City of Upland

2026 Local Hazard Mitigation Plan

Public Review Draft, March 2026

This page intentionally left blank.

TABLE OF CONTENTS

TABLE OF CONTENTS i

CHAPTER 1 – INTRODUCTION 1

Plan Purpose and Authority 1
Plan Organization and Use 3
Plan Goals 4
Planning Process 4
Plan Resources 10

CHAPTER 2 – COMMUNITY PROFILE 12

Setting and Location 12
History 12
Demographics 15
Disabilities and Access and Functional Needs 17
Climate 18
Economy 18
Development Profile 20
Infrastructure 23

CHAPTER 3 – RISK ASSESSMENT 25

Hazard Identification 25
Hazard Profile: Seismic Hazards 33
Hazard Profile: Fire 42
Hazard Profile: Human-Caused Hazards 48
Hazard Profile: Severe Weather 65
Hazard Profile: Infrastructure Failure 75
Hazard Profile: Flood 81

CHAPTER 4 – THREAT AND VULNERABILITY 89

Threat Assessment Process 89
Threat Profile: Seismic Hazards 95
Threat Profile: Fire 101
Threat Profile: Human-Caused Hazards 106
Threat Profile: Severe Weather 119
Threat Profile: Infrastructure Failure 123

Threat Profile: Flood 125

CHAPTER 5 – HAZARD MITIGATION STRATEGY 130

Strategy Development Process 130
Capabilities Assessment 130
Hazard Mitigation Strategies 146
Hazard Mitigation Actions 149
2025 Hazard Mitigation Actions Plan 151
National Flood Insurance Program 167

CHAPTER 6 – PLAN MAINTENANCE 169

Plan Adoption 169
Plan Implementation 169
Coordinating Body 169
Plan Maintenance Process 171
Incorporation into Existing Planning Mechanisms 173
Continued Public Involvement 174
Point of Contact 174

APPENDIX A – HMPC Meeting Materials A-1

APPENDIX B – Outreach Engagement Materials B-1

APPENDIX C – Resolution of Adoption C-1

APPENDIX D – Hazard Mitigation Implementation Handbook D-1

CHAPTER 1 –
INTRODUCTION

Plan Purpose and Authority

A hazard event is an emergency created by a natural or human-caused event that has the potential to cause harm. These events can lead to injuries or death, affect the overall health and safety of a community, damage or destroy public and private property, harm ecosystems, and disrupt key services. Although hazard events often get the most attention, it is only part of a larger emergency management cycle.

Emergency planners and responders can take steps during the cycle's response, recovery, mitigation, and preparedness phases to minimize the harm caused by a disaster. The City of Upland 2025 Local Hazard Mitigation Plan (LHMP) focuses on optimizing the mitigation phase of the process.

Hazard mitigation is "any sustained action taken to reduce or eliminate long-term risk to people and property from natural or human-caused hazards and their effects."[1] This mitigation involves making a community more resilient so that when hazard events do ultimately occur, the community suffers minor damage and can recover quickly and effectively. Mitigation differs from preparedness, which involves advanced planning for how best to respond when a disaster occurs or is imminent. For example, a policy to make homes structurally stronger so they suffer minor damage during an earthquake is a mitigation action, while fully equipping emergency shelters to accommodate people who lose their homes in an earthquake is a preparedness action. Some activities may qualify as both.[2]

The Emergency Management Cycle

Resiliency is the "capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive

Like other communities, the City of Upland (City) could suffer severe harm from hazard events. Although large disasters may cause widespread devastation, minor disasters can have more substantial effects. The City cannot make itself completely immune to hazard events, but this LHMP can help make the community a safer place to live, work, and play. This LHMP provides a comprehensive assessment of the city's threats from natural and human-caused hazard events and a coordinated strategy to reduce these threats. It identifies resources and information to help community members, City staff, and local officials understand local threats and make informed decisions. The LHMP can also support increased coordination and

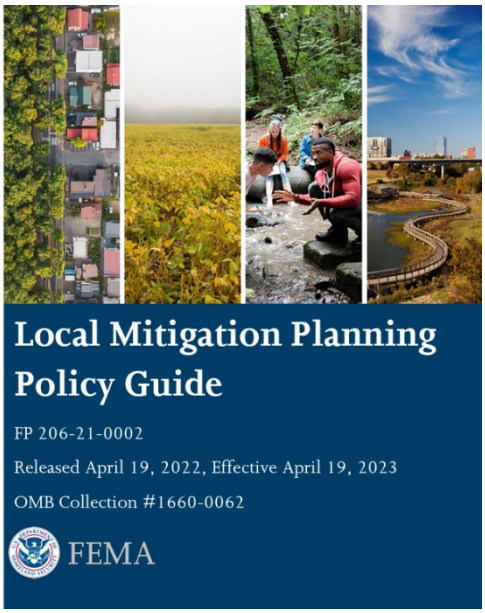
[1] California Governor's Office of Emergency Services. 2017. State of California Emergency Plan. https://www.caloes.ca.gov/wp-content/uploads/Preparedness/Documents/California_State_Emergency_Plan_2017.pdf

[2] Rodin, J. 2014. The Resilience Dividend: Managing Disruption, Avoiding Disaster, and Growing Stronger in an Unpredictable World. New York: Public Affairs.

collaboration between the City, other public agencies, local employers, service providers, community members, and other key stakeholders.

Federal Authority

The City 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 seeking eligibility for federal hazard mitigation grant funding must prepare a hazard mitigation plan that meets a set of guidelines and submit it 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.



FEMA's Local Mitigation Planning Policy Guide

This guide provides the official policy and interpretation of the applicable statutes and mitigation planning regulation in 44 Code of Federal Regulations.

State Authority

California Government Code Sections 8685.9 and 65302.6

The California Disaster Assistance Act (CDAA) Section 8686 limits the State of California's share of disaster relief funds paid to local governments to 75 percent of the funds not covered by federal disaster relief efforts. California Government Code Section 8685.9 (also known as Assembly Bill 2140) adds a caveat: If a 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, the state may cover over 75 percent of the remaining disaster relief costs.

All cities and counties in California are required to prepare a General Plan, including 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 if the LHMP meets applicable state requirements. This enables communities to use the LHMP to fulfill 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 provides a stronger mechanism for implementing it.

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 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.

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 actions/strategies reflect best practices and community values. It meets the requirements of current state and federal guidelines and makes the City 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, it does not grant FEMA or Cal OES an increased role in the governance of the city or authorize either agency to take any specific action in the community.

Plan Organization and Use

The Upland 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 resilience in the city. It is divided into the following chapters:

- **Chapter 1: Introduction.** This chapter describes the Plan's background, its goals and objectives, and the process used in its development.
- **Chapter 2: Community Profile.** This chapter discusses Upland's history, physical setting, land use, demographics, and other important community characteristics.
- **Chapter 3: Hazard Assessment.** This chapter identifies and describes the hazards that threaten Upland and discusses past and future events and the effects of climate change.
- **Chapter 4: Vulnerability Assessment.** This chapter describes each hazard's threat to Upland's key facilities and community members, including socially vulnerable individuals.
- **Chapter 5: Mitigation Strategy.** This chapter lists the mitigation actions to reduce Upland's vulnerability to hazard events and provides an overview of the community's existing capabilities to improve hazard resilience.
- **Chapter 6: Plan Maintenance.** This chapter summarizes the implementation, monitoring, and updating of the LHMP, as well as opportunities for continued public involvement.

Previous Upland LHMP–2016

This is an update to Upland's 2016 LHMP. This update, once approved and adopted by the City Council, will reinstate the City's eligibility to apply for FEMA grants for hazard mitigation projects and monetary relief during emergency situations. The content from the previous Plan has been included in this document and updated accordingly. As for integrating the previous Plan into

other planning mechanisms, the City successfully incorporated one aspect of it: the hiring of an emergency manager. Key modifications in this plan focus on expanding the risk assessment (understanding potential losses and vulnerable populations) in Chapter 4 and on revising and modifying mitigation strategies and actions in **Chapter 5**.

Key updated elements from the previous Upland LHMP include the following:

- Updated demographic information for Upland residents
- Updated hazard categories
- Descriptions of recent hazard events
- An updated threat assessment that incorporates recent data
- Updates to the Capabilities Assessment to reflect the most recent framework
- New and revised hazard mitigation actions to better meet current priorities of the City

Previous Plan Integration

As this is an update to Upland's LHMP, the City will be looking to integrate this document into other planning documents and processes. To ensure this future integration occurs, **Chapter 6** of this Plan includes additional guidance on how to best integrate the LHMP into the General Plan Safety Element, Emergency Operations Plan, and other planning mechanisms the City uses. The previous plan was not integrated into other City planning documents/efforts. In response the City sees this update as a good opportunity to begin this practice.

Plan Goals

The overarching intent of this updated LHMP is to increase resiliency to hazard events in Upland. This LHMP has six distinct goals to achieve this purpose:

1) Protect against threats from natural hazards to life, injury, and property damage within the Upland Community.
2) Increase public awareness of potential hazard events.
3) Preserve critical services and functions by protecting key facilities and infrastructure for the community.
4) Protect natural systems from current and future conditions.
5) Coordinate mitigation activities among City departments, neighboring jurisdictions, and with state and federal agencies.
6) Prepare for long-term changes in hazard conditions.

Planning Process

State and federal guidance for LHMPs does not require that jurisdictions follow a standardized planning process. FEMA encourages communities to create a planning process that reflects local values, goals, and characteristics. FEMA does suggest a general planning process that follows the steps identified below.

The planning process used to create this plan for the City of Upland is described as follows:

Hazard Mitigation Planning Committee

The City established a Hazard Mitigation Planning Committee (hereafter referred to as the HMPC). The HMPC comprises representatives from key city departments and stakeholders from local and regional agencies and companies that are key to hazard mitigation activities. **Table 1-1** identifies the members who were invited and/or attended HMPC meetings.

Table 1-1: Upland Hazard Mitigation Planning Committee (HMPC)

Name	Title	Department
Jessica Gordon	Deputy Director	Public Works Department, Operations
Richard Gonzales	Deputy Director	Public Works Department, Utilities Division
Damien Arrula	Assistant City Manager	City Manager's Office
Marcelo Blanco	Chief of Police	Upland Police Department
Bob Critchfield	Engineering Manager	Public Works Department, Engineering Division
Robert Dalquest	Director	Development Services Department
Ed Diggs	Interim Utilities Manager	Public Works Department, Utilities Division
Jessica Escoto	Parks and Recreation Manager	Community Services Department, Recreation and Community Services Division
Loralee Farris	Planning Manager	Development Services Department, Planning Division
Norberto Ferreira	Chief Water Treatment Operator	Public Works Department, Water Quality Division
Tanya Garcia	Management Analyst	Public Works Department, Utilities Division

TABLE 1-1: UPLAND HAZARD MITIGATION PLANNING COMMITTEE (HMPC)		
Name	**Title**	**Department**
Richard Jeganathan	IT Manager	Administrative Services Department, Information Technology Division
Jason Lara	Utilities Supervisor	Public Works Department
Tracy Montez	Dispatch Supervisor	Upland Police Department
Christopher Morgan	Building Official	Development Services Department, Building and Safety Division
Stephen Parker	Assistant City Manager	City Management
Klasha Ray	Emergency Services Officer	San Bernardino County of Emergency Services
Justin Salgado	Emergency Services Officer	San Bernardino County of Emergency Services
Richard Smiderle	Operations Manager	Public Works Department, Operations Division
Staci Sullivan	Finance Manager	Finance
Lon Teague	Patrol Operation Commander	Upland Police Department
Cecilia Todd	Deputy Director of Human Resources and Risk Management	Administrative Services Department, Human Resources/Risk Management Division
Marc Warner	Utilities Supervisor	Public Work Department
Aaron Pfannenstiel Crystal Stueve Robert Jackson	Consultant	Atlas Planning Solutions

The Planning Committee held two meetings throughout the plan update development process to lay out the Plan's methods and approach, draft and review content, make revisions, and engage members of the public.

- **Kick Off Meeting (December 2, 2024):** The initial meeting with HMPC coordinators and the consultants to discuss the schedule, potential HMPC members, timeline, and initial research materials gathering.
- **HMPC Meeting #1 (May 14, 2025):** The Planning Team members confirmed the project goals and responsibilities. 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.
- **HMPC Meeting #2 (June 5, 2025):** Members discussed the results of the hazards assessment and mapping that showed the areas facing an elevated risk. The HMPC also reviewed the hazard prioritization results. The team reviewed the risk assessment results to identify populations and assets that may be at greater risk in a hazard event and discussed potential hazard mitigation actions to address vulnerabilities.
- **HMPC Meeting #3 (August 11, 2025):** This was a follow-up meeting on mitigation actions.

Invitations and meeting materials were provided via email. **Appendix A** contains copies of invitations, meeting agendas, sign-in sheets, and other relevant materials distributed for these meetings.

PUBLIC ENGAGEMENT

Under FEMA guidelines, local hazard mitigation planning processes should create opportunities for public involvement in Plan development—at a minimum, during the initial drafting stage and Plan approval. Due to the policy changes in the post-COVID-19 pandemic world, some in-person public workshops and meetings were replaced with virtual workshops, meetings, and discussion groups. The HMPC developed a community engagement and outreach strategy to guide all public engagement activities. To ensure all residents were aware of the project, City staff conducted the following activities:

- City social media: posts via Instagram, Facebook
- LHMP City webpage (see below)
- English flyers at City facilities
- Promotion at City Meetings/Events (see below)
- Promotion at City Facilities (City Hall, etc.) with signage on Plan review content and QR codes for the Hazard Mitigation Survey were posted at the front desk.
- Information shared with businesses via the Chamber of Commerce

Stakeholder Engagement

As part of the plan update process, the City invited stakeholders to review and comment on the Public Review Draft of the LHMP. These stakeholders included neighboring jurisdictions, medical centers, utility providers, the local school district, railroads, and County agencies. Information on this engagement opportunity is in **Appendix B**. All jurisdictions and stakeholders were invited via email and/or by direct telephone communication from the HMPC project manager, the City of Upland's Assistant City Manager, Public Works. The following is a list of stakeholders invited to participate in the plan development process and review.

- American Red Cross
- Cable Airport
- California Highway Patrol
- Caltrans
- Neighboring Jurisdictions:
    - City of Claremont
    - City of Montclair
    - City of Ontario
    - City of Rancho Cucamonga
- San Antonio Regional Hospital
- San Bernardino County Fire District
- San Bernardino County Office of Emergency Services
- San Bernardino County Sheriff's Department
- San Bernardino County Planning and Land Use
- San Bernardino County Public Health Department
- San Bernardino County Public Works

- San Bernardino County Transportation Authority
- Southern California Edison
- Southern California Gas
- Upland Chamber of Commerce
- Upland Unified School District

Vulnerable Populations Outreach

Signage was posted at City facilities with information on both the Public Review LHMP and the Hazard Mitigation Survey. Having the signage and information on the LHMP and the feedback survey posted at community centers was a key focus, ensuring this portion of the community was made aware of the Plan and the City's request for feedback. It was important that the City didn't solely rely on online sources to publicize LHMP process and plan.

Future Outreach Opportunities

Recognizing that other vulnerable populations may exist in the City, this Plan focuses on these populations. Opportunities to share information, such as the annual Upland Birthday Celebration, the Halloween Festival, Winter Wonderland, and the National Night Out, become great opportunities for outreach. Continued outreach occurs during the implementation of the Plan, and future updates will continue to refer to this resource to help identify vulnerable populations and key issues affecting their vulnerability.

Community Meetings and Events/Public Engagement Opportunities

The City regularly conducts community meetings and events intended to provide useful information to participants/attendees. During the planning process, three outreach meetings and events were held, during which City staff discussed the Plan and process currently underway and provided opportunities for feedback. The following information provides dates for each meeting:

- City Council Meeting – March 23, 2026
- Stakeholder Meeting

Online Engagement

The City conducted a variety of online engagement activities that support the hazard mitigation planning process. The following are key activities conducted.

LHMP Project Webpage

The City created a page on its website dedicated to the Local Hazard Mitigation Plan to reach a broad audience and increase public engagement and participation. The webpage is a simple, one-stop location for community members to learn about the LHMP. The webpage explains what an LHMP is, why the City should have one, how it is developed, and how the public can participate in the planning process, including a link to the LHMP survey (see below). The webpage is available at [https://www.uplandca.gov/local-hazard-mitigation-plan-lhmp].

LHMP Website

Online Survey

The City released an online survey to community members to gather feedback on the planning process and hazards of concern. The City advertised the survey on their social media channels and on the City website. Flyers were also posted at City facilities in both English and Spanish and at community events and meetings.

At the time of the Public Review Draft release, the City received a total of 32 responses from community members and stakeholders during the survey period. Due to the small number of survey responses, the City recognizes that the method by which the survey was shared may not have been the most effective means to engage with the community. Future outreach will look to identify additional strategies to improve survey response. Based upon those survey responses, the following information was gathered and shared with the HMPC:

- Approximately 52% of responders have been impacted by a natural hazard event in their current residence.
- The top three hazards of concern that have impacted residents in their homes are: (1) High Winds, (2) Drought, and (3) Extreme Heat.
- The top three hazards of greatest concern according to responders are: (1) Earthquakes, (2) High Winds, and (3) Wildfire.
- Approximately 53.1% of responders are very concerned that climate change may exacerbate or create new hazardous situations in Upland, while approximately 9.4% aren't concerned at all.
- Approximately 57% of responders indicated that they are familiar with the special needs of neighbors in the event of a disaster (special needs may include limited mobility, severe medical conditions, and memory impairments).
- Approximately 47% of responders are trained members of the Upland Community Emergency Response Team (CERT), and 31% of responders would like to learn more about CERT.

As part of the outreach strategy, a QR code was created for use on promotional materials and handouts at fairs and booths operated by City staff at community events. This QR code provided quick access to the City's Online Survey.

The survey results were provided to the HMPC. The data was then analyzed, reviewed, and incorporated into the LHMP content by the HMPC. The survey provided unique local insight into hazard concerns and assessed the public's overall opinion and perception of the hazards affecting Upland. The full hazard mitigation survey results and copies of all materials used for public outreach are provided within **Appendix B** of the LHMP, including the survey questions and answers.

Social Media Outreach

The City promoted and provided information on both the Hazard Mitigation Survey and the LHMP Public Review Draft on multiple social media platforms. Social Media analytics are provided in **Appendix B** (upon completion of the public review period).

Public Review Draft

On March 24, 2026, the Public Review Draft of the Plan was distributed to the residents and businesses of Upland for a 15-day public review period. The City's LHMP website [https://www.ci.upland.ca.us/820/Local-Hazard-Mitigation] hosted public electronic copies of the Plan.

Hardcopy versions of the Plan were made available at the following locations:

- City Hall – 460 N. Euclid Ave
- City Public Works Yard – 1370 N. Benson Ave

The City received (X) number of comments during this review period.

CalOES and FEMA Review (Updated after Public Review)

Upon completion of the public review period and adoption, the City transmitted the document to the California Office of Emergency Services for their review and approval on Month, Day, Year. Upon Cal OES approval, the plan was transmitted to FEMA for review and approval.

Plan Adoption (Updated after FEMA Approval)

On Month, Day, Year, the Upland City Council adopted the 2026 Upland Local Hazard Mitigation Plan. The resolution of adoption is included in **Appendix C**.

Plan Resources

The City referred to several plans, studies, technical reports, datasets, and other resources to prepare the Plan's hazard assessment, mapping, threat assessment, and other components. **Table 1-2** provides some of the HMPC's primary resources to prepare this Plan.

TABLE 1-2: KEY RESOURCES FOR PLAN DEVELOPMENT		
Section	**Key Resources Reviewed**	**Data Incorporated from Resource**
Multiple	• City of Upland 2016 Hazard Mitigation Plan • City of Upland Climate Action Plan • City of Upland General Plan • City of Upland reports • California Department of Water Resources • FEMA Local Hazard Mitigation Plan Guidance • National Oceanic and Atmospheric Administration • West End Consolidated Water Company: Urban Water Management Plan • San Antonio Water Company: Urban Water Management Plan • National Weather Service • U.S. Census Bureau	• Science and background information on various hazard conditions • General data about hazard mitigation plans • Records of past disaster events in and around Upland and San Bernardino County • Projected climate conditions in and around Upland • Information on the City's history and current demographics and characteristics
Community Profile	• California Energy Commission • Western Regional Climate Center	• Information about utility services in Upland • Current climate conditions in and around Upland
Hazard Assessment		
Drought	• Safeguarding California • US Drought Monitor	• History of drought events • Current and projected future drought conditions
Flood	• San Bernardino County Flood Control District • FEMA Map Service Center	• Records of past floods in and around Upland • Locations of flood hazard zones in Upland
Human-Caused Hazards	• California Department of Toxic Substances Control • California Office of Emergency Services spill release reports • Global Terrorism Database • State Water Resources Control Board • US Environmental Protection Agency	• Locations and status of hazardous material facilities • Historic records of terrorism and hazardous material releases
Seismic Hazards	• Southern California Earthquake Data Center • U.S. Geological Survey (USGS) Earthquake Archive • USGS ShakeMap scenarios • USGS Third Uniform California Earthquake Rupture Forecast	• Locations of fault zones and seismic hazard areas • Records of past seismic events • Future seismic event scenarios
Wildfires	• California Department of Forestry and Fire Prevention	• Records of past fire events • Locations of fire zones in and around Upland
Note: Sections not individually identified in this table relied primarily on sources identified in multiple sections.		

CHAPTER 2 –

COMMUNITY PROFILE

The Community Profile section of the LHMP describes Upland, including information about the community's physical setting, history, economy and demographics, current and future land uses, and key infrastructure. The Community Profile helps establish the baseline conditions in Upland, which informs the development of the hazard mitigation strategies and actions in **Chapter 5**.

Setting and Location

The City of Upland (population approximately 78,940) is located 27 miles west of San Bernardino and 35 miles east of Los Angeles, nestled at the base of the San Gabriel Mountains in San Bernardino County. The city is bounded by Ontario to the south, Rancho Cucamonga to the east, Claremont, and Montclair to the west, and on the north and east by mountainous terrain. It uses the council/mayor form of government common across the state.

The City of Upland covers 15.84 square miles. It's located within the Santa Ana River watershed, which includes much of Orange County, the northwestern corner of Riverside County, the southwestern corner of San Bernardino County, and a small portion of Los Angeles County. Its 2,800-square-mile watershed is bounded to the south by the Santa Margarita watershed, to the east by the Salton Sea and Southern Mojave watersheds, and to the north and west by the Mojave and San Gabriel watersheds.

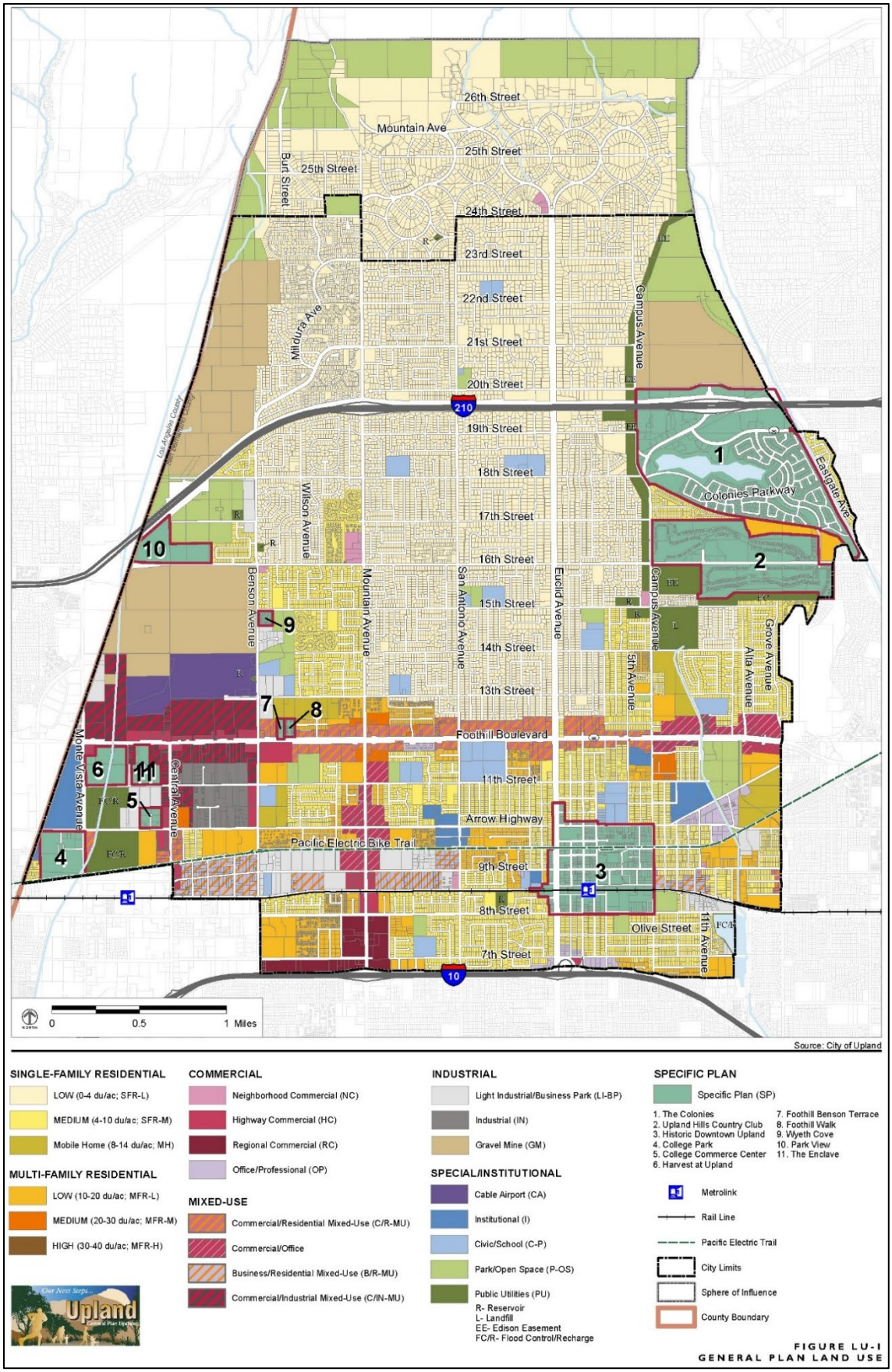
Upland's sphere of influence includes the small, unincorporated community of San Antonio Heights, bordered by the San Bernardino National Forest to the north. This community is primarily residential and is primarily built out.

History

The area that is now Upland used to be the home of the Tongva people, who inhabited most of the San Bernardino and western San Bernardino regions. The 1771 founding of Mission San Gabriel and its establishment as a major supply hub on the trail blazed by the Anza expedition in 1774 led to the Spanish colonizers expanding their cattle-grazing range to the east, engulfing the Tongva tribal lands around the future Upland. In 1810, a party under Padre Dumetz left Mission San Gabriel to find a suitable location for an eastern supply outpost along the Anza Trail. They entered a large valley on San Bernardino's feast day and named the valley for the saint. They also bestowed the name "Cucamonga" (Tongva for "sand place") on the area that would eventually become Upland.

Anglo settlers began to carve out farms and ranches from the Cucamonga rancho after the Mexican War took California into the United States. Canadian brothers George and William Chaffey arrived in the early 1880s, establishing the Etiwanda irrigation colony in 1881 and the Ontario Model Colony in 1882, along with the San Antonio Water Company to provide water from the nearby mountains.

Figure 2-1. Upland General Plan Land Use Map



What is now Upland was known as “North Ontario” or “Magnolia” at that time.

The Atchison, Topeka, and Santa Fe Railroad established a stop in North Ontario in 1887, linking the future Upland to its vast network to the east and west. When Ontario incorporated in 1891, it left North Ontario. By 1901, however, Ontario’s power structure feared that North Ontario might incorporate and, coveting the district’s rail line, train depot, and bustling packing houses, pushed through a huge expansion of the city. North Ontario residents fought back and approved a vote for incorporation in 1906. The City of Upland was born on May 15, 1906, stopping Ontario’s march north. It didn’t regain its prized rail line and station until 1935.

Downtown Upland, looking north, 1890s

Between 1880 and 1920, the citrus industry dominated Upland’s economy. Profits from the industry were distributed across the board, from wealthy growers to town businesses to field hands. The growers’ disposable incomes fueled investment in land development. Within two decades, new construction in the commercial district continued steadily with all services needed to sustain the city. As new mechanized fruit packing and handling technology arrived between 1925 and 1945, the citrus industry tripled in size. In the 1930s, construction of modernized packing houses with large administrative offices began to replace the older establishments.

Citrus continued to prosper during WWII. However, returning WWII veterans caused the population to soar, with housing subdivisions rapidly replacing orchards. A boom in the construction of schools and shopping centers followed. Within a few years, citrus growing, once the leading business, played a steadily diminishing role in the city's wealth. The economy has flourished, and the population has grown over the decades. Commercial and industrial development continues to meet the community's needs.

Modern downtown Upland

Present-day Upland retains many of the same features it had in the past, most notably Euclid Avenue (designed by George Chaffey), the primary north-south, tree-lined street that runs through town, as well as many of the older adobe and ranch-style houses. Other Upland features include Upland Town Center—an open-air mall in the downtown area at the intersection of 9th Street and 2nd Avenue—and a clear view of Mount Baldy. Upland has two sister cities: Mildura, Victoria, Australia, and Caborca, Sonora, Mexico.

Demographics

This section paints a portrait of Upland through data. Basic demographics data (**Table 2-1**) comes from the most comprehensive American Community Survey 2018–2023 (ACS), administered by the United States Census Bureau (U.S. Census) completed in 2023, and from the California Department of Finance (CDOF).

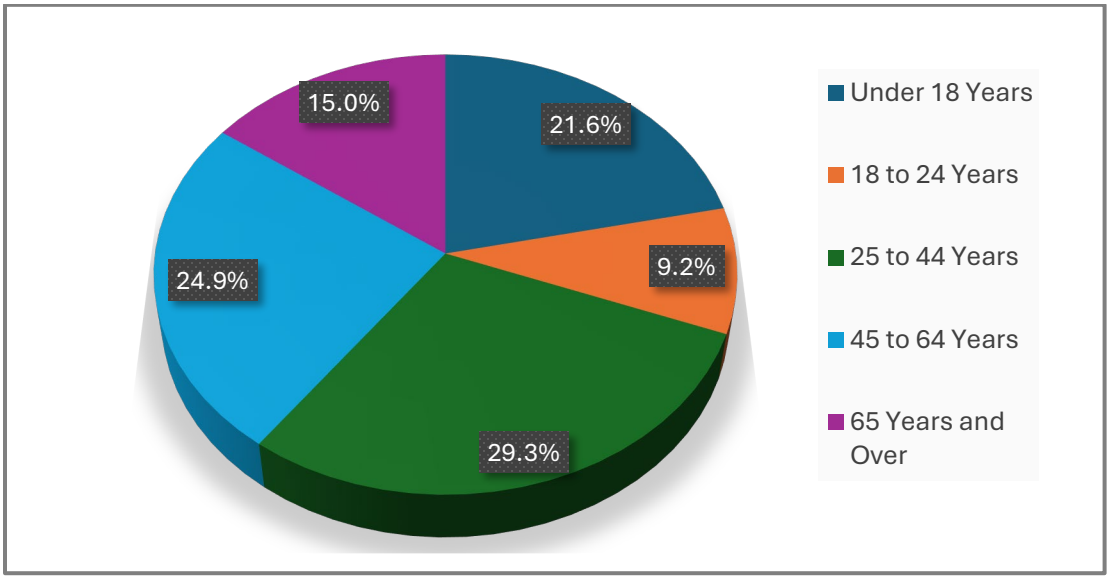
Upland's population is 3.6% of San Bernardino County's total population and forms 3.8% of the County's total households.

TABLE 2-1: BASIC DEMOGRAPHICS—UPLAND & SAN BERNARDINO COUNTY

Demographic	Upland	San Bernardino County
Total Population	78,940	2,187,816
Percent of children who are less than 10 years old	11%	10.9%
Percent of residents who are senior citizens (65+)	15%	14.7%
Median Age	37.5	34.4
Total households	28,366	738,535
Median household income	$101,407	$82,184
Percent of residents 25+ HS graduate or higher	90.5%	82.1%
Percent of rental households	43.1%	38.4%
Source: American Community Survey, ACS 2023 5-Year Projections		

On average, the City's residents tend to be slightly older than the county as a whole (median age of 37.5 years for the city vs. 34.4 years for the county). **Figure 2-2** shows a distribution of the City's population into five age brackets.

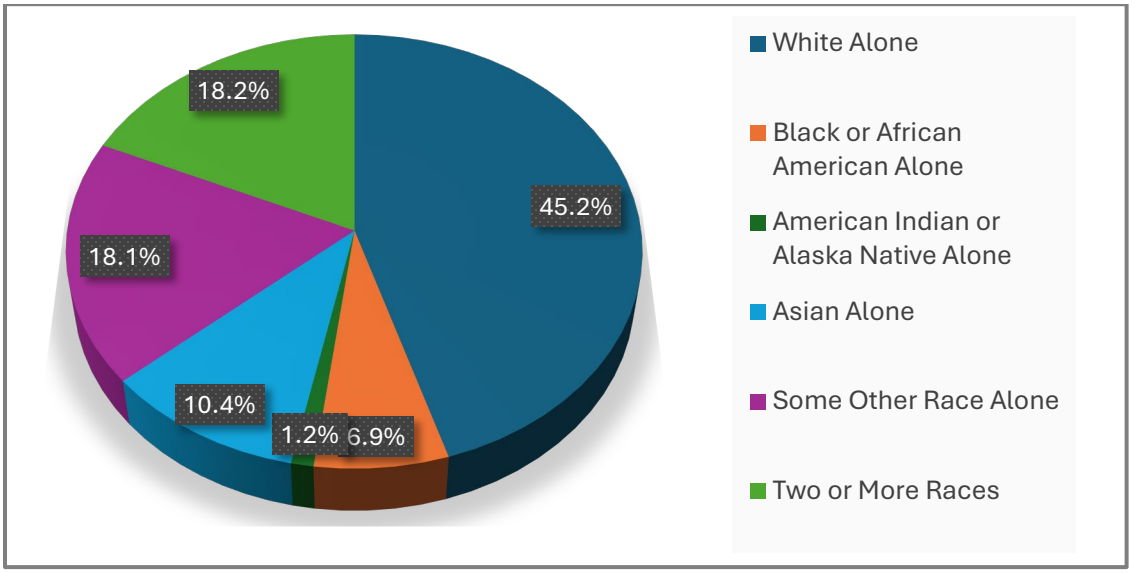
Figure 2-2. Age Distribution of Residents



Source: U.S. Census Bureau, 2023 American Community Survey (ACS). Percentage values are rounded to the nearest tenth decimal.

Non-Hispanic Whites constitute a larger share of Upland's population than of the county's (45.2% vs. 39.1%). Conversely, Black people and Asians are less represented in the City. **Figure 2-3** breaks down the City's population into five categories.

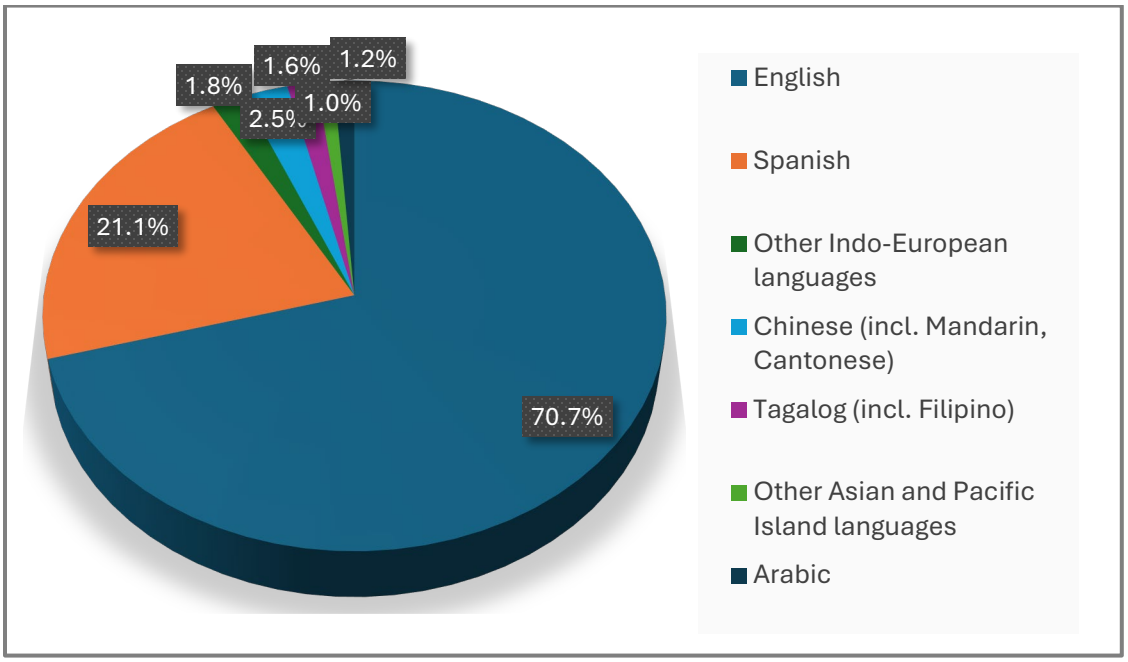
Figure 2-3. Racial Composition of Residents



Source: U.S. Census Bureau, 2023 American Community Survey (ACS). Percentage values are rounded to the nearest tenth decimal. In this dataset, "Latino/Hispanic" is not included as a race. Survey respondents may use "Some Other Race Alone" as an analog for "Latino/Hispanic."

Over 91% of the City's residents speak either Spanish or English at home, with over two-thirds preferring English. **Figure 2-4** details language usage in the City.

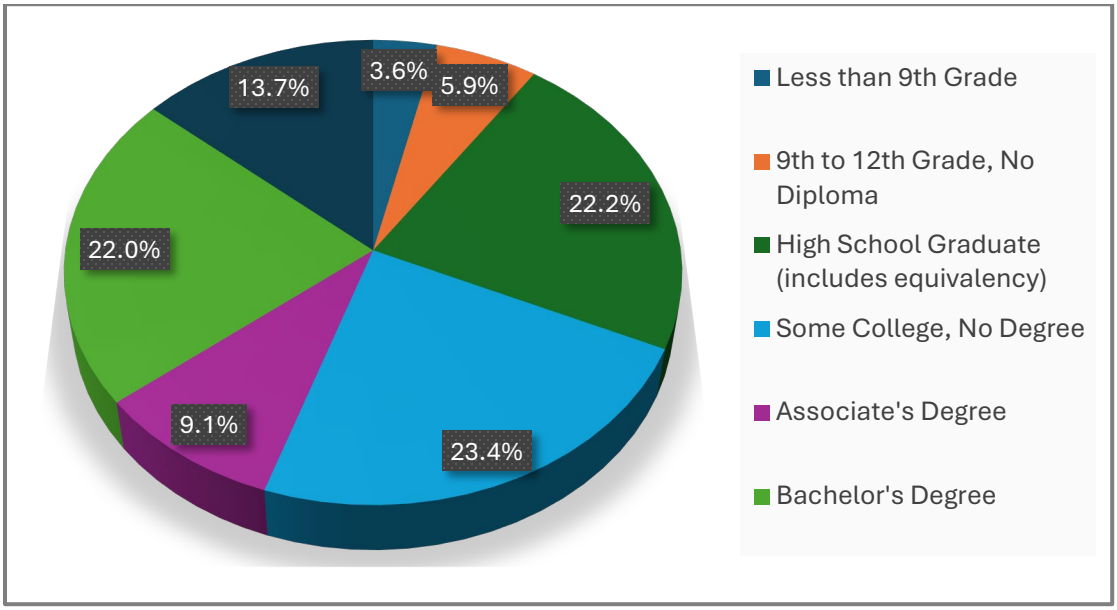
Figure 2-4. Languages Spoken at Home (Residents Aged 5+)



Source: U.S. Census Bureau, 2023 American Community Survey (ACS). Percentage values are rounded to the nearest tenth decimal.

Slightly over 90% of City residents have achieved at least a high school diploma, a higher proportion than the county. Over 44% hold some level of college degree. This may account for the City's 23.4% higher median income than the counties. **Figure 2-5** shows educational attainment details for the City's residents.

Figure 2-5. Educational Attainment of Residents Aged 25+



Source: U.S. Census Bureau, 2023 American Community Survey (ACS). Percentage values are rounded to the nearest tenth decimal.

Disabilities and Access and Functional Needs

No two disasters are ever the same. However, virtually all incidents disproportionately affect individuals with disabilities and access and functional needs (DAFN). This term refers to individuals who have:

- Physical, developmental, or intellectual disabilities
- Chronic conditions or injuries
- Limited English proficiency
- Older adults
- Children
- Pregnant women
- Low income, homelessness, and/or transportation-disadvantage (i.e., people dependent on public transit)

These are often the most overlooked parts of our populations; city and emergency planners may not even know the size of these communities or where they live or work. The data presented in **Table 2-2** are intended to provide a general overview of the prevalence of DAFN communities in Upland, enabling the city to engage them during mitigation planning and implementation.

TABLE 2-2: DAFN COMMUNITIES IN UPLAND		
	Number	**Percentage**
Residents below 15 years of age	13,869	17.7%
Residents 65+ years of age	11,880	15.1%
Residents 65+ years living alone	2,207	2.8%
Residents with incomes below the poverty level in the past 12 months	9,167	11.7%
Total residents with a disability*	8,763	11.1%
Under 18 with a disability	534	0.6%
65+ with a disability	4,377	5.6%
Residents 5+ who speak English less than very well	7,308	9.8%
Residents 16+ who depend on public transportation	579	1.4%
Households that have no access to a vehicle	1,049	3.8%**
Households with no telephone service	261	0.96%**
Households with no internet access	870	3.2%**

Source: American Community Survey, ACS 2023 5-Year Projections

* Defined by the U.S. Census Bureau as vision difficulty, hearing difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, or independent living difficulty.

** Percentage of households.

Climate

Like much of Southern California, Upland enjoys a Mediterranean climate, with hot, dry summers and mild winters. The warmest month of the year is August, with an average maximum temperature of 90.7º F; the coldest month of the year is December, with an average minimum temperature of 41.2º F. Temperatures vary up to 25º F between daytime and nighttime in summer, and about 22º F in winter. The annual average precipitation is 16.5 inches.

Economy

Upland's economic base has fully transitioned from an agricultural focus (which is now the smallest industry sector in the city) to services (including healthcare and education), retail, and professional occupations.

Unlike other San Gabriel Valley and Inland Empire cities, Upland never had a significant concentration of defense or aerospace industries and thus was relatively untouched by the post-Cold War crash in that sector. Its relatively low dependence on manufacturing and construction also mostly shielded it from recurring boom/bust cycles in those industries.

The U.S. Census Bureau ACS 5-Year Estimate for 2018–2023 says 62.6% of Upland residents 16 years and older are employed in a range of industry sectors, as shown in **Table 2-4**.

TABLE 2-4: EMPLOYMENT BY INDUSTRY SECTOR, RESIDENTS 16 YEARS AND OLDER		
Industry Sector	**Number Employed**	**Percent**
Educational services and health care and social assistance	11,111	27.7%
Professional, scientific, and management, and administrative and waste management services	4,322	10.8%
Retail trade	4,259	10.6%
Arts, entertainment, recreation, accommodation, and food services	3,881	9.7%
Transportation and warehousing, and utilities	3,496	8.7%
Manufacturing	2,695	6.7%
Construction	2,598	6.5%
Public administration	2,187	5.5%
Finance and insurance, and real estate and rental and leasing	2,032	5.1%
Other services, except public administration	1,986	5.0%
Wholesale trade	755	1.9%
Information	583	1.5%
Agriculture, forestry, fishing and hunting, and mining	215	0.5%
Total	**40,120**	**100.0%**
Source: American Community Survey, ACS 2023 5-Year Projections		

The City's median household income has increased by 134.3% since 2000, faster than the county's median household income growth of 106.5% over the same period. **Table 2-5** shows the distribution of household income over the past twelve months.

TABLE 2-5: DISTRIBUTION OF HOUSEHOLD INCOME IN LAST 12 MONTHS (2023 DOLLARS)		
Income Range	**Number of Households**	**Percent**
Less than $10,000	1,081	4.0%
$10,000 to $14,999	668	2.5%
$15,000 to $24,999	1,045	3.8%
$25,000 to $34,999	1,276	4.7%
$35,000 to $49,999	2,181	8.0%
$50,000 to $74,999	3,678	13.5%
$75,000 to $99,999	3,448	12.7%
$100,000 to $149,999	5,242	19.3%
$150,000+	8,566	31.5%
Total	**27,185**	**100.0%**
Source: American Community Survey, ACS 2023 5-Year Projections		

Like many communities in Southern California, most local residents commute outside the City to work. Upland experiences a net outflow of over 5,400 workers during the daily going-to-work commute (29,540 outbound vs. 24,128 inbound).

The City's top ten private-sector employers are concentrated on retail and services, as shown in **Table 2-6**.

TABLE 2-6: TOP 10 PRIVATE-SECTOR EMPLOYERS (2024)

Employer	Type of Business	# Employees	% of Total City Employment*
San Antonio Regional Hospital	Healthcare	2,000	5.3%
Upland Unified School District	Public Education	1,272	3.4%
VCI Construction	Construction	458	1.2%
Holliday Rock Co. Inc	Construction Materials	350	0.9%
Upland Rehabilitation & Care Center	Healthcare	343	0.9%
Home Depot	Retail	324	0.9%
Lewis Group	Property Development	314	0.8%
City of Upland	Local Government	280	0.7%
Target	Retail	264	0.7%
Walmart	Retail	201	0.5%
	Total	**5,806**	**15.4%**

Source: Upland FY 2024 Annual Comprehensive Financial Report.
* Total City private-sector employment is 40,120.

Development Profile

Upland has reached development levels close to complete build-out. Developers view the remaining small parcels as primarily commercial and industry usages.

The San Bernardino County Mapping Division completed a land-use survey for the County on a parcel-by-parcel basis. The land uses were characterized based on the County's land-use code categories. The summary of information on existing land use is shown on the General Plan Land Use Summary. According to data collected:

- Most of the City's land is dedicated to residential uses (3,427.92 acres, or 43.05 percent of the land surveyed).
- The next largest category of land is vacant or non-taxed land (2,236.77 acres, or 28.44 percent of the land in the City). This category includes public owned properties, open-space land, flood control, water recharge areas, and mineral resources areas.
- Industrial uses comprise 822.38 acres (10.40 percent), of which 817.83 acres are committed to light industrial uses and 4.55 acres are occupied by heavy industrial use.
- Office and retail uses are located on 513.12 acres of land (6.51 percent). These uses include small office (157.03 acres or 1.99 percent), medium office (.27 acres), and retail uses (355.83 acres or 4.52 percent).
- The City has 71 acres of land (.90) percent) committed to airport uses.
- The land surveyed includes parking (9.82 acres) and special public facilities, including San Antonio Community Hospital, churches, and publicly owned buildings.

HOUSING

Like most Southern California communities, Upland's housing stock and land usage are dominated by single-family detached homes. This type of development is one of the greatest contributors to our current housing shortage and its attendant high prices and homelessness. However, the wood-frame, single-family detached house is one of the most seismically resilient building types in our cities, though its performance during urban conflagrations leaves much to be desired. **Table 2-7** shows the details.

TABLE 2-7: HOUSEHOLD TENURE BY NUMBER OF UNITS IN STRUCTURE

	Number of Households	Percent
Owner-occupied units		
1 unit, attached/detached	14,416	53.0%
2–4 units	87	0.3%
5 or more units	132	0.5%
Mobile homes, RVs, boats, etc.	834	3.1%
Renter-occupied units		
1 unit, attached/detached	3,517	12.9%
2–4 units	2,247	8.3%
5 or more units	5,874	21.6%
Mobile homes, RVs, boats, etc.	78	0.3%
Total households	**27,185**	**100%**

Source: American Community Survey, ACS 2023 5-Year Projections

COMMERCIAL

Upland's 2nd Avenue commercial area has historically functioned as Upland's "main street" since its founding. Other major commercial strips are Foothill Boulevard and Mountain Avenue in the City's south, and the strip of Highway 210 east of Euclid Avenue. Most of the City's industrial development is next to the airport in the southwest.

DEVELOPMENT TRENDS

The development of infrastructure and residential and commercial structures is ongoing to keep up with the resulting demands. However, the city's land area is relatively small, 15.84 square miles, and will thus serve to limit growth in the future. The lack of opportunity to build out will force a denser population per acre in residential developments.

The overall intention is to preserve the city's scale and general character. Current strategies focus on opportunities to recapture commercial and industrial development along with employment-generating land uses. The emphasis is on projects such as the Colonies at San Antonio, a mixed-use, master-planned community of residential, commercial, and recreational development. Other planned development projects include:

- An Opportunity Zone bordered by Benson Avenue on the west, Foothill Boulevard and 11th Street on the north, San Antonio Avenue and Mountain Avenue on the east, and 9th Street on the south.
- A mixed-use, commercial/residential development north of Highway 210 and east of Benson Avenue, across from the mall.
- The Harvest at Upland residential development on Monte Vista Avenue south of Foothill Boulevard.

All future development will be built in compliance with current development codes and standards, taking all hazards into account.

Open Space

The City operates at least eight public parks, most of which are south of Highway 210. The public Upland Hills Country Club offers an 18-hole golf course east of North Campus Avenue along East 16th Street, and the private Red Hill Country Club hosts an 18-hole course next to Upland's eastern border north of Foothill Boulevard. Aside from this, the bulk of outdoor recreation opportunities lies in the mountains north of San Antonio Heights and in the watershed along San Antonio Creek immediately west of Upland.

Historical Resources

Upland has no registered National Historic Landmarks and only one State Historical Landmark: the "Madonna of the Trail," a 1929 statue commemorating the westward expansion. Three other areas in the City form informal historic districts:

1) Period structures still dot **Foothill Boulevard** (previously known as Historic Route 66), including the 1929 Buffalo Inn and an original "golden arches" McDonald's.
2) **Euclid Avenue** entered the National Register of Historic Places in 2005. Pre-1950s homes lined much of the road from north of Interstate 10 to Foothill Boulevard. The three-mile-long Bridle Trail, which separates the northbound and southbound lanes, remains a linear park for joggers and walkers.
3) **Historic Downtown Upland** encompasses the area east of Euclid Avenue between 8th Street and Arrow Highway. An eponymous business organization seeks to preserve the remaining period structures in Upland's traditional downtown, once known as "Old Magnolia."
4) **Carnegie Library** located at 123 East D Street, was completed in 1913 and holds the distinction of being the city's first public building. Funded in part by a $10,000 grant from Andrew Carnegie, the building served as the town's public library until 1969. It currently serves as a community center and hosts the city's Literacy Program.

The City website hosts a catalog of over 600 houses built in or before 1950. None of them is currently listed in federal or state registries, but the City is committed to acknowledging, protecting, and enhancing them as historic resources.

General Plan goals and policies support this commitment by recommending the protection of these sites, subject to further study of their historical significance.

Infrastructure

Infrastructure plays a vital role in mitigating the effects of hazard events. When infrastructure fails, it can exacerbate the effects of a hazard event or complicate rescue efforts to reach victims. For example, fallen utility poles resulting from strong winds or seismic activity can obstruct roadways and prevent emergency vehicles from reaching affected areas.

Electric Power

Southern California Edison is the primary provider of electrical power in Upland. SCE's service area includes portions of 15 counties and hundreds of cities and communities across a 50,000-square-mile region in central, coastal, and Southern California. It operates the electrical transmission paths across Upland as well as the substations and switching yards in the distribution system.

Natural Gas

SoCalGas is the natural gas service provider for most of Southern California, including Upland. In addition to providing natural gas service, it owns and operates the natural gas infrastructure in and around the City.

Water

The City's Water Division has access to local and imported water supply resources. City water interests are a result of either a direct water right or indirectly through its shareholder interest (entitlement) in two private mutual water companies. Locally, the City has adjudicated groundwater water rights in the Chino, Cucamonga, and Six Basins. The City has a 93% shareholder interest in West End Consolidated Water Company's (WECW Co's) local groundwater operations. The City has a 68% shareholder interest in San Antonio Water Company (SAW Co.), which provides both local groundwater and surface water from San Antonio Canyon. Local surface water is treated at the City's San Antonio Water Treatment Plant. In addition to the local surface and groundwater supplies, the City invested in and owns a 22% interest in an 81-million-gallon imported water treatment plant, the Water Facilities Authority (WFA-JPA) Agua de Lejos, located on Benson Avenue north of 17th Street.

Wastewater / Stormwater

The City's Environmental Division is responsible for the collection of wastewater within the city limits and delivery to the Inland Empire Utilities Agency (IEUA). IEUA provides wastewater treatment and is the wholesale distributor of imported water and recycled water for the San Bernardino Valley. Upland is in IEUA Division 1.

The San Bernardino County Flood Control District provides flood protection within its boundaries. The District has developed and operated an extensive system of dams, conservation basins, channels, and storm drains to intercept and convey flood flows through and away from the major developed areas of the county.

TRANSPORTATION

Two major freeways provide direct access to Upland: I-10 (along Upland's southern border) and State Highway 210 (cutting across the City's north end). Euclid Avenue, which connects Upland with Chino via Ontario, is also partly a state highway (CA-83). Foothill Boulevard is part of CA-66. The regional surface street grid continues largely without interruption through the city.

Omnitrans, the San Bernardino Valley's bus transit system, provides bus transportation in and through Upland.

Metrolink owns the former ATSF right-of-way through Upland. The San Bernardino Line stops at the historic Upland train station. BNSF runs freight operations on the same trackway.

Cable Airport, the world's largest family-owned, public-use, general aviation airport, is located next to the primary industrial area in Upland's southwest corner.

TELECOMMUNICATIONS

AT&T and Frontier Communications provide landline phone and data service to a steadily dwindling number of customers in Upland. The three major wireless communications companies operate cell sites in the City.

CHAPTER 3 –

RISK ASSESSMENT

Risk assessment is the process of measuring the potential impact on life, property, and the economy resulting from natural hazards. The intent of the risk assessment is to identify—as much as practicable, given existing, available data—the qualitative and quantitative vulnerabilities of a community. The results of the risk assessment provide a foundation for developing and prioritizing mitigation actions to reduce damage from natural hazards by improving preparedness and response times and better allocating resources to areas of greatest vulnerability.

This risk assessment section evaluates the potential loss from each hazard by assessing the vulnerability of buildings, infrastructure, and people to its effects. It identifies the characteristics and potential consequences of hazards, how much of the community a hazard could affect, and its impact on the community's population and assets. The risk assessment approach consists of two components:

1) **Hazard Identification:** Identification and screening of hazards.
2) **Hazard Profiles:** Review of historical occurrences and assessment of the potential for future events.

Hazard Identification

Hazard Screening Criteria

FEMA guidance identifies several hazards that communities should evaluate for inclusion in a hazard mitigation plan. Communities may also consider additional hazards for their plans. The HMPC reviewed an extensive list of hazards and excluded those that don't pose a significant threat to Upland. **Table 3-1** lists the hazards considered and explains the reasoning for inclusion or exclusion. For context, this table shows whether a hazard is recommended for consideration by FEMA, if it's included in the 2023 California State Hazard Mitigation Plan (SHMP), and if it's included in the San Bernardino County Hazard Mitigation Plan (SBC HMP). This table doesn't include all potential impacts; the table is based upon FEMA and state guidance and the most probable impacts within Upland. As a result, some hazards—like war or foreign invasion—are better addressed at the federal level.

TABLE 3-1: HAZARD EVALUATION FOR UPLAND LHMP			
Hazard	**Source of Recommendation**	**Included in LHMP?**	**Reason for Inclusion or Exclusion**
Agricultural Pests	SHMP	No	The Planning Committee did not consider the LHMP to be the appropriate place to address disease and pest management hazards.
Air Pollution	SHMP	No	While air pollution remains a chronic hazard for Upland's residents, its mitigation is the domain of regional, state, and federal agencies.
Aircraft Incident	SHMP	Yes	Transportation incidents, including vehicle, air, and rail mass casualties, are identified as a hazard of concern for the City.
Aquatic Invasive Species	SHMP	No	There are no standing bodies of water in Upland large enough to host invasive aquatic species.
Avalanche	FEMA guidance SHMP	No	Not applicable. Snowfall is not a typical occurrence in Upland, and there is no historical record of this hazard in the region.
Civil Disturbance or Riot	SHMP	Yes	Civil disturbances are included under human-caused hazards; however, they may be related to mass casualty incidents, some of which may be outgrowths of extreme civil disturbances. MCIs are included in the "Human-Caused Hazards" profile.
Climate Change	SHMP SBC HMP	Yes (as a component of other hazards)	Climate change can affect the frequency, intensity, and/or location of different hazards. It is not a stand-alone hazard and will be discussed as a factor of other hazards rather than as a distinct event.
Coastal Flooding and Storm	FEMA guidance SHMP	No	Not applicable. Coastal erosion and storms occur within the coastal communities. Upland is not a coastal community.
Cyber Threats	SHMP	Yes	Cybercrime and cyberterrorism are hazards of concern for all levels of government in the state and nation.
Dam Failure	FEMA guidance SHMP SBC HMP	Yes	Upland lies within the inundation zone for dams.
Drought	SHMP SBC HMP	Yes	Droughts are a recurring and potentially severe hazard in Upland.
Energy Shortage	SHMP	No	The Planning Committee did not consider the LHMP to be the appropriate place to discuss energy shortages.

TABLE 3-1: HAZARD EVALUATION FOR UPLAND LHMP			
Hazard	**Source of Recommendation**	**Included in LHMP?**	**Reason for Inclusion or Exclusion**
Epidemic, Pandemic, Vector-Borne Disease	SHMP	No	While epidemics and pandemics are potential hazards of concern for Upland, their mitigation is the domain of county, state, and federal agencies.
Erosion	FEMA guidance SHMP	No	There are no known erosion hazards in the City.
Expansive Soil	FEMA guidance	No	There is no known expansive soil in Upland.
Extreme Cold	FEMA guidance SHMP	No	Extreme cold events are not a hazard to the community.
Extreme Heat	FEMA guidance SHMP	Yes	Extreme heat events are a recurring hazard in Upland.
Fault Rupture	FEMA guidance SHMP SBC HMP	Yes	Upland is in a seismically active area and has experienced past earthquakes.
Flooding	FEMA guidance SHMP	Yes	Floods are a hazard in Upland.
Fracking	SHMP	No	Fracking does not occur in Upland.
Hail	FEMA guidance	No	The Planning Committee found that hail severe enough to constitute a hazard in Upland is too rare to be included in this Plan.
Hazardous Materials Release	SHMP	Yes	Various modalities of hazardous materials released are potential threats to the City.
Hurricane	FEMA guidance SHMP	No	Hurricanes do not occur in Upland.
Infrastructure Failure	SHMP	Yes	Reservoir replacement due to faulty design. Closed landfill.
Landslide	FEMA guidance SHMP	No	Landslide-prone areas are outside and to the north of the City.
Levee Failure	SHMP	Yes	Certain levees along the City's eastern border may pose a hazard during high-water-flow events. This is addressed as part of the Flood Hazard profile.
Lightning	FEMA guidance	No	Lightning is not a sufficient hazard to be addressed in this Plan.
Liquefaction	FEMA guidance SHMP SBC HMP	No	Liquefaction is not considered to be a hazard of concern for the City.
Methane-containing Soils	SBC HMP	No	There are no known methane-containing soils in Upland.
Natural Gas Pipeline Hazards	SHMP	Yes	A natural gas transmission pipeline crosses the City's downtown and industrial areas.

TABLE 3-1: HAZARD EVALUATION FOR UPLAND LHMP			
Hazard	**Source of Recommendation**	**Included in LHMP?**	**Reason for Inclusion or Exclusion**
Oil Spills	SHMP	No	Hazardous materials release is identified as a City concern; however, significant oil spills were not included.
Power Failure	SHMP	Yes	Public Safety Power Shutoffs may affect the northern part of the City during Red Flag events.
Radiological Accidents	SHMP	No	Hazardous materials release is identified as a City concern; however, radiological materials release was not included.
Sea-level Rise	FEMA guidance SHMP	No	Upland is not a coastal community and so is not susceptible to sea level rise.
Seiche	FEMA guidance SHMP	No	There are no standing bodies of water in Upland large enough to create a significant seiche.
Seismic Shaking	FEMA guidance SHMP SBC HMP	Yes	Upland is in a seismically active area and has been impacted by earthquakes in the past.
Severe Wind	FEMA guidance	Yes	Severe winds occur in Upland and may pose a threat to the community.
Severe Winter Storms	FEMA guidance SHMP SBC HMP	No	Severe winter storms are not identified as a threat to Upland
Storm Surge	FEMA guidance	No	Upland is not a coastal community and so is not susceptible to storm surge.
Subsidence	FEMA guidance	Yes	While subsidence in general is not a concern for the City, the presence of a former landfill is. Former landfills can often experience subsidence as the materials below the surface settle or decompose.
Terrorism (Mass-Casualty Incident)	SHMP	Yes	Since active-shooter incidents and terrorism may happen anywhere, the Planning Committee determined that mass-casualty incidents should be addressed in the Plan.
Thunderstorm	SHMP	No	The San Bernardino Valley rarely experiences thunderstorms severe enough to pose a threat to Upland.
Tornadoes	FEMA guidance SHMP	No	Tornadoes do not pose a threat to Upland.
Transportation Incidents	SHMP	Yes	Major transportation routes, heavy road, air, and rail traffic, and a gas pipeline put Upland at risk from transportation-related incidents.
Tree Mortality	SHMP	No	The City currently manages its urban forest effectively and does not feel it constitutes a hazard of concern.

TABLE 3-1: HAZARD EVALUATION FOR UPLAND LHMP			
Hazard	**Source of Recommendation**	**Included in LHMP?**	**Reason for Inclusion or Exclusion**
Tsunami	FEMA guidance SHMP	No	Tsunamis are a coastal hazard, and Upland is not a coastal community.
Urban Fire	SHMP SBC HMP	Yes	Wildland/Urban Interface fires can become urban conflagrations under extreme weather conditions.
Volcano	SHMP	No	There are no volcanoes near enough to Upland to reasonably pose a risk to the community.
Wildfire	FEMA guidance SHMP	Yes	Upland is located approximately one mile below the San Bernardino National Forest, and wildfires have affected the City in the past.
* Federal disasters are declared at the county level. A disaster declared for San Bernardino County did not necessarily cause any harm to Upland.			

After hazard evaluation and the organizational changes were made by the HMPC, this Plan discusses seven broad hazard types with their respective sub-categories, including climate change, which is discussed in each hazard profile, these are depicted in **Table 3-2**.

TABLE 3-2: HAZARD CATEGORIES AND SUB-CATEGORIES	
Hazard Category	**Sub-Categories**
Seismic Hazards	• Fault Rupture • Seismic Shaking
Fire	• Wildland Fire • Wildland / Urban Interface Fire
Human-Caused Hazards	• Hazardous Materials Release • Landfill Subsidence • Transportation Incidents (Rail, Aircraft, Highway) • Cybercrime Incidents • Mass Casualty / Fatality Incidents
Severe Weather	• Extreme Heat • Drought • Severe Wind
Infrastructure Failure	• Power Failure • Public Safety Power Shutoff
Flood	• Surface Flooding • Dam and Levee Failure

HAZARD SCORING AND PRIORITIZATION

The HMPC followed FEMA guidance for hazard mitigation plans, prioritizing each of the eight hazards and their respective subcategories. In the initial step, it assigned a score of 1 to 4 for each of the hazards for the following criteria:

- **Probability:** The likelihood that the hazard will occur in Upland in the future.
- **Magnitude/Severity:** The severity of the direct damage of the hazard to Upland.
- **Warning Time:** The time the city has before a disaster event/hazard impacts Upland.

- **Duration:** The time that the disaster event will affect Upland.

The HMPC 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 weighing the factor in determining the overall score for each criterion. FEMA recommends these weighting values:

- **Probability:** 2.0
- **Location:** 0.8
- **Maximum Probable Extent (Primary Impact):** 0.7
- **Secondary Impacts:** 0.5

After calculating the total impact score for each hazard (sum of the location, maximum probable extent, and the secondary impact), FEMA guidance recommends multiplying the total impact score by the overall probability 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. **Table 3-3** depicts the criteria for scoring each hazard previously discussed, including probability, location, primary impact, and secondary impacts.

In compliance with the Disaster Mitigation Act (and as further specified by Interim Final Rule 44 CFR Section 206.401(c)(2)(i)), this LHMP addresses, in substantial detail, the primary hazards facing the City. Lower-priority hazards are addressed at a lesser level of detail due to their relatively reduced impacts, as identified in the hazard assessment discussion. **Table 3-4** shows each hazard's criterion scores, final score, and threat level based on the above prioritization process.

TABLE 3-3: CRITERION SCORING				
Category	**Description**	**Score**	**Weighting Factor**	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 0.001	1	**2.0**
	Possible	Extremely rare with no documented history of occurrences or events. Annual probability of between 0.01 and 0.001	2	
	Likely	Occasional occurrence with at least two or more documented historic events. Annual probability of between 0.1 and 0.01	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 0.1	4	
Location	Negligible	The impact zone is a small part of the planning area (a few structures).	1	**0.8**
	Limited	The impact zone is a limited part of the planning area (a neighborhood or city block).	2	
	Significant	The impact zone is a significant part of the planning area (multiple blocks or neighborhoods; a district).	3	
	Extensive	The impact zone covers much of the planning area (multiple districts).	4	
Maximum Probable Extent (Primary Impact)	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid, and there are no deaths	1	**0.7**
	Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructures). Injuries and illnesses do not result in permanent disability, and there are no deaths	2	
	Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructures). Injuries or illnesses result in permanent disability and at least one death	3	
	Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths	4	
Secondary Impacts	Negligible	No loss of function, downtime, and/or evacuations. Shutdown of critical facilities for less than 24 hours. Negligible quality of life lost	4	**0.5**
	Limited	Minimal loss of function, downtime, and/or evacuations. Shutdown of critical facilities for more than 1 day and less than 1 week. Limited quality of life lost	3	
	Moderate	Some loss of function, downtime, and/or evacuations. Shutdown of critical facilities for more than 1 week and less than 1 month. Moderate quality of life lost	2	
	High	Major loss of function, downtime, and/or evacuations. Shutdown of critical facilities for more than 1 month. Significant quality of life lost	1	

TABLE 3-4: UPLAND HAZARD PRIORITIZATION SCORES AND THREAT LEVELS						
Hazard	Probability (2.0)	Impact (2.0)			Total Score	Hazard Planning Consideration
		Location (0.8)	Primary Impact (0.7)	Secondary Impact (0.5)		
Seismic Hazards	3.0	3.0	3.0	3.0	36.0	**Medium**
• Fault Rupture	3	2	3	2	28.2	Medium
• Seismic Shaking	3	4	3	4	43.8	High
Fire	3.0	3.0	3.0	4.0	39.0	**Medium**
• Wildland Fire / Wildland Urban Interface Fire	3	3	3	4	39.0	Medium
Human-caused Hazards	2.8	1.8	2.6	2.6	25.1	**Medium**
• Hazardous Materials Release	3	2	2	3	27.0	Medium
• Landfill Subsidence	3	1	2	2	19.2	Medium
• Transportation Incidents (Rail, Aircraft, Highway)	2	2	3	3	20.8	Medium
• Cybercrime Incidents	4	2	3	2	37.6	Medium
• Mass Casualty / Fatality Incidents	2	2	3	3	20.8	Medium
Severe Weather	2.7	3.0	2.0	2.7	28.0	**Medium**
• Extreme Heat	2	3	2	3	21.2	Medium
• Drought	2	2	2	3	18.0	Medium
• Severe Wind	4	4	2	2	44.8	High
Infrastructure Failure	2.5	4.0	2.2	3.0	28.6	**Medium**
• Power Failure	2	4	2	3	24.4	Medium
• Public Safety Power Shutoff	3	4	2	3	32.7	Medium
Flood	2.0	3.0	2.5	3.0	20.3	**Medium**
• Surface Flooding	3	2	2	3	27.0	Medium
• Dam and Levee Failure	1	4	3	3	13.6	Medium

Hazard Profile: Seismic Hazards

DESCRIPTION

An earthquake is a sudden motion or trembling caused by the release of strain accumulated within or along the edge of the Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and can cause massive damage and extensive casualties after just a few seconds.

Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. This sudden discharge of energy into the crust can lead to rupturing of land that sits on top of fault lines, liquefaction in areas with wet soil, or landslides in hilly or mountainous areas.

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 the built-up tension is eventually 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. California's 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 has caused the areas where they intersect to become fragmented, creating new, smaller faults.

The area near 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 land displacement.

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

Seismic Shaking

Seismic shaking is the motion felt on the Earth's surface caused by an earthquake. In most cases, earthquakes are not powerful enough to be felt. However, particularly powerful earthquakes can generate significant shaking, causing widespread destruction and property damage.

LOCATION AND EXTENT

Fault Rupture

The City of Upland is near several known active and potentially active earthquake faults. The San Jacinto Fault, approximately 15 miles from the City, experienced its most recent surface rupture on April 9, 1968 (M 6.5) on its Coyote Creek segment. The Cucamonga Fault is part of the Sierra Madre fault zone. It traverses the northern section of the City and runs directly through San Antonio Heights. Activity has been low on this fault.

The southern segment of the San Andreas Fault is located approximately thirty miles from the City of Upland. The current probability of a magnitude 8.3 or greater earthquake on this fault is between 2 and 5 percent.

New faults are continuously being discovered within the region. Scientists have identified almost 100 faults in the greater Los Angeles area known to be capable of a magnitude 6.0 or greater earthquake. January 17, 1994, magnitude 6.7 Northridge Earthquake (thrust fault), which produced severe ground motion, caused 57 deaths, 9,253 injuries, and displaced over 20,000 people.

Depending on the magnitude and duration of an earthquake along one of the region's faults, Upland can expect to see varying degrees of damage citywide. The city's natural topography means there are areas of the community constructed on slopes, which may be subject to earthquake-induced landslides (see the landslide hazard profile for further discussion).

Seismic Shaking

Southern California, including Upland, is a highly seismically active region due to the major faults that run through it and are subject to seismic shaking. The intensity of seismic shaking is usually measured using the Modified Mercalli Intensity (MMI) scale, which is based on the observed damage. The MMI scale has replaced the Richter scale, which is no longer used since it loses effectiveness when measuring larger earthquakes. Since the degree of shaking, and consequently damage, generally decreases as the seismic energy travels further away from the fault rupture's point of origin, different sections of a city or region can report different MMI measurements in different locations. The MMI scale uses Roman numerals on a 12-point scale to measure shaking intensity by degree. **Table 3-5** shows the MMI scale, while **Table 3-6** lists earthquake faults that may affect the City.

TABLE 3-5: MODIFIED MERCALLI INTENSITY SCALE		
Intensity	**Description**	**Description**
I	Instrumental	Felt by very few people, under especially favorable conditions.
II	Feeble	Felt 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 people indoors and by some people 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 to specially designed structures. Great damage and partial collapse in substantial buildings, and buildings are shifted off their 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 and bridges are destroyed. Rail lines are greatly bent.
XII	Catastrophic	Damage is total. The lines of sight are distorted, and objects are thrown into the air.
Source: https://www.usgs.gov/media/images/modified-mercalli-intensity-mmi-scale-assigns-intensities		

TABLE 3-6: SELECTED SHAKING SCENARIOS FOR UPLAND			
Fault Name	**Magnitude (Mw)**	**Distance (Miles) ***	**MMI range in Upland**
San Jose	6.66	8.34	7.5 – 8.0
Cucamonga	6.88	9.37	7.5 – 8.0
San Jacinto (Lytle Creek)	6.72	13.47	6.0 – 7.0
San Jacinto (San Bernardino)	6.96	17.02	6.5 – 7.0
San Andreas NSB+SSB	7.21	26.87	6.5 – 7.0
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.			

Another scale for measuring seismic shaking is the moment magnitude scale (MMS, denoted Mw or simply M). The MMS measures the energy released by the fault rupture, starting at 1.0 and increasing as the earthquake's energy grows. The MMS is a logarithmic scale, meaning that the difference between numbers on the scale increases as the numbers increase. An earthquake with 5.0 M is approximately 1.4 times greater than 4.9 M, 32 times greater than 4.0 M, and 1,000 times greater than 3.0 M.

Seismic shaking can also be measured in relationship to the force of Earth's gravity (g) or percent g. This method is useful for displaying areas of seismic shaking potential on a map. Percent g is computed by determining the acceleration of the earthquake's motion relative to the force of gravity. The acceleration of gravity is 980 centimeters per second, so if, for example, an earthquake's acceleration is measured at 765 centimeters per second, the shaking is modeled as 765/980, or .781 g (78.1% g). **Figure 3-1** plots the seismic hazard zones and associated faults in and around Upland, while **Figure 3-2** shows the seismic shaking potential in the City.

Past Events

Since seismologists began recording earthquakes, tens of thousands have been recorded in Southern California, most with magnitudes below 3. No community in Southern California is beyond the reach of a damaging earthquake.

Fault Rupture

There haven't been any recorded instances of fault rupture within Upland despite the occurrence of earthquakes.

Seismic Shaking

Upland has experienced two earthquakes in the last 40 years of a magnitude greater than 4.0.

1) **June 26, 1988, Upland earthquake (Mw 4.7)** caused minor damage in the epicenter area (3 km NW of Upland) and would have been of relatively little notice were it not for the possibility that it might have been triggered by the Whittier Narrows earthquake nine months earlier and 20 km away.[3]

2) **February 28, 1990, Upland earthquake (Mw 5.4)** displayed similar behavior as its immediate predecessor. It was much more damaging than the 1988 quake, causing considerable damage near the epicenter and triggering landslides that blocked roads in the Mount Baldy area. It also caused some damage to the San Antonio Dam, which lies across the path of the main watershed coming south from Mount Baldy. Thirty-eight people sustained minor injuries. The quake was felt as far northeast as Las Vegas and as far south as Ensenada.[4]

In both cases, the causative fault was the San Jose fault, an 18-km-long concealed fault that splays west-southwest from the frontal fault of the central Transverse Ranges.

Other strong regional earthquakes have occurred in Southern California, but their epicenters have been so distant from Upland that seismic shaking generated by the event did not cause significant property damage or harm to the City.

The most recent significant earthquake affecting the Southern California region was the Northridge Earthquake in 1994. At 4:31 A.M. on Monday, January 17, a 6.7 earthquake struck the San Fernando Valley. Thousands of aftershocks occurred in the following days and weeks, causing additional damage to affected structures and the populace:

[3] SCEDC (2013): Southern California Earthquake Center. Caltech. Dataset. doi:10.7909/C3WD3xH1

[4] Ibid.

- Fifty-seven people were killed, and more than 1,500 people were seriously injured.
- For days afterward, thousands of homes and businesses were without electricity; tens of thousands had no gas, and nearly 50,000 people had little or no water.
- Approximately 15,000 structures were moderately to severely damaged, leaving thousands of people temporarily homeless; 66,500 buildings were inspected, nearly 4,000 were severely damaged, and over 11,000 were moderately damaged.
- Several collapsed bridges and overpasses created commuter havoc on the freeway system. Extensive damage was caused by ground shaking, but the earthquake triggered liquefaction, and dozens of fires also caused additional severe damage.
- Due to the impact in neighboring counties, San Bernardino County experienced transportation disruptions and some economic losses.

Table 3-7 shows significant earthquakes—magnitude 6.0 Mw or greater—that have occurred within 100 miles of Upland since 1933. Upland had no significant reported incidents of damage. Authorities made disaster declarations in Los Angeles County for the 1994 Northridge Earthquake and the 1987 Whittier Narrows Earthquake.

TABLE 3-7: SIGNIFICANT EARTHQUAKES (MW 6.0+) WITHIN 100 MILES OF UPLAND

Date	Name	Magnitude	Fault
3/11/1933	Long Beach	6.4	Newport-Inglewood
3/25/1937	Terwilliger Valley	6.0	San Jacinto
4/10/1947	Manix	6.5	Manix
12/4/1948	Desert Hot Springs	6.0	Banning (San Andreas S)
7/21/1952	Kern County	7.5	White Wolf
2/9/1971	Sylmar (San Fernando)	6.6	San Fernando
7/8/1986	North Palm Springs	6.0	Banning or Garnet Hill
4/23/1992	Joshua Tree	6.1	Eureka Peak
6/28/1992	Landers	7.3	Johnson Valley, Landers, Homestead Valley, Emerson, Camp Rock
6/28/1992	Big Bear	6.3	Unknown
1/17/1994	Northridge	6.7	Northridge Thrust
10/16/1999	Hector Mine	7.1	Lavic Lake, Bullion

Source: Southern California Earthquake Data Center. 2025. Earthquake Catalogs SCSN Catalog Search (1933–Present). http://service.scedc.caltech.edu/eq-catalogs/radius.php

Figure 3-1. Seismic Hazard Zones and Associated Faults In and Around Upland

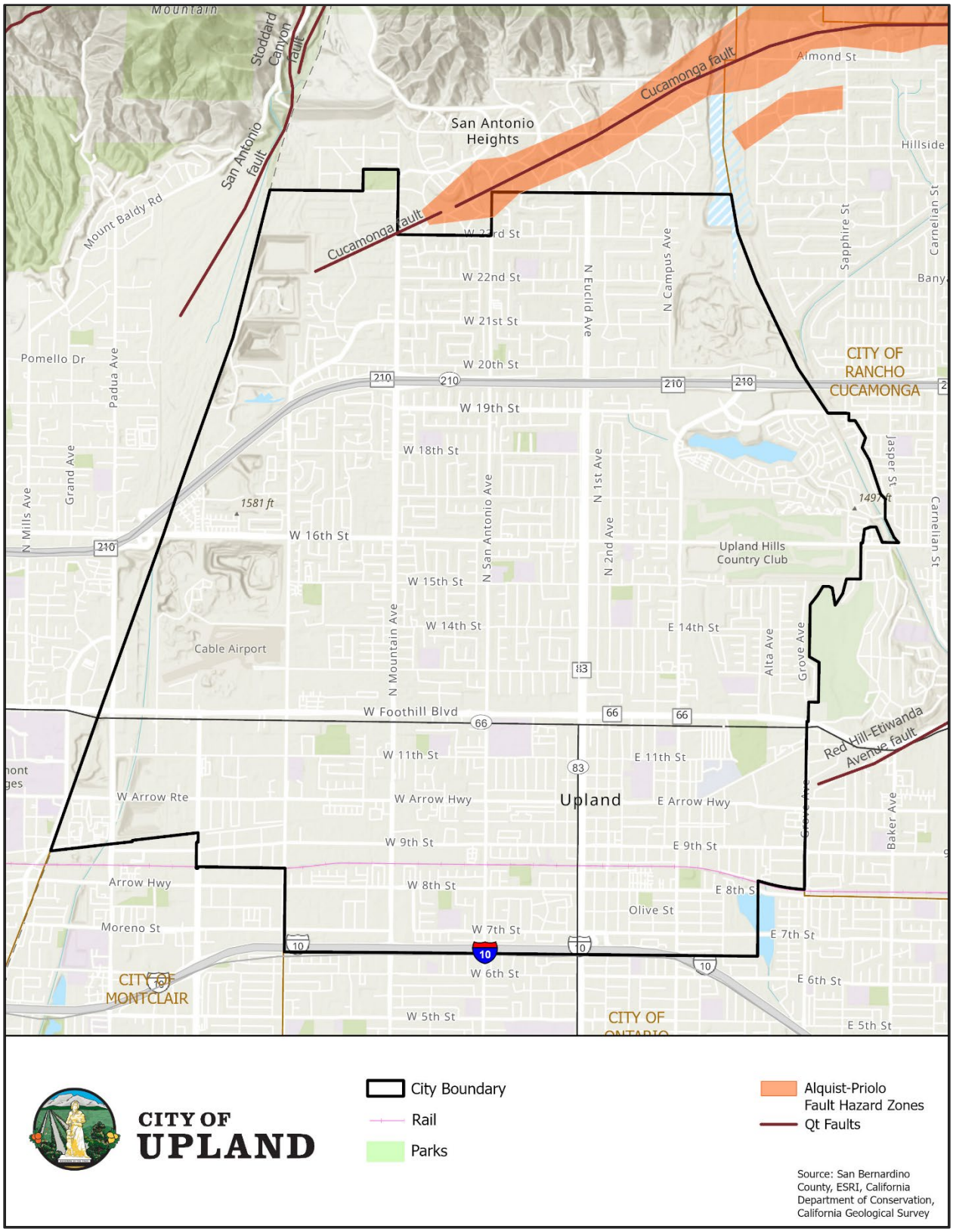
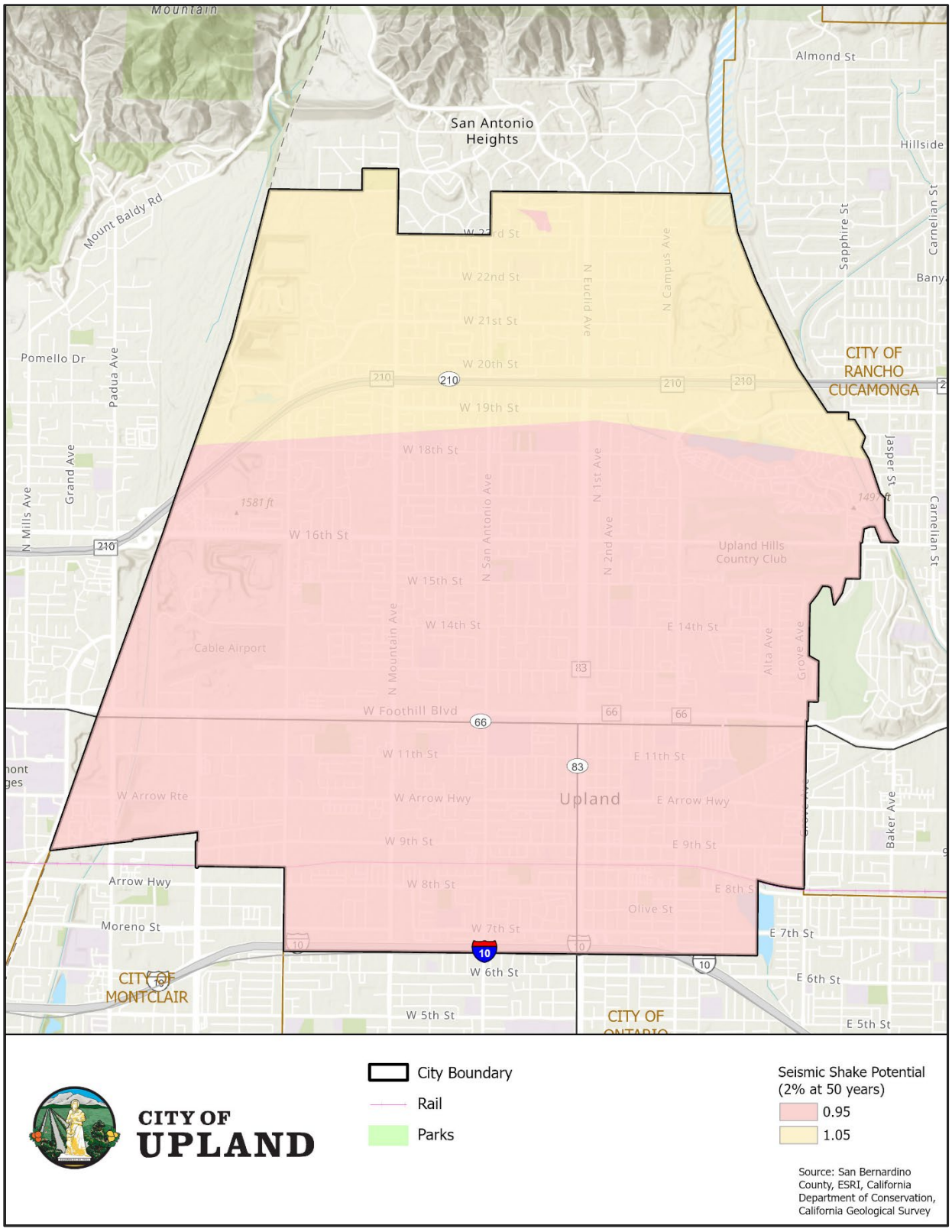


Figure 3-2. Seismic Shaking Potential in Upland



RISK OF FUTURE EVENTS

Fault Rupture

Given the presence of faults within the City, it is likely that fault rupture could occur in the future. As depicted in Hazard Scoring **Table 3-4** (above), fault rupture is considered likely. An occasional occurrence with at least two or more documented historic events, with an annual probability of between 0.1 and 0.01.

Seismic Shaking

Historical and geological records show California has a long history of seismic events. Southern California is probably best known for the San Andreas Fault, a 750-mile-long fault running from the Mexican border to an offshore point west of San Francisco. Geologic studies show that over the past 1,400 to 1,500 years, large earthquakes have occurred at about 130-year intervals on the Southern San Andreas Fault. As the last large earthquake on the Southern San Andreas occurred in 1857, that section of the fault is considered a likely location for an earthquake within the next few decades. The Third Uniform California Earthquake Rupture Forecast (UCERF3) was released in 2015 and is the most recent assessment of the probability of a major earthquake on various faults between 2015 and 2044. **Table 3-8** shows the results for Upland's nearby and regional fault lines.

TABLE 3-8: EARTHQUAKE PROBABILITIES FOR KEY FAULTS NEARBY (2015–2044)

Fault	Distance (Miles) *	Probability †			
		6.7+ Mw	7.0+ Mw	7.5+ Mw	8.0+ Mw
San Jose	2.62	0.30	0.20	0.03	Negligible
Cucamonga	3.57	1.09	0.97	0.61	0.03
Sierra Madre	5.52	1.10	1.06	0.72	0.03
Chino Alt 1	7.12	1.42	0.15	0.08	Negligible
Fontana	7.84	0.23	Negligible	Negligible	Negligible
San Jacinto (Lytle Creek)	7.89	1.13	1.13	1.12	0.49
San Gabriel	9.34	0.46	0.42	0.18	<0.01
San Jacinto (San Bernardino)	14.16	5.15	5.14	5.09	2.77
Whittier Alt 1	15.38	1.45	1.26	0.66	<0.01
San Andreas†	15.75	19.02	15.55	11.78	4.06
Elsinore (Glen Ivy)	19.03	3.19	1.68	0.89	<0.01
Elsinore (Temecula)	40.14	2.16	1.75	0.94	<0.01
Palos Verdes	44.11	3.09	2.79	0.10	Negligible

* Distance between Upland City Hall and the nearest point of the fault. All distances are approximate.

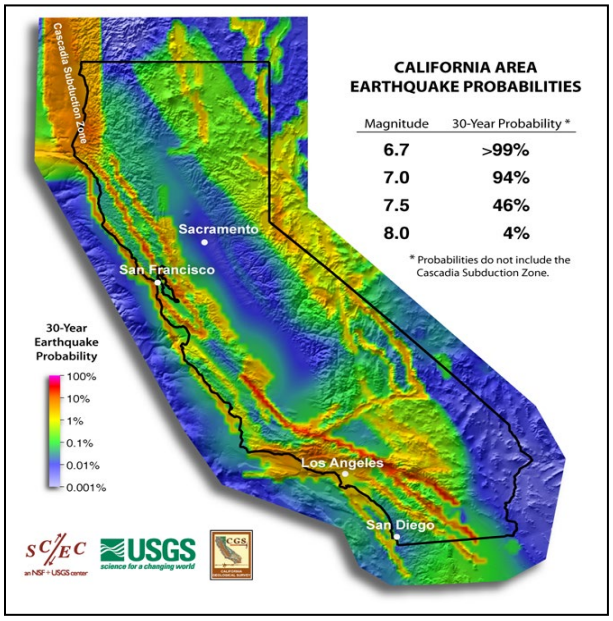
† Southern California segments only.

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.

Source: Working Group on California Earthquake Probabilities. 2015. The Third California Earthquake Rupture Forecast (UCERF3). https://wgcep.org/UCERF3

The entirety of California is prone to earthquake effects. **Figure 3-3** represents the UCERF3 probabilities of having a nearby earthquake rupture (within 3 or 4 miles) of magnitude 6.7 or larger in the next 30 years. As shown in the table, the chance of having such an event somewhere in California exceeds 99%. The 30-year probability of an even more powerful quake of magnitude 7.5 or larger is about 4%. As in Hazard Scoring **Table 3-4** (above), seismic shaking is considered likely. An occasional occurrence with at least two or more documented historic events, with an annual probability of between 0.1 and 0.01.

Figure 3-3. UCERF3 Probabilities of a Nearby Earthquake



CLIMATE CHANGE CONSIDERATIONS

Fault Rupture

Generally, there's no known direct connection between earthquake fault rupture and climate change. Some evidence suggests that increased oceanic pressure on tectonic plates due to melting land ice could influence the behavior of seismic events. Still, little indicates that this would play a major factor in any seismic event, including fault rupturing.

Seismic Shaking

There's no direct link between climate change and seismic activity, so climate change isn't expected to cause any changes to the frequency or intensity of seismic shaking. Some research indicates that climate change could result in "isostatic rebounds," or a sudden upward movement of the crust due to reduced downward weight from glaciers. As glaciers are known to melt when global temperatures increase, climate change could indirectly lead to increased seismicity in Southern California.[5]

[5] Masih, A. January 2018. "An Enhanced Seismic Activity Observed Due to Climate Change: Preliminary Results from Alaska." IOP Conference Series: Earth and Environmental Science. doi :10.1088/1755-1315/167/1/012018. https://iopscience.iop.org/article/10.1088/1755-1315/167/1/012018/pdf

Hazard Profile: Fire

DESCRIPTION

Wildland Fire

Wildland fires (wildfires) are fires that burn in largely undeveloped and natural areas. They are a regular feature of ecosystems throughout California. These fires help to clear brush and debris from natural areas and are necessary for the health of many ecosystems and various species' life cycles. However, since the early twentieth century, the common practice was to suppress naturally occurring fires in wildland areas, allowing dry plant matter and other fuels to build up.

Lightning, accidents, or arson can spark wildfires. The size and severity of any fire depend on fuel, weather conditions, and topography availability. However, wildfires in the WUI do not need to be large to be damaging. In Oakland, the 1991 Tunnel Fire was relatively small—only 1,600 acres—but it was one of California's deadliest and most destructive wildfires.[6]

The flames from wildfires create severe risks to property and lives. Smoke and other particulate matter from wildfires pose a health risk, even to those not near the blaze. Burned areas can be more susceptible to flooding and landslides because wildfires destroy the vegetation that helps slow down water runoff and hold slopes together.[7] The ground may repel water rather than absorb it when faced with ash deposits. Due to the change in the landscape structure after a fire, repelled water can carry debris into water reservoirs.[8]

Wildland / Urban Interface Fire

Human activity has caused changes in the buffer zone between urbanized and undeveloped areas, known as the wildland-urban interface (WUI). The more natural setting of a WUI can make these zones highly desirable places to live. In many parts of California, the WUIs have become developed, sometimes at densities approaching those of urbanized areas. This development activity has brought more people into wildfire-prone areas. The availability of fuel and increasing encroachment into WUI, together with a changing climate, have made wildfires among California's most common and dangerous natural hazards. Additionally, invasive pests such as the polyphagous shot hole borer can kill trees, creating more dead material that will potentially provide additional fuel for wildfires.

An urban fire is a fire that causes damage to buildings or infrastructure in an urban area. In some minor situations, the fire prompts the evacuation of the building's occupants, and the fire is contained within a short amount of time by firefighting teams or the building's fire suppression systems. In severe cases, the fire can destroy the building and spread to surrounding properties. Common causes of urban fires include stoves that are accidentally left on, short-circuited electrical equipment, or mishandling of household tools. Breaches in gas pipelines may cause

[6] Cal OES. 2016. https://webservices.caloes.ca.gov/wp-content/uploads/sites/10/2016/10/Top20_Deadliest.pdf

[7] EPA. 2019. "Wildfires: How Do They Affect Our Water Supplies?" https://www.epa.gov/sciencematters/wildfires-how-do-they-affect-our-water-supplies

[8] Bichell, R. 2019. "How Wildfires May Muck Up the West's Reservoirs." Colorado Public Radio. https://www.cpr.org/2019/09/25/how-wildfires-may-muck-up-the-wests-reservoirs/

larger urban fires, large transportation accidents, or downed electrical transmission wires. Arsonists may intentionally start fires.

When urban fires get out of control, they may become urban conflagrations, burning hundreds or even thousands of structures. The two most likely causes of urban conflagration are major earthquakes and wildfires that move through the WUI. The twin firestorms in Pacific Palisades and Arcadia in January 2025 show graphically what can happen when wildland fires driven by severe winds push through the WUI and reached developed areas.

LOCATION AND EXTENT

Wildland Fire

Wildfires are not measured on a specific scale and are usually classified by size (e.g., acres burned) or impact (buildings destroyed or damaged, injuries or deaths, cost of damage, etc.).

The California Department of Forestry and Fire Protection (Cal Fire) defines the wildfire hazard zones on a three-tier scale of fire hazard severity zones (FHSZs): very high, high, and moderate. These zone classifications don't correspond to a specific risk or intensity of fire but are qualitative terms that consider many factors.

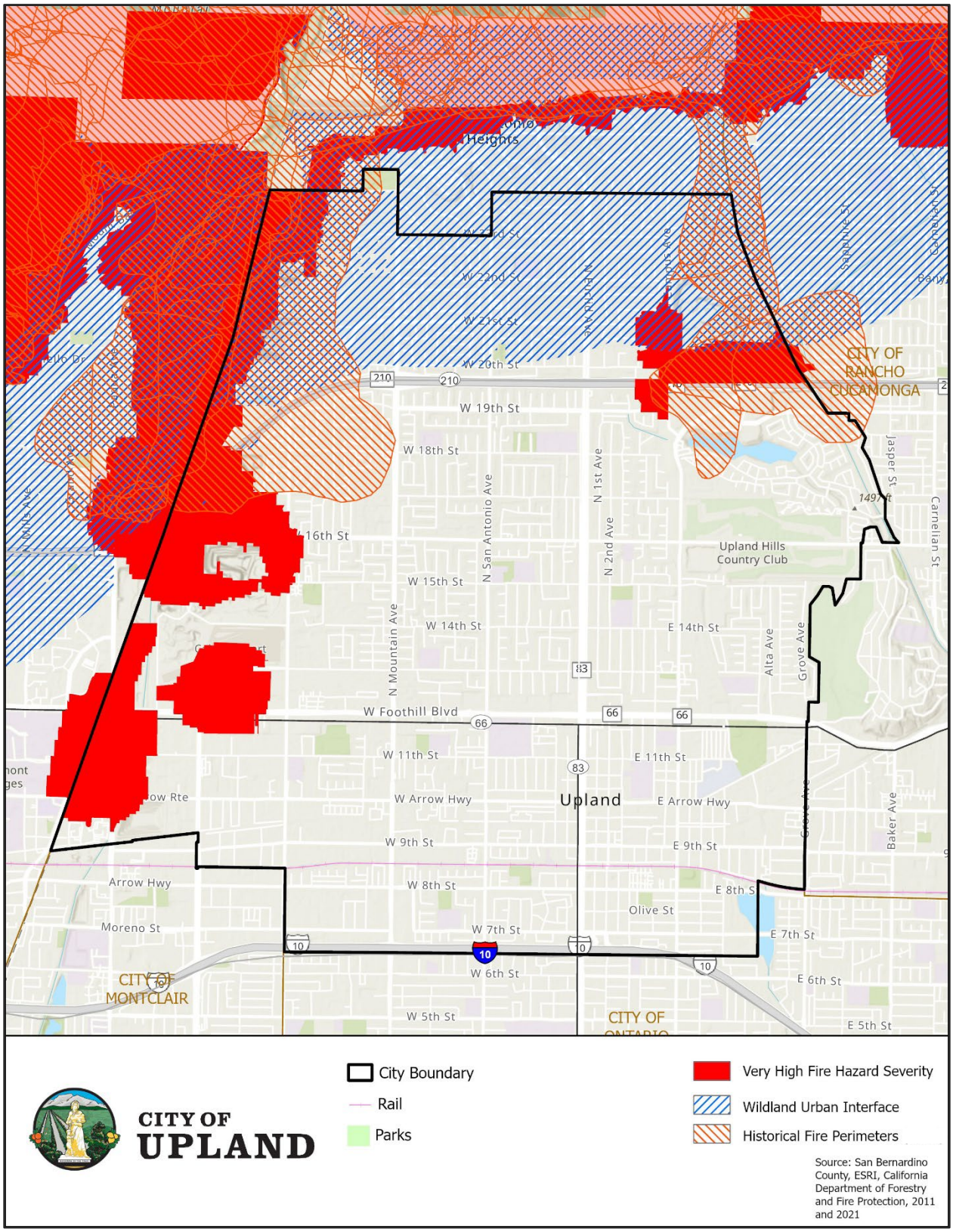
Fire-prone areas are also classified by the agency responsible for fire protection. Federal Responsibility Area (FRAs) fall to federal agencies such as the U.S. Forest Service, the Bureau of Land Management, and the National Park Service. State Responsibility Areas (SRA), which includes unincorporated land within counties with statewide watershed value, fall to the Cal Fire. Local Responsibility Areas (LRA), which include portions of incorporated cities with identified wildfire hazard zones, fall to local governments.

Due to the topography adjoining San Antonio Heights, Upland's sphere of influence is in an area susceptible to wildfires, and portions of the community are within the WUI. Wildfires present a significant threat to the city and the county in or near the WUI, as they have relatively high temperatures, low humidity, and low precipitation during the summer. Fall brings with it the Santa Ana winds to exacerbate the area's already dry conditions, increasing the foothills and canyons' susceptibility to wildfire. Fire threat assessment and Geographic Information System (GIS) mapping for Upland identify the WUI as the area within the City with the highest fire risk. **Figure 3-4** identifies portions of the City located within the WUI and historic fire perimeters in the City.

According to county and Cal Fire FHSZ mapping of the city, the northern border of San Antonio Heights is adjacent to an SRA Very High Fire Hazard Severity Zone (VHFHSZ). San Antonio Heights itself is part of a county Fire Safety Overlay that regulates how structures may be built to present the least fire risk. The San Antonio Creek scrublands along the western border of Upland proper are in an LRA VHFHSZ, as is the partly developed area north of Highway 210 and east of 2nd Avenue.

The potential for a wildfire to begin in the SRA and spread into the city's LRA is highly probable if the fire can't be contained with the SRA. The SRA located in unincorporated San Bernardino County falls under the jurisdiction of CAL Fire, while the LRA is under the control of the San Bernardino County Fire Protection District.

Figure 3-4. Wildland Urban Interface (WUI) and Historical Wildlife Perimeters



A fire can ignite only if three elements are present: heat, fuel, and oxygen. Lacking any one of these elements, a fire will extinguish itself. Thousands of structures In Upland provide copious amounts of fuel, making them extremely flammable. Activity that creates intense, unmonitored, or unregulated heat may lead to the ignition of a fire. The National Institute of Standards and Technology, Fire Research Division, has developed a scale that measures the increase in temperature and the kind of fire response that develops. **Table 3-9** shows the progression of temperature relative to fire response.

TABLE 3-9: FIRE SUSCEPTIBILITY BASED ON TEMPERATURE INCREASE

Temperature (°F)	Response
98.6 °F	Average normal human oral/body temperature.
101 °F	Typical body core temperature for a working firefighter.
109 °F	Human body core temperature that may cause death.
111 °F	Human skin temperature when pain is felt.
118 °F	Human skin temperature causes a first-degree burn injury.
130 °F	Hot water causes a scald burn injury with 30 s exposure.

Once a fire has ignited, it can conceivably grow indefinitely if abundant fuel and oxygen are available. For example, a fire that ignites in one house could hypothetically continue to expand and spread to other adjacent houses due to ember casting or fuel linking the structures. Fires in confined spaces may occasionally burn so intensely that they consume all the oxygen available and burn out before they can expand.

Wildland / Urban Interface Fire

Most of Upland's buildings are wood-frame construction and are susceptible to catching fire. Even structures that don't have wooden frames, such as large medical facilities or office towers, are at risk of urban fires. These locations contain furniture, papers, plant material, textiles, and other objects that can ignite. Given that nearly all of Upland is developed, urban fires can occur at any location in the City since any of these structures can potentially burn.

Fires are also likely to occur where significant pieces of infrastructure are located, such as gas pipelines, power lines, or highways.

- SoCalGas operates a large, high-pressure gas pipeline across the southern edge of the City. If the pipeline breaches and the released gas ignites, any structures located along the extent of the breach would likely catch fire.
- SoCal Edison owns and operates above-ground, high-voltage transmission lines strung from towers on rights-of-way through the City. While there are no structures directly beneath the towers in the utility right-of-way, trees or opportunistic plants (weeds) could ignite if a downed power line comes into contact with them. If this open space catches fire, it could spread to surrounding homes and buildings if hot cinders from the fire encounter the buildings.

Past Events

Wildland Fire

The 2003 Old Fire grew to historic proportions as it spread across the San Bernardino Mountains for more than a week. In addition to the normally dry brush, the fire was fueled by thousands of dead, bark beetle-infested trees caused by several years of drought. The Old Fire spread west, where it crossed the I-15 freeway and merged with the expanding Grand Prix Fire. The combined fires created a path of destruction more than 30 miles wide. During the course of the Old Fire, six lives were lost and 70,000 citizens were evacuated. The fire consumed 91,281 acres and destroyed 940 residences, 30 commercial buildings, and 300 outbuildings. At the height of the blaze, more than 4,000 firefighters battled the flames. The Grand Prix Fire burned 69,894 acres and destroyed 194 residences; one life was lost.[9]

The September 8, 2024, Bridge Fire broke out near the Cattle Canyon Bridge in San Gabriel Canyon and spread quickly through dense brush resulting from an abnormally wet winter earlier in the year. It grew to 56,030 acres before becoming 100% contained on November 26. While it remained within the San Bernardino National Forest and the San Gabriel Mountains, its southern extent reached to within 3-4 miles north of Upland, Claremont, and Laverne.

Wildland / Urban Interface Fire

Upland has no recent history of large, multi-structure fires within its city limits. However, the proximity of San Antonio Heights to the San Gabriel foothills closely parallels that of Altadena, an unincorporated Los Angeles County community 28 miles west of Upland. In January 2025, the Eaton wildfire, driven by extreme Santa Ana and downslope winds, roared out of the San Gabriel Mountains and engulfed Altadena, destroying over 9,000 structures and killing 17 residents. Like Upland, Altadena was mostly built out in a typical suburban zoning pattern. This tragedy suggests that a similar conflagration may be only a bad windstorm away in Upland.

Risk of Future Events

Wildland Fire

The probability of future wildfires is influenced by weather and fuel conditions. Typically, October represents the beginning of the primary time of concern for offshore flow across California. These dry, windy conditions can lead to very significant fire events in areas of high population. Fuels continue to be very dry in California because of long-term drought and increased vegetation stress and mortality. Under windy conditions, these fuels can become extremely volatile and can support extreme fire behavior. Hazard Scoring **Table 3-4** (above) shows the HMPC-set annual wildfire probability to be between 0.1 and 0.01%, though with the rapid progression of climate change, this estimate may understate the growing risk.

[9] San Bernardino County Fire Chiefs' Association. *Lessons Learned Report: Fire Storm 2003 "Old Fire."* https://web.archive.org/web/20150924013239/http://www.firescope.org/training/aars/2003/2003-old-fire-lessons-learned-report.pdf

Wildland / Urban Interface Fire

The conditions for a major urban fire exist in Upland as they do in most other Southern California cities. Given that each fire event has a unique origin, it's impossible to predict the precise likelihood of an urban fire emerging in the city. Some areas, however, are at an increased risk of an urban fire igniting, including the San Antonio Heights development and the scrublands along the San Antonio Creek channel. As with wildland fire, the HMPC-estimated annual WUI fire probability is between 0.1 and 0.01%, though with the rapid progression of climate change, this estimate may also understate the growing risk.

CLIMATE CHANGE CONSIDERATIONS

Wildland Fire

Climate change is expected to cause an increase in temperatures and more frequent and intense drought conditions. This will likely increase the amount of dry plant matter available for fuel, worsening wildfire risk statewide. Climate change is expected to increase the number of acres burned annually in mountains and foothills that are already highly prone to wildfires. However, increases in fuel supplies could cause wildfires to move faster or spread into more developed areas, increasing the future threat to Upland and other surrounding communities.

Wildland / Urban Interface Fire

While climate change has been linked to a potential increase in wildfire events, it is unclear exactly how climate change could influence the ignition or behavior of urban fires in Upland except as extensions of a WUI fire.

Hazard Profile: Human-Caused Hazards

DESCRIPTION

Hazardous Materials Release

The State of California defines hazardous materials as substances that:

- Are toxic, ignitable, or flammable, reactive, and/or corrosive
- Show high acute or chronic toxicity
- Are carcinogenic (cause cancer)
- Have bioaccumulative properties (accumulate in the body's tissues)
- Are persistent in the environment
- Are water-reactive

Hazardous materials release refers to an event whereby harmful concentrations of hazardous or toxic substances are released into the environment. This occurs when storage containers of hazardous materials leak or fail. This can happen due to industrial accidents, vehicle crashes, as a direct result of other disasters (e.g., a flood or earthquake), or as a deliberate act.

The primary concern associated with hazardous materials release is short- and/or long-term effects on the public from exposure to hazardous materials.

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 the skin, or are ingested, among other factors. Exposure to hazardous materials can result in short- or long-term effects, including death or major damage to organs and systems in the body. Hazardous waste is any material with properties that make it dangerous or potentially harmful to human health or the environment and is no longer of use, requiring disposal. Hazardous materials can also cause health risks if they contaminate soil, groundwater, and air, potentially posing a threat long after the initial release.

Landfill Subsidence

Subsidence is a general term for the downward vertical movement of the Earth's surface. It can be caused by both natural processes and human activities. Subsidence involves little or no horizontal movement, which distinguishes it from slope movement.

Processes that lead to subsidence include:

- Dissolution of underlying carbonate rock by groundwater
- Gradual compaction of sediments
- Mining
- Settling of poorly consolidated soil
- Pumping of subsurface fluids, such as groundwater or petroleum
- Warping of the Earth's crust by tectonic forces

Subsidence resulting from tectonic deformation of the crust is known as tectonic subsidence and can provide accommodation for sediment accumulation and eventual lithification into sedimentary rock.

Transportation Accidents

For the purposes of this Plan, "transportation accident" includes incidents involving:

- Commercial air carrier (airline) aircraft
- Air taxi, charter airline, air cargo carrier, air tour, or aeromedical aircraft
- General aviation aircraft
- Passenger or freight trains
- Bulk goods pipelines
- Passenger motor carriers (buses)

Any of these modes of transportation can be upset in any number of ways. Aircraft can collide with each other or the ground; trains can crash into each other or derail because of natural or human-caused forces; pipelines can be breached by digging, land subsidence, seismic forces, or age; buses can hit or be hit by other vehicles or run off the road due to bad conditions or driver inattention. Transportation-related accidents happen countless times a day all across the nation. In most cases, the results are minor, with few casualties and little damage to anything other than the vehicles themselves and their occupants.

However, major transportation accidents do happen on a regular basis. A major transportation accident occurring in a heavily populated area can result in considerable loss of life and property. There's no controlling where a train travels once it leaves its track or when an airplane falls from the sky; it may leave a trail of wreckage, hit buildings, or collide with normal street traffic.

The aftermath of a major transportation emergency presents responders with many threats: hazardous materials releases, fire, severe damage to buildings or vehicles, and loss of life to passengers or people in adjacent buildings, in vehicles, or otherwise near the accident.

Cybercrime Incidents

The United Nations defines cybercrime as "an act that violates the law, which is perpetrated using information and communication technology (ICT) to either target networks, systems, data, websites, and/or technology or facilitate a crime."[10]

Cyberterrorism is a subset of cybercrime. The UN defines cyberterrorism as "a cyber-dependent crime perpetrated for political objectives to provoke fear, intimidate and/or coerce a target government or population, and cause or threaten to cause harm (e.g., sabotage)."[11] Cybercrime is typically committed for profit or personal gain; cyberterrorism is to make a statement.

Digital information systems—a discrete set of information resources organized for collection, processing, maintenance, use, sharing, dissemination, or disposition of information, and over the past forty years have become central to nearly every aspect of advanced society. Computers

[10] United Nations Office on Drugs and Crime. E4J University Module Series: Cybercrime Module 1: Cybercrime in Brief. https://www.unodc.org/e4j/en/cybercrime/module-1/key-issues/cybercrime-in-brief.html

[11] United Nations Office on Drugs and Crime. E4J University Module Series: Cybercrime Module 14: Cyberterrorism. https://www.unodc.org/e4j/zh/cybercrime/module-14/key-issues/cyberterrorism.html

and networks facilitate virtually all commercial activity, telecommunications, transportation, process control, logistics, business and governmental situational awareness, mass entertainment, healthcare, and education. Entire industries now exist entirely in the digital realm, employing millions and generating trillions of dollars in wealth.

While this technological explosion has brought into everyday use capabilities that not so long ago were pure science fiction, it's also introduced an unprecedented vulnerability to the global economy. Anyone sufficiently skilled and equipped can, from anywhere in the world, attack the very underpinnings of our society without firing a shot or dropping a bomb, either for profit or in the service of ideology.

Unlike natural disasters that occur because of some impersonal geophysical process—seismic activity, atmospheric conditions, climate change—cybercrime and cyberterrorism are the products of people willfully subverting our infrastructure to achieve their own ends. Over the past ten years, the number and type of threat factors have grown wildly as knowledge and tools have spread worldwide.

Cybercriminals can be individual thieves of various kinds, extortionists, blackmailers, vandals, members of organized crime groups, and spies (private- and public-sector). Cyberterrorists can be lone political or religious zealots, activists, members of organized terrorist groups, private hacking teams supported by or affiliated with governments, or military personnel conducting cyber warfare operations.

Each of these factors has a different motive, objective, and modus operandi. This makes prevention and protection (a.k.a. mitigation) exceptionally hard.

Just as the varieties of threat actors have proliferated over time, so have the ways they can attack information systems and their users. Each type of attack exploits a particular weakness in the system involved: a design or manufacturing flaw, incompetence, or inattention on the part of the system's administrators, missing or insufficient security practices, or the endless ignorance and gullibility of the user community.

Civil Disturbances (Description only, not profiled further)

Civil disturbances range from posting a protest sign on a telephone pole to staging a violent riot or an armed takeover of public or private property. *The vast majority of "civil disturbances" are peaceful exercises of First Amendment rights to free assembly and expression and aren't of any concern to this Plan.*

As defined for this Plan, civil disturbance is an event that threatens or temporarily interrupts normal City operations through violent protests, riots, shootings, or armed standoffs. Civil disturbances of this sort may be single events or a string of related events. Property damage to businesses, public facilities, or homes can occur during these events. In some situations, death or injury may result.

Riot control and the containment of armed standoffs are the province of law enforcement and are best overseen through mutual aid and established police procedures. *If the disturbance leads to multiple casualties or fatalities, however, it's considered a mass casualty or mass fatality incident, which this Plan addresses separately (below). For the purposes of this plan, the only discussion related to civil disturbance is provided in the mass casualty / mass fatality incident profile.*

Mass Casualty / Fatality Incidents

A mass casualty incident (MCI) is any incident that produces casualties (living and dead) in such number and severity of injuries that it overwhelms the available emergency medical services resources. A mass fatality incident (MFI) is a specialized form of MCI in which most or all of the resulting casualties are deceased. An MFI is always an MCI, but an MCI isn't always an MFI; the difference lies in who is responsible for the scene, what operations they undertake (for example, rescue versus recovery), and the follow-on effects.

MCIs tend to come in several forms, both prosaic (train or bus crashes, industrial accidents, HAZMAT releases) and uncommon (floods, landslides, earthquakes, violent protests, or riots). The events more likely to cause MFIs are marked by their violence: mass shootings, airplane crashes, building collapses, mass poisonings (accidental or deliberate), or terrorist attacks.

Most of these causes are self-explanatory. Two require further definition:

1) **Mass shootings.** The FBI defines an active shooter as "one or more individuals actively engaged in killing or attempting to kill people in a populated area."[12] The Investigative Assistance for Violent Crimes Act of 2012[13] defines mass killings as "3 or more killings in a single incident." Put together, they describe a phenomenon that has become common in America: one (usually) or more people arrive at a public place and start shooting everyone they see. The FBI's list of U.S. active shooter incidents between 2000 and 2018[14] cites 289 cases from all across America, with a notable increase in numbers in recent years. Unfortunately, this is likely a severe undercount.

2) **Terrorism.** Executive Order 13224, signed by President George W. Bush on September 23, 2001, defines terrorism as "an activity that (1) involves a violent act or an act dangerous to human life, property, or infrastructure; and (2) appears to be intended to intimidate or coerce a civilian population; to influence the policy of a government by intimidation or coercion; or to affect the conduct of a government by mass destruction, assassination, kidnapping, or hostage-taking."[15] This term is broken down into two categories, defined by the FBI:[16]

    a. Domestic terrorism is "[v]violent, criminal acts committed by individuals and/or groups to further ideological goals stemming from domestic influences, such as those of a political, religious, social, racial, or environmental nature."

    b. International terrorism is "[v]violent, criminal acts committed by individuals and/or groups who are inspired by, or associated with, designated foreign terrorist organizations or nations (state-sponsored)."

[12] FBI Active Shooter Safety Resources. https://www.fbi.gov/how-we-can-help-you/active-shooter-safety-resources

[13] S.1793 - Investigative Assistance for Violent Crimes Act of 2012. https://www.congress.gov/bill/112th-congress/senate-bill/1793/text

[14] FBI. Active Shooter Incidents in the United States from 2000-2018. https://www.fbi.gov/how-we-can-help-you/active-shooter-safety-resources/active-shooter-incidents-from-2000-to-2018

[15] U.S. Department of State. Executive Order 13224. https://www.state.gov/executive-order-13224/

[16] FBI What We Investigate: Terrorism. https://www.fbi.gov/investigate/terrorism

LOCATION AND EXTENT

Hazardous Materials Release

Hazardous materials and chemicals are used daily in households and businesses throughout Upland. In addition to the locations of large commercial and industrial uses, sources of hazardous materials can originate from seemingly harmless places such as gas stations, auto repair shops, dry cleaners, medical centers, and almost any industrial business. Hazardous waste can take the form of liquids, solids, contained gases, or sludge. It can be the by-product of manufacturing processes or simply discarded commercial products, like cleaning fluids and pesticides.

In severe situations, Upland may also be at risk of HAZMAT release events on a regional level. With the right prevailing wind conditions, airborne toxic material could spread to and impact various parts of the air basin, including areas of Upland.

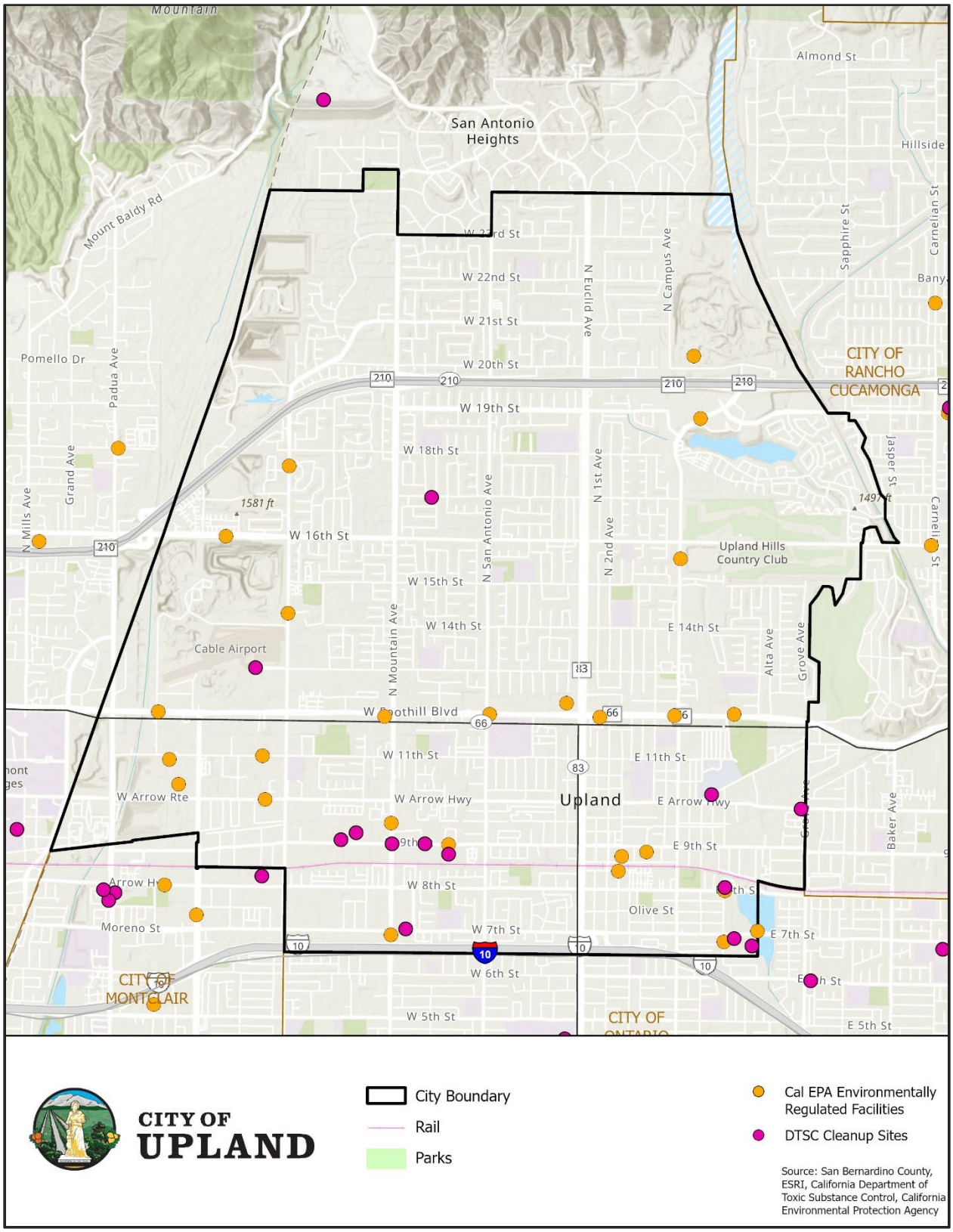
Figure 3-5 identifies stationary hazardous materials locations within Upland that store, use, or produce hazardous materials regulated by the state. While these locations are fixed, roadways throughout the community are commonly used to transport hazardous materials and waste. These facilities are common locations for spills and releases. While there's no scale for hazardous materials release, the probability of an incident is anticipated to be occasional (less than 10% chance of occurrence) each year.

Landfill Subsidence

The Upland Landfill was closed in 1979 when it reached its capacity and failed to meet the more stringent environmental standards established by the Resource and Recovery Act of 1976. Storage of waste in the landfill caused hazardous methane gas production, increased the risk of groundwater contamination, including the potential presence of unregulated toxins and hazardous materials. Located between 14th and 15th Streets along Campus Avenue, the landfill served the community for decades before its closure. The sites' closure followed the standard regulatory pattern of phasing out older, unlined disposal sites in favor of modern sanitary facilities. Following its closure, the site was utilized for landfill gas management, with a reciprocating engine burner for landfill gas being listed as "defeated" later in 1983. Closure of the site was intended to avoid contact with hazardous materials within the community and the people living there. Subsidence can affect the area formerly occupied by the site due to landfill compaction, which can create voids and compact the underlying soil as waste (especially organic materials) decompose over time. The site is currently used as a storage facility for recreational vehicles.

Today, the City of Upland manages its waste disposal needs through modern facilities and programs, such as the Household Hazardous Waste Collection Center located on N. Benson Ave.

Figure 3-5. Stationary Hazardous Materials Locations Within Upland



Transportation Accidents

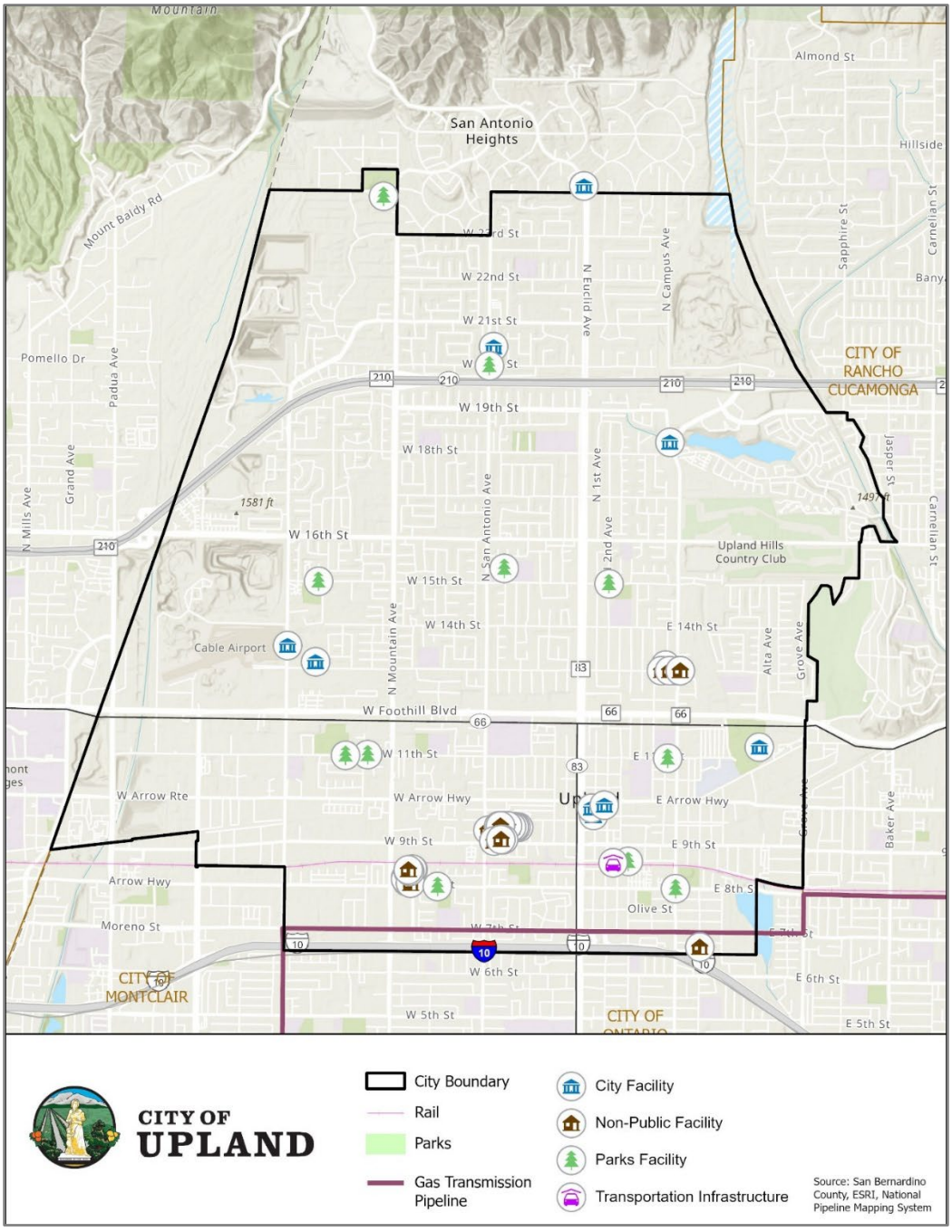
The City has one airport inside its borders and lies beneath the flight paths and control zones of several nearby airports.

- **Cable Airport (CCB)** is a non-towered general aviation airport located two miles northwest of Upland's central business district and adjacent to its industrial area. It bases over 270 aircraft and generates over 92,000 flight operations a year. The FAA CAROL database shows reports of five fatal accidents out of 26 reported incidents since 2000. Departure and approach patterns fly at low altitudes directly over central Upland.
- **Ontario International Airport (ONT)** is located south of Upland, two miles east of downtown Ontario. The easternmost of Los Angeles's major airports, it generated 106,715 flight operations in 2024 involving 7.08 million passengers and over 793,000 tons of cargo. It services various scheduled airlines and is the regional hub for UPS and a major distribution depot for FedEx. While typical departure and arrival patterns take traffic west or east, some air routes overfly Upland. The FAA CAROL database lists ten reported incidents since 2000 with no reported fatalities.
- **San Bernardino International Airport (SBD)** is 23.7 miles east of Upland near downtown San Bernardino. Once a major Air Force base, SBD now services a commuter airline and various Part 291 air cargo services, generating 52,218 flight operations in 2024. Like ONT, it can accommodate Boeing 747s and Airbus 380s. SBD also hosts an executive terminal for business jets. The FAA CAROL database lists 11 reported accidents since 2000, including one fatal accident, although it's unclear how many involved the airport. Approach and departure patterns may take aircraft directly over Upland.
- **March Air Reserve Base (RIV)** in Moreno Valley is 26.7 miles southeast of Upland. It's the sole military airfield left in the Inland Empire and serves as a transit point for various military aircraft as well as the base for the 452nd Air Mobility Wing operating C-17s and KC-135s. California Air National Guard squadrons operate F-15s and MQ-9 Reaper drones from the field. The greatest threat posed by RIV's operations lies not in the volume of its operations, but in their type: high-performance military aircraft, potentially armed fighter jets and helicopters, and cargo aircraft possibly carrying hazardous payloads.
- Other airports that contribute to the crowded sky above Upland include:
    - **Los Angeles International Airport (LAX)**
    - **John Wayne Airport (SBD)** (initial approach begins over the San Bernardino Valley and proceeds over the San Gabriel Valley)
    - **Chino Airport (CNO)**, a three-runway general aviation, executive, and reliever airport, which generates over 164,000 flight operations a year
    - A host of smaller general aviation airfields, such as Riverside Municipal, Corona Municipal, Redlands Municipal, and Brackett Field.

Freight and passenger trains cross Upland 24 hours a day, seven days a week, serving businesses, commuters, and tourists. These trains may travel over 60 mph. A Metrolink commuter passenger car can hold 147 seated passengers and many more standing; Amtrak passenger cars can hold anywhere from 65 to 95 passengers each.

A Southern California Gas transmission pipeline cuts across the southern edge of Upland just north of Interstate 10.[17] **Figure 3-6** shows the approximate route this pipeline takes across the City.

Figure 3-6. Approximate Route of a Southern California Gas Transmission Pipeline



[17] National Pipeline Mapping System. https://pvnpms.phmsa.dot.gov/PublicViewer/

Cybercrime Incidents

We can predict what areas a flood will damage or the kinds of buildings that will fail in an earthquake. However, there are far too many ways to misuse or abuse an information system, and far too many objectives to be served by doing so, to let us do anything more than guess at how and why any particular system may be attacked, and by whom.

There's no central authority in charge of cataloguing hardware and software vulnerabilities or publicizing them to users. (If there were, it would be the number one target for hackers worldwide.) Each individual manufacturer discovers these flaws through internal testing, customer trouble reports, hacking incidents, or notices issued by third parties, such as the makers of security hardware or software, academic researchers, or white-hat hackers. The manufacturer then has to devise a patch (if possible), notify its customers (if possible), and hope that the customers will quickly apply the fix to close the vulnerability. With this process, the wonder isn't that there are so many vulnerable information systems, but that there are no secure systems at all.

Some major hardware and software manufacturers aggressively assess their products for vulnerabilities and push out regular updates to fix them. For example, Microsoft issues numerous security and quality updates every month for its Windows operating system and other products. Smaller companies may not patch their products regularly or may wait to roll out security fixes with product updates they issue every few months or every year. Some vulnerabilities (such as passwords embedded in IoT device firmware) may never be fixed because the systems themselves aren't designed to allow it. Of course, patches and updates are only useful if the users or system administrators install them—a common failing that's been at the root of several major cyberattacks.

System administrators are ultimately responsible for the security of their systems. They may find vulnerabilities through manufacturers' notices, articles in the specialized press, alerts generated by cybersecurity software or hardware installed on the system, and bulletins issued by agencies such as the Department of Homeland Security's National Cyber Awareness System.

Mass Casualty / Fatality Incidents

MCIs and MFIs can occur anywhere, although public spaces and locations where many people congregate are most common. A list of the places where mass shootings and terrorist attacks have happened since 2000 is a description of our everyday world: offices, parks, schools, daycare centers, places of worship, grocery stores, shopping centers, restaurants, movie theaters, nightclubs, airports, festivals, athletic events…the list goes on endlessly.

While it's commonly thought that terrorists of whatever stripe will try to attack infrastructure or government-related targets, the reality is that they are far more likely to attack the same soft targets as do mass shooters. The only difference is their motivation.

MCIs are typically measured by the fatalities, injuries, and destruction they cause; no universal scale is used to measure these events.

PAST EVENTS

Hazardous Materials Release

Upland has experienced an average of 5.33 hazardous materials spills reported annually to the Cal OES Spill Release Reporting database. **Table 3-10** displays this data. Most of these incidents involve the release of sewage and petroleum products.

TABLE 3-10: HAZARDOUS MATERIALS RELEASE REPORTING

Year	Reported Releases
2010	9
2011	3
2012	8
2013	3
2014	7
2015	5
2016	6
2017	3
2018	5
2019	5
2020	7
2021	4
2022	9
2023	4
2024	2
Annual Avg.	**5.57**

Source: https://www.caloes.ca.gov/cal-oes-divisions/fire-rescue/hazardous-materials/spill-release-reporting

Landfill Subsidence

No incidents of general subsidence have been identified within the City. The closed landfill location is annually inspected for signs of disturbance, which can range from cracking in the asphalt cover to ground movement (subsidence). The City frequently monitors these activities and conducts repairs as occurred in 2023.

Transportation Accidents

Transportation accidents happen regularly across the country. Some examples from California:

- On August 31, 1986, a four-seat Piper Archer aircraft originating from Torrance Airport collided with Aeroméxico Flight 498, a DC-9 on descent into Los Angeles International Airport. Both aircraft crashed into northeastern Cerritos. All 67 people on both aircraft and another fifteen people on the ground died; the crash also destroyed four houses and damaged seven more.

- At 4:22 p.m. on September 12, 2008, a Southern California Regional Rail Authority (Metrolink) passenger train ran a red signal and collided head-on with a Union Pacific freight train in Chatsworth. Twenty-five people died, 135 were injured (46 critically), and the crash caused over $7 million in damage.
- A thirty-inch Pacific Gas & Electric natural gas pipeline exploded on September 9, 2010, in San Bruno, California. The explosion and resulting fire in the suburban Crestmoor neighborhood killed eight people, blew a 167-foot-long, 40-foot-deep crater in the street, and destroyed 35 homes. Over 200 firefighters battled the resulting eight-alarm fire, which burned for over 12 hours.
- On October 23, 2016, a USA Holiday tour bus returning to Los Angeles from the Red Earth Casino near the Salton Sea crashed into a tractor-trailer rig near Palm Springs, killing the driver and 12 passengers and injuring dozens of others.[18]

Cybercrime Incidents

Cybercrime is geography independent. Threat factors can conduct their attacks from anywhere in the world that has a sufficiently robust information infrastructure to support their activities.

Profit-seeking threat actors may not even know or care where their victims are; their attacks seek out particular vulnerabilities in systems. Brett Callow, a threat analyst at Emsisoft, told the *Washington Post*, "Most ransomware attacks are spray-and-pay in nature, and those hit are the ones with the weakest systems. Local governments seem to have the weakest systems."[19] For example, an August 2019 mass ransomware attack against 22 Texas state and local government information systems mauled Wilmer, a town of 4,000 people on the far fringes of Dallas that had neither the financial nor the personnel resources to meet the criminals' demands.

DDoS and TDoS attacks are motivated by "an interest in obtaining financial reward, making an ideological statement, creating a geopolitical advantage, or exacting revenge for a particular government action, corporate campaign, or policy stance."[20] They're still a favorite tool of ideological threat actors who often aim their attacks at government information and communication systems. The victimized government entity may not have done anything to earn the attackers' ire other than being part of a class of disfavored entities (law enforcement, public health, military, foreign policy, etc.).

Upland is in no way immune to cyberattacks by being small, semi-obscure, inoffensive, or in a "nice" neighborhood.

Another difficulty in sizing the threat is that victims report only some small fraction of cyberattacks. No one can even agree on how small that fraction is; estimates range from less than 10% to perhaps 25%. What reporting there is, is fragmented among various public and private organizations and databases. The public is more likely to hear about attacks against

[18] "Police: 'No appearance of braking' in deadly bus crash." *CNN*, Oct.24, 2016. https://www.cnn.com/2016/10/23/us/california-bus-accident/

[19] "Ransomware poses threat to vulnerable local governments." *Washington Post*, Aug. 22, 2021. https://www.washingtonpost.com/politics/2021/09/07/cybersecurity-202-ransomware-is-wreaking-havoc-us-cities/

[20] "The risks of DDoS attacks for the public sector." *Government Computer News*, Jan. 15, 2021. https://gcn.com/2021/01/the-risks-of-ddos-attacks-for-the-public-sector/315952/

public-sector victims because of state and federal transparency laws, though smaller agencies in states with weak transparency laws may be able to slide by without releasing this information.

With this in mind, following are some national statistics and specific cyberattacks against small-to-medium-sized jurisdictions to provide insight into the possible costs and consequences for Upland in a potential future attack.

- At least one reported ransomware attack against a U.S. city, county, or state government happened each month in 2022. Somerset County, NJ (population 330,151) and Quincy, IL (pop. 40,111) were May's victims. Quincy spent over $600,000 countering its attack and restoring its systems (out of a $47.8 million budget) in an attempt to avoid paying a ransom of less than $500,000.[21]

- In 2020, at least 1,794 U.S. governmental and educational organizations reported experiencing a ransomware attack.[22] At least 113 of these were against governmental organizations at all levels, including Tillamook County, OR (pop. 26,782), Hall County, GA (pop. 203,136), and Torrance, CA (pop. 145,000).

- Tillamook County lost the use of its network for nearly two weeks and eventually paid the hackers $300,000 for a decryptor after discovering its backups were also compromised.[23]

- The Hall County incident provides an unusually detailed view of the cost of responding to a ransomware attack. The attack started on October 7, 2020, causing the county to shut down all its information systems…too late. While its public safety systems still worked, around 2,000 workstations needed to be wiped and reconfigured, leaving the parts of the county government not associated with public safety "back to 1980," in the words of Assistant County Administrator Zach Propes—including the county's response to Hurricane Zeta. The county's network finally returned to service on December 15. All told, Hall County spent $1.7 million to avoid paying ransom to restore its systems: $1.13 million for infrastructure changes, $478,000 for recovery activities, $85,000 for security monitoring, and $30,590 for force-account overtime.[24] (The 2020 Hall County budget was $103 million.)

- A ransomware attack on the City of Torrance on 1 March 2020 took down the city's website, email system, and credit card processing system. The DopplePaymer attackers demanded 100 bitcoin ($689,147) in ransom from the city, claiming they had encrypted 150 servers and 500 workstations to steal more than 200 gigabytes of files.[25] While the city claims it never paid the ransom, it spent $50,000 on an insurance deductible, and DopplePaymer put over 200GB of stolen data on the dark web, including personal

[21] "May ransomware attacks strike municipal governments, IT firms." *TechTarget*, Jun. 2, 2022. https://www.techtarget.com/searchsecurity/news/252521021/May-ransomware-attacks-strike-municipal-governments-IT-firms

[22] "The State of Ransomware in the US: Report and Statistics 2020." *Emsisoft Malware Lab*, Jan. 18, 2021. https://blog.emsisoft.com/en/37314/the-state-of-ransomware-in-the-us-report-and-statistics-2020/

[23] "Top 10 cybersecurity incidents in 2020." *ZDNetLive*, Sep. 4, 2020. https://www.znetlive.com/blog/top-10-cybersecurity-incidents-in-2020/

[24] "Hall County's 'crippling' cyberattack last year cost $1.7M. Here's what else we've learned since then." *Gainesville Times*, Dec. 18, 2021. https://www.gainesvilletimes.com/news/government/hall-countys-crippling-cyberattack-last-year-cost-17m-heres-what-else-weve-learned-since-then/

[25] "Cyberattacks continue amid COVID-19 pandemic." *Daily Breeze*, Apr. 23, 2020. https://www.dailybreeze.com/2020/04/23/cyberattacks-continue-amid-covid-19-pandemic/

information about city employees.[26] No estimates of lost revenues or productivity, excess overtime, or tort claims are available.

- An attack using Maze ransomware took down the email, phones, 311 customer service, and online electric and sanitation payment systems belonging to the City of Pensacola, FL (pop. 52,918) for several days in December 2019. While the attackers took pains to not affect 911 service—the city was still dealing with the NAS Pensacola mass shooting—they did steal 6GB of city data and demanded $1 million in Bitcoin for a decryptor.[27] Pensacola didn't pay the ransom, but it did pay for a systems audit by Deloitte & Touche and identity protection services for 57,000 people affected by the data loss.[28] Similar attacks in June 2019 affected Lake City, FL (pop. 12,166), which paid $460,000 to the cybergang that encrypted its systems, and Riviera Beach, FL (pop. 35,025), which paid $600,000.[29]

Ransomware isn't the only threat. DDoS and TDoS attacks against vital services can be as damaging but are easier to launch and harder to block. TDoS attacks can last for several days. As the transition to Next Generation 911 (NG911) proceeds, Public Safety Answering Points (PSAPs) will become more vulnerable to DDoS attacks as well as more traditional TDoS attacks; NG911 is based on Voice-over-IP architecture using the Internet, providing hackers with more avenues of attack.

- On Oct. 26, 2016, a junior hacker experimenting with Apple iOS exploits accidentally unleashed code that caused a TDoS attack against PSAPs in twelve states.[30] During that attack, it took only a hundred spurious calls arriving in a few minutes to shut down 911 service for Surprise, AZ (pop. 139,007) and Peoria, AZ (pop. 172,109).[31]

While this discussion focuses on direct attacks against U.S. city and county governments, there's no need for cybercriminals or cyberterrorists to go after a government agency's systems to damage that agency. Over 1,300 of those 2020 ransomware attacks mentioned previously affected public schools and colleges. Compromised system vendors (Microsoft Exchange Server, 2021), utilities (Delta-Montrose Electric Association, CO, 2021), communications providers (T-Mobile, 2018-21; Bandwidth.com, 2021), or hospitals (too many to mention) can interrupt vital services, expose confidential personal data, or both.

Mass Casualty / Fatality Incidents

The following MCIs/MFIs have occurred within San Bernardino County, the state, or the nation and may be relevant to the community:

[26] "Hackers post Calif. city's data online after it denied leak." *Statescoop*, Apr. 22, 2020. https://statescoop.com/hackers-post-torrance-california-data-online-after-denied-leak/

[27] "Maze Ransomware Behind Pensacola Cyberattack, $1M Ransom Demand." *Bleeping Computer*, Dec. 11, 2019. https://www.bleepingcomputer.com/news/security/maze-ransomware-behind-pensacola-cyberattack-1m-ransom-demand/

[28] "Cyberattack postmortem reveals Florida city lost 6GB of data." Insurance Business America, Feb. 12, 2020. https://www.insurancebusinessmag.com/us/news/cyber/cyberattack-postmortem-reveals-florida-city-lost-6gb-of-data-213486.aspx

[29] "Pensacola Ransomware Attack Update: Cybercriminals Release Data." MSSPAlert, Dec. 26, 2019. https://www.msspalert.com/cybersecurity-breaches-and-attacks/ransomware/pensacola-ransomware-attack-data-released/

[30] "DHS: Teenager's malware disrupted 911 call centers in 12 states." Cyberscoop, Nov. 14, 2016. https://www.cyberscoop.com/911-call-center-ddos-dhs-maricopa-county/

[31] "Young hacker arrested for disrupting 911 Service with a TDoS attack." Security Affairs, Oct. 31, 2016. https://securityaffairs.co/wordpress/52895/cyber-crime/911-service-attacks.html

- **April 19, 1995:** Timothy McVeigh detonated a bomb outside the Alfred P. Murrah Federal Building in Oklahoma City, OK. The blast was so powerful that the Federal Building was destroyed, and more than 300 nearby buildings were damaged or destroyed. The bombing killed 168 people, including 19 children. Timothy McVeigh's motive for bombing the Federal Building was that he hoped to inspire a revolution against the federal government.[32]

- **April 15, 2013:** Two bombs detonated near the finish line of the Boston Marathon. The explosion killed three spectators and wounded more than 264 other people. Police captured 19-year-old Dzhokhar Tsarnaev in connection with the bombing; the second suspect, Tamerlan Tsarnaev, died following a shootout with law enforcement. Investigators concluded that the Tsarnaev brothers planned and conducted the attack on their own and were not connected to any specific terrorist group.[33]

- **December 2, 2015:** A terrorist attack consisting of a mass shooting and an attempted bombing occurred at the Inland Regional Center in San Bernardino, California. The perpetrators—Syed Rizwan Farook and Tashfeen Malik, a married couple living in the city of Redlands—targeted a San Bernardino County Department of Public Health training event and Christmas party of about 80 employees in a rented banquet room. Fourteen people were killed and 22 others were seriously injured. Farook was a U.S.-born citizen of Pakistani descent who worked as a health department employee.[34]

- **October 1, 2017:** Stephen Paddock opened fire on the Route 91 Harvest Festival concert in Las Vegas from an elevated position at the Mandalay Bay Hotel. The attack resulted in 61 people killed (including two victims who died in 2019 and 2020 and Paddock himself) and 867 injured. Paddock shot and killed himself before responding officers reached him. The FBI Behavioral Analysis Unit determined no clear motivation for the attack. Although this attack did not occur in California, many California residents were affected by the event, as more than half of the 61 people killed were from California.[35]

- **January 21, 2023:** A 72-year-old shooter, Huu Can Tran, committed the deadliest mass shooting in the history of Los Angeles County in Monterey Park. Tran killed eleven people and injured nine others at the Star Ballroom Dance Studio after a nearby, all-day Lunar New Year Festival, and at the Lai Lai Ballroom in nearby Alhambra. He died from a self-inflicted gunshot wound during a standoff with police in Torrance the next day.[36]

- **October 25, 2023:** Forty-year-old Robert Card conducted a spree shooting in Lewiston, Maine, United States, killing 18 people and wounding 13 others. The initial attack occurred at the Just-In-Time Recreation bowling alley during a youth league event,

[32] Federal Bureau of Investigation. Famous Cases and Criminals. https://www.fbi.gov/history/famous-cases/oklahoma-city-bombing

[33] History.com Editors. June 2019. Boston Marathon Bombing. https://www.history.com/topics/21st-century/boston-marathon-bombings

[34] Bringing Calm to Chaos: A Critical Incident Review of the San Bernardino Public Safety Response to the December 2, 2015, Terrorist Shooting Incident at the Inland Regional Center. (2016). Office of Community Oriented Policing Services (COPS Office), U.S. Department of Justice. https://portal.cops.usdoj.gov/resourcecenter/Home.aspx?page=detail&id=COPS-W0808&utm

[35] Los Angeles Times Staff. "Las Vegas Shooting Victims: Portraits of the Fallen." October 2017. https://www.latimes.com/projects/la-na-las-vegas-shootings-victims-list-20171002/

[36] "2023 Monterey Park Shooting." Wikipedia. https://en.wikipedia.org/wiki/2023_Monterey_Park_shooting

followed shortly by a second shooting at the Schemengees Bar & Grille Restaurant. Following an organized search, police found Card dead from a self-inflicted wound.[37]

- **January 1, 2025:** Shamsud-Din Bahar Jabbar drove a pickup truck into a Bourbon Street crowd celebrating New Year's Eve in New Orleans. He killed 14 people and injured over 57. He may also have delivered or set two IEDs prior to his attack on the crowd, none of which are known to have exploded. The investigation is still ongoing as of this writing, but it appears Jabbar may have become radicalized through the Internet and may have been inspired by Islamic State-linked vehicle attacks in Europe.[38]

Risk of Future Events

Hazardous Materials Release

Most of the release events within Upland have occurred due to human error, malfunctioning equipment, or a deliberate act. Given this, it is anticipated that future events within Upland will include minor incidents like some of the past occurrences identified above in **Table 3-9**. Activities to prevent future releases, as well as response strategies, should take this into consideration. As identified in Hazard Scoring **Table 3-4** (above), the future probability of hazardous materials release is likely with between a 0.1% and a 1% chance of occurrence each year.

Landfill Subsidence

Subsidence can potentially remain a concern for the City due to decomposition of waste at the former site. It is anticipated that minor events could occur in the future. As identified in **Table 3-4**, the future probability of subsidence events occurring has an annual probability of between 0.1% and 0.01%.

Transportation Accidents

As mentioned before, because the different transportation-related modalities are so omnipresent, transportation accidents happen regularly and typically don't result in much more than a localized cleanup problem, a short-lived traffic tie-up, or a handful of injuries. However, a significant transportation accident can be highly destructive and costly in lives and property. As identified in Hazard Scoring **Table 3-4** (above), the future probability of a significant transportation accident is considered possible, however extremely rare, it has between 0.01% and 0.001% of occurrence each year.

Cybercrime Incidents

Cybercrime and cyberterrorism will only grow in scope and capability over time. As organized crime and national actors (militaries and intelligence agencies) become more involved and cyber warfare becomes established doctrine among nation states, highly skilled and well-resourced hackers will pose an ever-greater threat to IT systems of all stripes. State and local governments will continue to be targets, especially as they are known to be soft targets. As

[37] "2023 Lewiston Shootings." Wikipedia. https://en.wikipedia.org/wiki/2023_Lewiston_shootings

[38] FBI. Bourbon Street Attack Investigation Updates. https://www.fbi.gov/news/press-releases/bourbon-street-attack-investigation-updates

identified in Hazard Scoring **Table 3-4** (above), a "highly likely" probability indicates a greater than 10% chance of a damaging cyberattack occurring annually.

Mass Casualty / Fatality Incidents

Given that MCIs and MFIs can stem from a variety of factors—infrastructure decay, extreme weather, industrial accidents, economics, societal pressures, warfare, mental health, geopolitics, national or local politics, religion, etc.—it's impossible to predict when an incident will occur. Upland doesn't host any significant national or state facilities and is unlikely to attract the attention of international terrorist groups. However, most MCIs and MFIs in the U.S. are caused by disasters or by "the guy next door."[39] Unfortunately, these events are increasingly common and can happen anywhere. As identified in Hazard Scoring **Table 3-4** (above), the future probability of an MCI/MFI incident is considered possible, however extremely rare, with between 0.01% and 0.001% of occurrence each year.

CLIMATE CHANGE CONSIDERATIONS

Hazardous Materials Release

Climate-related natural hazard events, such as increased precipitation and subsequent flooding, could cause an increase in hazardous materials release. Some of these incidents could result from transportation crashes (due to poorer road conditions) or damage to storage containers or vessels containing these substances. Climate-related hazards could also exacerbate the effects and impacts of such events. For example, heavier rains could lead to more runoff from a contaminated site with hazardous materials. These issues should be monitored during the five-year implementation period of this plan.

Landfill Subsidence

Climate change may bring about an increase in subsidence associated with warmer temperatures and increased precipitation. While the site appears to be stable, if temperatures increase over time and the asphalt cap on top of the landfill degrades more quickly, or experiences more cracking due to the temperature changes, the landfill materials could be exposed more easily. In addition, more cracking could allow water infiltration to become easier, impacting settlement. Increased temperatures and more intense precipitation could impact operations and maintenance of the landfill cap, increasing potential exposure of underlying materials, which could increase settlement.

Transportation Accidents

Climate change may bring about an increase in transportation accidents in a number of ways.

- Over-pumping groundwater sources can cause ground subsidence (this is already happening in California's Central Valley). Sinking land can damage bridges and roadways and break pipelines, leading to vehicle crashes or explosive pipeline breaches.

[39] "Of the 172 individuals who engaged in public mass shootings covered in the database, 97.7% were male." National Institute of Justice, "Public Mass Shootings: Database Amasses Details of a Half Century of U.S. Mass Shootings with Firearms, Generating Psychosocial Histories," February 3, 2022, nij.ojp.gov: https://nij.ojp.gov/topics/articles/public-mass-shootings-database-amasses-details-half-century-us-mass-shootings

- More numerous and severe storms could cause or contribute to more air accidents, especially in general aviation operations in which less-experienced pilots may find themselves overmatched by conditions they aren't used to and can't cope with.
- Likewise, more severe storms, high-volume rains, and flooding may undermine roads, creating hazards that contribute to more road accidents involving high-profile and high-weight vehicles.
- High winds generated by extreme storms can and do knock over high-profile vehicles, including those carrying hazardous cargo.

Cybercrime Incidents

As with MCIs/MFIs, it's possible but as yet unproven that the ill effects of climate change may aggravate existing societal tensions and inspire more people to lash out in bloody ways. Restrictions on water or power supply, spiraling food costs due to reduced availability, or rises in utility rates or gas prices could cause people already on edge to take out their frustrations on their schools, offices, or stores.

Mass Casualty / Fatality Incidents

The link between MCIs/MFIs and climate change isn't well understood. However, it has been suggested 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 limit economic growth for cities, regions, or even whole countries. Nevertheless, the likelihood of climate change impacting MCIs/MFIs in Upland is negligible since these changes are more likely to impact developments on the national or international level.

Hazard Profile: Severe Weather

Severe weather poses a risk to life and property in Upland by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. Severe weather is generally any destructive weather event, but in Upland, it usually occurs as extreme heat, drought, or severe wind.

DESCRIPTION

Extreme Heat

Extreme heat is a period when temperatures are abnormally high relative to the normal temperature range. There are generally three types of extreme heat events:

1) **Extreme Heat Days:** A day during which the maximum temperature surpasses 98 percent of all historic high temperatures for the area, using the time between April and October from 1950 to 2005 as the baseline.

2) **Warm Nights:** A day between April and October when the minimum temperature exceeds 98 percent of all historic minimum daytime temperatures observed between 1950 and 2005.

3) **Extreme Heat Waves:** A successive series of extreme heat days and warm nights where extreme temperatures do not abate. While no universally accepted minimum length of time for a heatwave event exists, Cal-Adapt considers four successive extreme heat days and warm nights to be the minimum threshold for an extreme heatwave.

Drought

Drought is a deficiency of rain over an extended period, usually a season or more. This results in a water shortage for some activity, group, or environmental sector. “Drought” as a condition is relative to some long-term average balance between precipitation, evaporation, and transpiration in a particular area—what residents consider "normal." It’s also related to the timing (e.g., principal season of occurrence, delays at the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains (such as rainfall intensity and the number of rainfall events). Drought is often associated with other climatic factors—such as high temperatures, high wind, and low relative humidity—that can significantly aggravate its severity.

Drought isn’t merely a physical phenomenon or natural event. Its impacts on society results from the interplay between a natural event (less precipitation than expected resulting from climatic variability) and the demand people place on the water supply. Humans often aggravate drought’s impact. The economic and environmental effects and personal hardships caused by recent droughts in both developing and developed nations have underscored the vulnerability of all societies to this "natural" hazard.

A single dry year may not constitute a drought in California; however, it can serve as a reminder that droughts are a natural part of the state’s water cycle. California's extensive water supply infrastructure—its reservoirs, groundwater basins, pipelines, aqueducts, and so on—mitigates the effect of short-term dry periods for most water users.

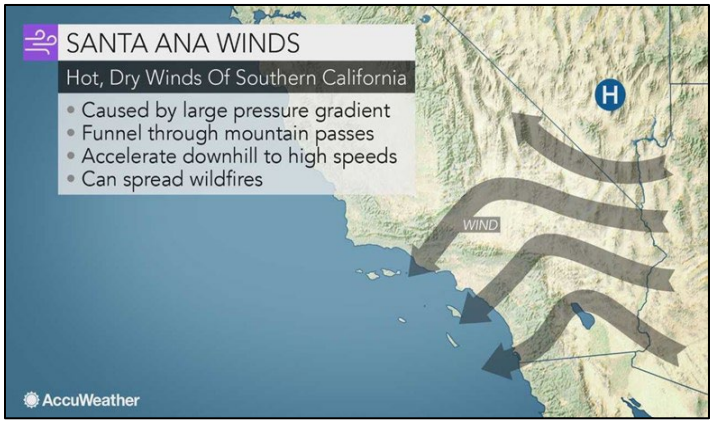
Defining when a drought begins is a function of drought impacts to water users. Drought is highly variable depending on location. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water-supply conditions.

The National Oceanic and Atmospheric Administration (NOAA), the California Department of Water Resources (DWR), and academic institutions such as the University of Nebraska-Lincoln's National Drought Mitigation Center generally agree that there's no clear definition of when a drought begins or ends.

Severe Wind

Windstorms and severe weather pose a risk to life and property in the region by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds can and do occasionally cause tornado-like damage to local homes and businesses. Severe windstorms can present a very destabilizing effect on the dry brush that covers local hillsides and urban-wildland interface areas. High winds can have destructive impacts, especially on trees, power lines, and other utility services. In Upland, severe weather patterns, such as Santa Ana Wind conditions (**Figure 3-7**), are recognized as hazards.

Figure 3-7. Santa Ana Winds Description



Wind is simply the movement of air caused by differences in atmospheric temperature. High-pressure air will naturally move to areas of low pressure. Usually, the distance between these high- and low-pressure zones is far; however, these low- and high-pressure zones may occasionally be near one another. When this happens, air will flow dramatically, creating high-speed winds. The most common wind events in Southern California are the "Santa Ana" wind conditions that typically occur in the fall and winter.

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 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.

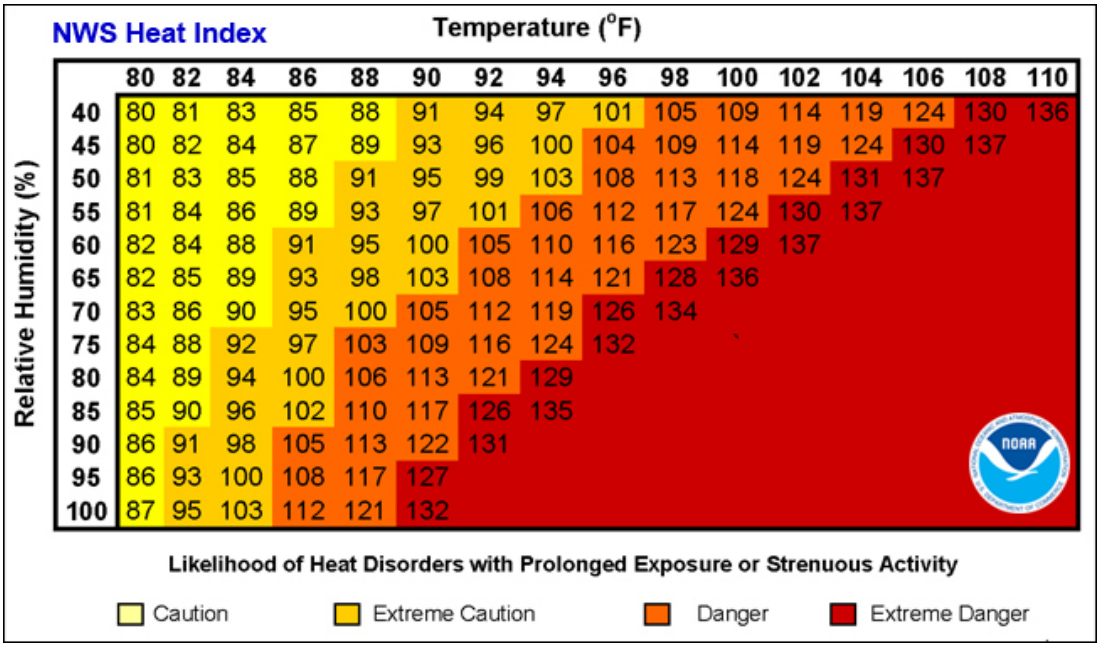
LOCATION AND EXTENT

Extreme Heat

Extreme heat events will differ from region to region since different areas have historically high temperatures. For example, an extreme heat day on the coast will feel different than an extreme heat day in the High Desert. The reason for this is how humidity affects the perceived heat that people feel. Humid conditions will make a day feel hotter than non-humid conditions, even though the temperature may be the same. The difference between the perceived and actual temperatures is known as the "heat index." To illustrate the effect of the heat index, a 90-degree day with 50 percent humidity feels like 95° F, whereas a 90° F Day with 90 percent humidity feels like 122° F. **Figure 3-8** illustrates the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service Heat Index.

Extreme heat events are not limited to any part of the city. They occur with the same intensity and duration at the same time across all locations in Upland. For Upland, an extreme heat day involves a temperature that exceeds 99.7° F, and a warm night involves a temperature that exceeds 66.9°F.[40] These thresholds are based on a 2% probability event.

Figure 3-8. National Weather Service Heat Index



Drought

Southern California's Mediterranean climate makes the region especially susceptible to variations in rainfall. The potential risk to Upland is in no way unique. Severe water shortages will affect the economic well-being of its community and that of all its neighbors.

Comparison of rainfall records from Los Angeles with water well records beginning in 1930 from the San Gabriel Valley indicates the existence of wet and dry cycles on a 10-year scale as well as for much longer periods. The climate record for the Los Angeles region beginning in 1890

[40] https://cal-adapt.org/tools/local-climate-change-snapshot

suggests increasingly dry conditions over the last century. Climate data also suggests that the last significant wet period was the 1940s. Well-level data and other sources seem to indicate the historic high groundwater levels (reflecting recharge from rainfall) occurred in the same decade. Since that time, rainfall and groundwater level trends appear to have declined. This decline may be part of a naturally occurring long-term wet/dry cycle, evidence of overuse of groundwater, or a harbinger of accelerating climate change; there's not yet clear evidence one way or another.

Climatologists compiled rainfall data from 96 stations in the state that spanned a 100-year period between 1890 and 1990. An interesting note: during the first 50 years of the reporting period, only one year (1890) had more than 35 inches of rainfall, but the second 50-year period recorded 5-year intervals (1941, 1958, 1978, 1982, and 1983) that exceeded 35 inches of rainfall in a single year. The year of maximum statewide rainfall was 1890, when the average annual rainfall was 43.11 inches; the second-wettest year on record occurred in 1983, when the state's average was 42.75 inches. The driest year of the 100-year study period was 1924, when the state's average rainfall was only 10.50 inches.

Drought is a chronic hazard, not an acute one. Its effects accumulate over months and years and are often subtle. Since there's no universally accepted definition for the beginning (or end) of a drought, we can be in the middle of a drought emergency before we know it's begun. The previously discussed hazards' damage modes can be described as demolition; drought's damage mode is closer to erosion.

Nearly every functioning process within the City depends on a reliable, safe water supply. This includes infrastructure, homes, businesses, places of employment, industry, and recreation.

Drought poses different levels of risk depending on the type of community it affects. A drought in an agricultural community may cause extensive—even fatal—damage to the local economy by killing crops or livestock. In a typical urban or suburban community such as Upland, drought's main effects are the slow degradation of the quality of life, a slowdown or end to development, and a loss of water-intensive industries.

Table 3-11 identifies the drought classifications used by the U.S. Drought Monitor program. This classification system synthesizes multiple different scales into a descriptive index.

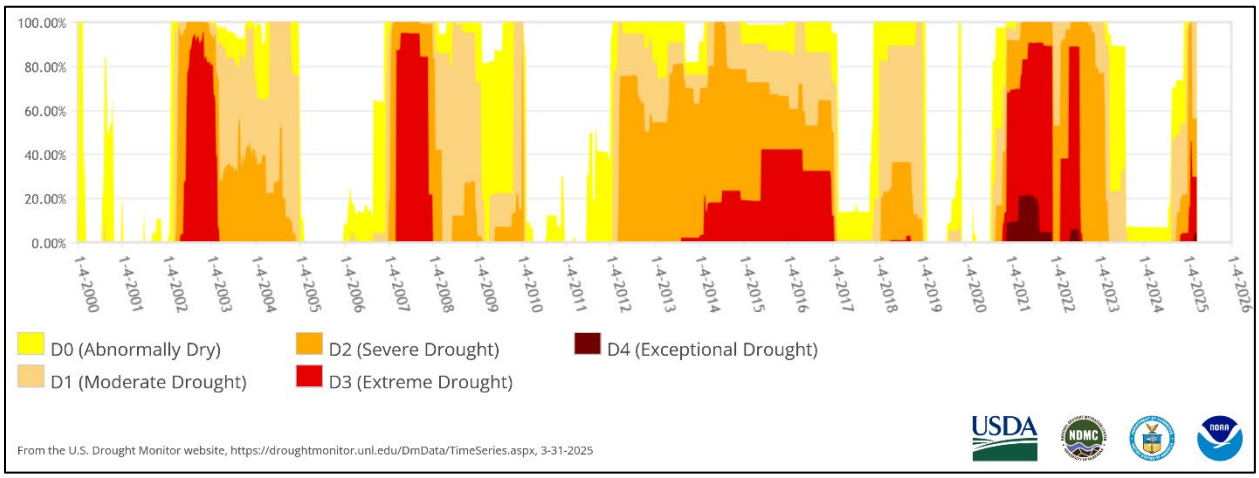
TABLE 3-11: US DROUGHT MONITOR CLASSIFICATION SCHEME

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
* 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 are not yet back to normal.

As of December 2024, about half of California is experiencing abnormally dry to extreme drought conditions. San Bernardino County is experiencing D0 (Abnormally Dry) to D3 (Extreme Drought) conditions. **Figure 3-9** illustrates the severity of the drought conditions experienced in the county over the past 24 years.

Figure 3-9. Area Percentage of San Bernardino County Within U.S. Drought Monitor Categories



Severe Wind

In Southern California, the most common type of windstorm event is called the Santa Ana winds. During the fall and winter months, high pressure over Nevada and Utah forces air currents 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 with allergies.[41]

The entire City can be affected by windstorms. Usually, they cause minimal damage; however, severe storms can cause massive damage to the City and personal property. Santa Ana winds blowing through the mountains and foothills often affect Upland. Santa Ana winds are a leading cause of wildfires in California.

Generally, winds are measured using the Beaufort scale, developed in 1805, categorizing wind events on a force scale from 0 to 12 using their speed and impacts. Any wind classified as force nine or above is generally considered a windstorm event. **Table 3-12** details how the Beaufort scale classifies wind events.

[41] Means, Tiffany. “What Are the Santa Ana Winds?” Farmers’ Almanac - Plan Your Day. Grow Your Life., June 5, 2024. https://www.farmersalmanac.com/what-are-the-santa-ana-winds

TABLE 3-12: BEAUFORT SCALE		
Force	**Speed (mph)**	**Description**
1	0 to 1	Calm: Smoke rises vertically, and the sea is flat
2	1 to 3	Light air: The direction of wind is shown by smoke drift, but not wind vanes
3	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 rise
4	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 rise
5	13 to 18	Moderate breeze: Dust and loose paper become airborne, and small branches are moved. Small waves appear on the ocean
6	19 to 24	Fresh breeze: Small trees begin to sway and moderate waves form
7	25 to 31	Strong breeze: Large branches are in motion, and using an umbrella becomes difficult. Large waves begin to form
8	32 to 38	Near gale: Whole trees are in motion and walking against the wind can be hard. Foam from rising waves is blown in streaks
9	39 to 46	Gale: Walking is difficult, and twigs break off trees
10	47 to 54	Severe gale: Slight structural damage. Crests of waves begin to topple
11	55 to 63	Storm: Trees are uprooted and there is considerable damage to structures. Very high waves form in long, overhanging crests
12	63 to 72	Violent storm: Widespread damage. Exceptionally high waves form, and the ocean is completely covered in foam
Source: US Drought Monitor. https://www.weather.gov/mfl/beaufort		

PAST EVENTS

Extreme Heat

Based on Cal-Adapt's historical information (1975 through 2004), the City experienced five extreme heat days yearly. During this same period, the City experienced a four-day heatwave approximately every four years.

In 2022, California experienced one of the worst heatwaves ever. From September 1st through September 9th, 2022, temperature records for September were shattered across the western portion of the United States, including Upland, where temperatures were reported as reaching 108° F. Prior to this, a heat wave in 1997 affected Southern California, causing five deaths. Temperatures in Upland reached 108° F during this event.

Drought

The following sampling of droughts known to have affected the area we now call Southern California helps put the state's twentieth-century droughts into perspective. Most of the dates shown below are necessarily approximations.

- Griffin & Anchukaitis (2014) used reconstructed tree-ring data to estimate annual precipitation for California since 1200. Their study indicates there was a prolonged dry spell from about 1755 to 1820. Floods in 1825 were followed by a severe drought in 1827–29; drought returned in 1844–46.[42]
- The drought of 1862–64, following on the heels of the epic floods of 1861–62, drove home the final nail in the coffin of the rancho system in Southern California. More than 70% of cattle in Los Angeles County died of disease or starvation.[43]
- The great western drought of 1928-34 that gave us the term "Dust Bowl" was geographically centered in the Great Plains yet ultimately affected water supplies in California. The drought conditions in the Plains resulted in a large influx of people to the West Coast. Approximately 350,000 people from the Great Plains emigrated mainly to California's Central Valley. As more people moved into California, including Los Angeles County—increases in intensive agriculture led to overuse of the Santa Ana River watershed and groundwater, resulting in regional water shortages.
- Yet another statewide drought began in 2012, featuring record-low Sierra snowpack, massive drawdowns of the State Water Project reservoirs, and rapid depletion of groundwater stocks that has led in some places (such as the San Joaquin Valley) to significant ground subsidence. A weak El Niño condition partly broke the drought in Northern California during the winter of 2015–16, but the drought continued in the southern part of the state for the better part of another year. According to the California Natural Resources Conservation Service, among the many effects of this drought was the extensive devastation of forests in the San Bernardino, San Jacinto, Palomar, and Sierra mountain ranges. The lack of rain and snow weakened millions of trees, making them susceptible to infestation by bark beetles.[44] In turn, dry vegetation and beetle-infested trees are more susceptible to fire than healthy forests.

DWR-recorded hydrology shows that the most significant statewide droughts in the past century occurred during 1928–34 (mentioned above), 1976–77, 1987–92, 2007–09, and 2012–16.[45]

Figure 3-9 (above) shows that San Bernardino County has been in drought almost constantly over the past 24 years.

[42] J.M. Guinn: Exceptional Years: A History of California Drought and Flood. https://www.jstor.org/stable/pdf/41167825.pdf

[43] https://articles.latimes.com/1991-06-13/news/nc-780_1_cattle-industry

[44] http://www.sbcounty.gov/calmast/sbc/cms/Docs/BarkBeetle112906ProgramLaunchFINAL_2_.pdf

[45] https://water.ca.gov/Water-Basics/Drought

Severe Wind

There have been several strong wind events recorded around the City of Upland. The following depicts some of these Santa Ana winds and other major windstorm events in the City, neighboring communities, San Bernardino County, and the surrounding region. Santa Ana wind events have been and will continue to be a hazard of concern for the City.[46]

- **January 2–3, 2001:** Santa Ana winds gusted at 52 mph in Ontario and 60 mph in Rialto. The winds fan the Viejas Fire, which burned 5,500 acres. Trees and power lines were downed.
- **February 8–10, 2002:** Santa Ana winds gusted to 80 mph in Descanso, 78 mph in Fremont Canyon, and 76 mph in San Bernardino. On February 9, the winds blew over semis, felled trees, damaged several homes, destroyed 12 million pounds of avocados in northern San Diego County, and started numerous wildfires. Fallen power lines caused most of the wildfires, with the largest being the Gavilan Fire near Fallbrook that burned 5,763 acres and 45 homes.
- **January 6–7, 2003:** Very widespread Santa Ana winds blasted gusts of 100 mph in Fremont Canyon, 90 mph in Ontario, 80 mph in Upland, 72 mph in Trabuco Canyon, and 70 mph in Riverside. The storm left 2 dead and 11 injured, along with widespread property damage, road closures, power outages, fallen trees, wildfires, and crop damage.
- **December 3, 2006:** Offshore winds gusted to 92 mph, with seven gusts over 75 mph in northwest San Bernardino and gusts to 75 mph in Fremont Canyon. Downed power lines sparked a small fire in the Inland Empire. Sixteen power poles were downed in Valley Center.
- **August 16, 2016:** Gusty winds and low humidity swept through the Cajon Pass. Winds fanned the Blue Cut Fire into a fury on this day. The fire spread rapidly, forcing 84,000 mandatory evacuations and threatening 35,000 homes. Numerous roads were closed, including I-15 in both directions for two days. The fire destroyed 105 homes and 313 smaller structures and scorched 36,274 acres before it was extinguished.
- **January 21–22, 2022:** Strong Santa Anas peaked in the foothills of the San Gabriel and San Bernardino Mountains and adjacent valleys, ranging from 50 to 80+ mph. Numerous trees and power poles were downed in Upland, Ontario, and Claremont, crushing several vehicles, damaging homes, and knocking out power.
- **October 29–31, 2023:** Widespread, strong Santa Ana winds struck Southern California. Worst hit were the San Gabriel and San Bernardino Mountains and through northern portions of the Inland Empire and the Santa Ana Mountains. Top gusts touched 100 mph in the San Gabriels, and several foothill locations had gusts up to 70-80 mph. Very windy and dry conditions led to wildfires, including the Highland Fire, which burned nearly 2,500 acres near Aguanga.

[46] "A History of Significant Weather Events in Southern California." National Oceanic and Atmospheric Administration. May 2017. https://www.weather.gov/media/sgx/documents/weatherhistory.pdf

Risk of Future Events

Extreme Heat

As temperatures rise throughout California, the number of extreme heat days will also increase. According to Cal-Adapt data (which relies on NOAA data sources), the City historically (1965-2004) experienced an average of five extreme heat days annually. That number increases to 17 days annually through 2035–2064. Cal-Adapt projects that the City may experience an annual average of 25 extreme heat days by 2070–2099, with a 30-year range of 4 to 50 days a year.

Drought

Given California's centuries-old boom/bust relationship with water and drought, it's nearly certain that Southern California in general and Upland in particular will continue to experience cycles of extreme drought punctuated by brief periods of torrential rain. Climate change (see below) will likely alter the specifics but won't change the overall theme. While the HMPC assessed a 0.1% to 1% annual probability of drought, the U.S. Drought Monitor data (above) demonstrates that the real probability is closer to 80%.

Severe Wind

Given the region's history of windstorm events in nearby cities, it is highly 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 of windstorm events occurring again in the future is highly likely. As discussed in Hazard Scoring **Table 3-4** (above), a "highly likely" probability indicates a greater than 10% chance of windstorms occurring annually.

Climate Change Considerations

Extreme Heat

The primary effect of climate change is warmer average temperatures. The hottest years on record have occurred since 2000, with 2024 and 2023 in the top spots.[47] As climate change accelerates in the 21st century, extreme heat events are anticipated to become more frequent and intense in the city. The projection is that Upland's extreme heat days could increase between 14 and 20 days annually by 2100, and the City can expect a shift in residential and business needs for cooling and addressing heat-related issues.

Drought

If as predicted, climate change brings more of what Upland already has, the City can look forward to longer and deeper droughts, more punishing torrential rainstorms, more heat waves, and heavier winds. Drought may become a chronic scourge we endure rather than a periodic condition we manage.

[47] "Topic: Temperature Rankings." NOAA. https://www.noaa.gov/topic-tags/temperature-rankings

Severe Wind

It is anticipated that the atmospheric rivers that deliver storms to Southern California may intensify because of climate change. While the average number of storms in Southern California will remain the same, storms are expected to increase in intensity between 10 and 20 percent.[48] This increase in storm intensity may also bring more intense winds to the Southern California region, including Upland.

Studies indicate that climate change may affect Santa Ana wind events in varying ways, but it is unknown whether the frequency and intensity of events may be some of those ways. According to one study that examined two global climate models, there's a projected increase in future Santa Ana events. However, other studies have found that the number of Santa Ana events may decrease by about 20% in the future.[49] Given the anticipated increases in temperatures throughout the region, future events are expected to become more severe in some cases, even if the number of events decreases.

[48] Oskin, B. (2014). Atmospheric Rivers to Soak California as Climate Warms. Live Science. https://www.livescience.com/49225-atmospheric-rivers-double-climate-change.html

[49] Hall, Alex, Neil Berg, Katharine Reich. (University of California, Los Angeles). 2018. Los Angeles Summary Report. California's Fourth Climate Change Assessment. https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf

Hazard Profile: Infrastructure Failure

DESCRIPTION

Power Failure

A power failure is an event that occurs within an electric power system when the total real or reactive power of the power plants in the system is insufficient to supply all consumers with electric power of the required quality. These events are considered a lifeline system failure. These failures can be the primary hazard or can directly result from another hazard, such as an earthquake, extreme weather event, or flood. These failures can also be simultaneous with other lifeline system failures such as natural gas, communication, drinking water, wastewater disposal, or transportation. Power failure can exacerbate and or create detrimental effects on these operational and lifeline systems. For this hazard profile discussion, energy/power failure incidents are the primary hazard of concern; however, power failure associated with other hazard events is a concern for many of the other hazards profiled in this Plan.

Generally, these power failure events are the direct result of events beyond the control of the City. These events often occur during a time of extreme demand/need for power, such as an extreme heatwave that creates an enormous strain on the power grid as residents try to stay cool. Most of these energy outages are short-term but can last for weeks if the situation is dire. There are three types of power/energy failures or outages; each is categorized based on duration and the actual effect of the failure/outage event:

1) **Permanent:** A massive loss of power typically caused by a fault on a powerline. However, power is restored automatically once the fault has been cleared.
2) **Brownout:** A sag (or drop) in voltage in an electrical power supply. They can cause equipment or various operational systems to perform poorly.
3) **Blackout:** A total loss of power in an area. The worst form of a power outage. Blackouts can last from a few minutes to multiple weeks, depending on the nature of the causal event and the configuration of the actual electric network.

Public Safety Power Shutoff

A Public Safety Power Shutoff (PSPS) is a practice that Southern California Edison (SCE, provider of electricity for Upland) and other utility companies may use to preemptively shut off power in high fire hazard areas to reduce fire risk during extreme and potentially dangerous weather conditions (hot, dry, and windy). According to the SCE[50], PSPS events are the last resort option in a line of operational procedures employed to mitigate fire risk when conditions warrant. In considering whether to shut off power to lines in affected areas, SCE considers the following factors, which may include, but are not limited to:

- The National Weather Service has issued Red Flag Warnings for counties with SCE circuits in High Fire Risk Areas.

[50] Wildfire and PSPS Fact Sheets. https://www.sce.com/wildfire/psps

- Ongoing assessments from the SCE in-house meteorologists regarding the local wind speed, humidity, and temperature conditions are informed by strategically deployed weather stations.
- Real-time situational awareness information from highly trained personnel positioned locally in High Fire Risk Areas identified as at risk for extreme weather conditions.
- Input from SCE fire management experts regarding any ongoing firefighting efforts.
- Specific concerns from local and state fire authorities regarding the potential consequences of wildfires in select locations.
- Awareness of mandatory or voluntary evacuation orders in place.
- Expected impact of de-energizing circuits on essential services, such as public safety agencies, water pumps, traffic controls, etc.
- Other operational considerations to minimize potential wildfire ignitions.

In advance of PSPS events, SCE will inform local governments about the PSPS protocol, including the location of circuits in their jurisdictions that may be shut off during an event. Notification is provided to residents 48 hours before the potential PSPS event, with follow-up notification occurring 24 hours before the power is shut off. Notifications will be made throughout the outage when power has been shut off and then finally again when it is restored. However, as extreme weather can be unpredictable, sometimes advance notification and coordination don't conform to this protocol. Notification may occur by phone call, text, the SCE.com website, email, and/or social media accounts.[51]

LOCATION AND EXTENT

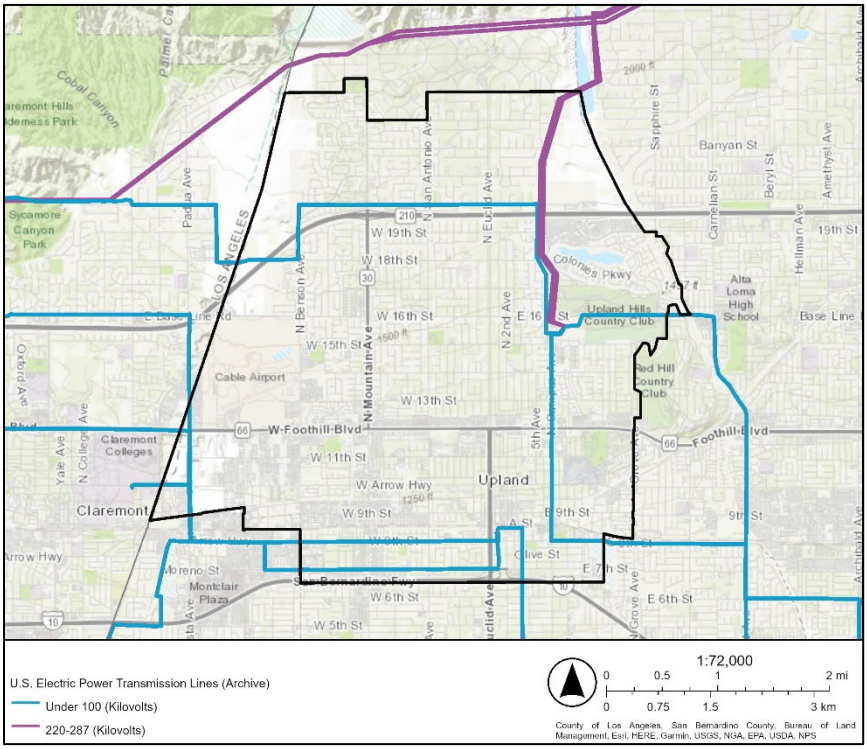
Power Failure

The entire city of Upland is vulnerable to power failure. Most power failure events, as stated earlier, are not necessarily caused by humans. An overwhelming demand for power due to accidents, equipment malfunction/failure, weather conditions, or other natural hazards the City is susceptible to can be the catalyst that creates a loss of power.

According to the California Energy Commission, electricity is transmitted to the distribution network from transmission lines that originate from outside city limits from multiple 220–287kV transmission lines north of the City. The transmission lines terminate into the Upland Substation, and the neighboring city of Claremont (**Figure 3-10**). From these sources, power is then distributed to the City through a series of under 100kV distribution lines running through the city, generally in an east-west direction.

[51] "SCE's 2020 Planning for Public Safety Power Shutoffs (PSPS)".https://www.sce.com/sites/default/files/2020-06/SCE%E2%80%99s%202020%20PSPS%20Preparations.pdf

Figure 3-10. U.S. Electric Power Transmission Lines in Upland



Power failure can occur in only small areas of the City, such as a single location or neighborhood, or the entire grid could fail, suddenly causing the entire City to lose power. Power failure is indiscriminate in who, where, and what it affects; however, locations with older infrastructure or infrastructure located above ground may be more susceptible to weather-related hazards. The duration of these power failures completely depends on the severity of the actual cause of the power loss and what's required to repair the issue or issues.

The electricity industry operated for years through "vertically integrated utilities" that owned generation, transmission, and distribution, and typically had monopolies in their designated service areas. In 1996, the Federal Regulatory Commission issued orders 888 and 889 requiring utilities with transmission infrastructure to provide nondiscriminatory access to all transmission customers. One way for a utility company to comply with this new requirement was to allow an independent system operator (ISO) to operate its transmission system for the company. ISOs don't own electricity transmitted over the grid, and they allow market participants to transmit electricity at the best available price. In 1998, because of Order 888 and California state legislation AB 1890, the California ISO was incorporated as a nonprofit public benefit corporation to fulfill this mission. ISOs are often compared to air traffic controllers, as they independently manage the traffic on a power grid they do not own, much like air traffic controllers manage airplane traffic in the airways and on airport runways.

California ISO is one of nine independent system operators in North America (**Figure 3-11**). Collectively, they deliver over 2.2 million gigawatt-hours of electricity each year and oversee more than 26,000 miles of high-voltage power lines. These independent grid operators serve two-thirds of the United States.[52]

[52] California ISO website: "ISO History." http://www.caiso.com/about/Pages/OurBusiness/ISO-history.aspx

Figure 3-11. All Independent System Operators (ISOs) in North America

Public Safety Power Shutoff

PSPS is based on circuits that provide power for certain areas. Each circuit has a name. During a Red Flag Warning or other weather event that poses a threat to a High Fire Risk Area, SCE will evaluate the state of its circuits in high-risk areas. If it finds an unacceptable risk in a particular circuit area, it will plan to de-energize that circuit when necessary. This will deprive the area served by that circuit of power until the PSPS conditions diminish.

Customers who don't live in high fire risk areas may also be affected because of the way the electrical grid is interconnected.

There are five SCE circuits providing service to the City and the surrounding region: Ferrara, Faro, Parina, Santorini, and Tully. While the Ferrara circuit primarily serves Upland the remaining circuits can potentially impact portions of the city should a PSPS event occur in the greater region and neighboring cities.

The City faces potential PSPS events in these areas. This potential is exacerbated during the hot and dry summer/fall months, especially when significant Santa Ana wind events occur. The City needs to anticipate and prepare for the potential effects of these events, including power degradation, an influx of people from neighboring communities/cities affected by power loss and/or evacuation, and increased calls for service.

PAST EVENTS

Power Failure

Due to maintenance actions or infrastructure faults, small-scale power failures frequently occur throughout Southern California. On several occasions, Upland has lost power due to human-caused errors and natural hazards. These small-bore events may affect a few dozen to a few hundred people, typically for a few hours.

The most damaging power failures tend to occur on a regional scale, affecting Upland residents and businesses depending on the location of the failure. California has experienced some major statewide and regional energy failures due to various reasons, including:

- **December 1982 (near Tracy, California):** Loss of a transmission tower, two 500-kV lines, and a pair of 230-kV lines. Five million people were affected. (Equipment failure)[53]
- **October 1989 (Loma Prieta Earthquake):** Loss of substations; 1.4 million people impacted. (Seismic event)[54]
- **August 1996 (region):** Cascading impacts from loss of power from 1996 North American Blackouts.[55]
- **December 1998 (San Francisco):** Loss of substations, impacting 350,000 buildings and 940,000 people. (Infrastructure failure, human error)[56]
- **2000 (statewide):** Power outages. (electricity crisis)[57]
- **2011 (Southwest Blackout):** Cascading impacts from the loss of power from the 23 distinct events on 5 separate power grids impacted 1.4 million people. This was the largest power failure in California history.[58]
- **July 2017 (Los Angeles):** An explosion at a power plant caused widespread outages in San Fernando Valley.[59]

Public Safety Power Shutoff

PSPS-related power losses have become a regular event during fire events throughout California and are nearly too many to mention. The latest major examples happened during the January 2025 Eaton and Palisades fires, when up to 1.2 million Los Angeles County residents were without power on January 8. Additional fires and PSPS activations in Ventura, Orange, San Bernardino, Riverside, and San Diego counties affected more than 2.1 million customers at 11:30 a.m. that day.[60] Hundreds of thousands of people remained without electrical service until late in January.

[53] “The 3 Worst Power Outages in the History of the U.S”. https://www.a-1-electric.com/the-3-worst-power-outages-in-the-history-of-the-u-s/

[54] Eguchi, R. T.; Seligson, H. A. (1994), "Lifeline perspectives" Practical lessons from the Loma Prieta earthquake, National Academies Press.

[55] Venkatasubramanian, Mani V. (2003-08-20) "Analyzing Blackout Events: Experience from the Major Western Blackouts in 1996."

[56] “Technician's error caused 1998 outage” https://www.sfgate.com/bayarea/article/Technician-s-error-caused-1998-outage-1-death-2595806.php

[57] Sweeney, James L. 2002. "The California Electricity Crisis: Lessons for the Future." https://www.nae.edu/Publications/Bridge/OurEnergyFuture/TheCaliforniaElectricityCrisisLessonsfortheFuture.aspx

[58] Medina, Jennifer (September 10, 2011) "Human Error Investigated in California Blackout's Spread to Six Million". The New York Times. https://www.nytimes.com/2011/09/10/us/10power.html

[59] DWP Plant Explosion Causes Massive Power Outage In San Fernando Valley, https://laist.com/news/dwp-plant-explosion-causes-massive

[60] https://www.kget.com/news/millions-without-power-in-southern-california-map-shows-latest-outages/

Risk of Future Events

Power Failure

Today, several mechanisms are in place to monitor, manage, and adapt to changing conditions and demands to help reduce and/or eliminate energy failures. California and regional organizations such as Cal ISO, the Federal Energy Regulatory Commission, Western Electricity Coordinating Council, North American Electric Reliability Corporation, California Public Utilities Commission, and the California Energy Commission are focused on energy production, use, and management. Each agency plays a role in planning, managing, and coordinating the allocation of energy within California.

Upland may experience a power failure anytime and anywhere throughout the year. The probability of it occurring again will always be present, as the City depends on electricity to function. As depicted in Hazard Scoring **Table 3-4** (above), the future probability of a significant power failure is considered possible, however it has between 0.01% and 0.001% of occurrence each year.

Public Safety Power Shutoff

As mentioned previously, PSPS operations have become common parts of the many wildfires California experiences each year. As electric utilities continue to be hit by multi-million-dollar fines when their equipment causes or contributes to the start of a fire, they will become more aggressive in shutting off circuits whenever conditions show the possibility of a fire near their transmission towers, transformers, and distribution lines. Those conditions aren't going away. As depicted in Hazard Scoring **Table 3-4** (above), the future probability of a PSPS event is considered likely, with an annual probability of occurrence between 0.1% and 0.01%.

Climate Change Considerations

Power Failure

Projections of changing climatic conditions through the end of the century suggest that the City should address future power failure concerns. Energy demand is not expected to increase significantly throughout the City due to compliance with updated codes and requirements; however, electricity production occurs outside the City, reducing opportunities for Upland to be energy independent. To better address power failure, Upland's current and future climate change mitigation and adaptation efforts should prioritize energy efficiency measures, generating energy locally from clean and renewable sources, and building reliability & redundancy using the latest energy storage and backup systems technologies.

Public Safety Power Shutoff

As mentioned in the *Hazard Profile: Fire* section of this document, climate change is likely to intensify and accelerate the conditions that lead to major wildland and WUI fires. This means that more, larger fires will start more often and spread farther and faster. In turn, this will force increasingly risk-averse electric utilities to use PSPS more aggressively not only to lower the fire risk, but also to lower the risk of being held liable for the start or spread of fires.

Hazard Profile: Flood

DESCRIPTION

Surface Flooding

Flooding occurs when an area becomes inundated with more water than it can drain in a specified period. This can range from a small, confined area—such as a grassy field in a park that floods for a few hours after a rainstorm—to whole city sections, such as streets becoming impassable because of floodwaters.

When floods are small, they may represent only a minor inconvenience as some recreational pathways and curb cuts become flooded. These smaller instances of flooding, where water collects into pools of standing water, are referred to as “ponding.” On the other hand, larger flood events can hamper a city’s operations. For example, if multiple streets flood simultaneously, the results could prevent emergency workers from reaching people who need assistance. Flooding can also damage critical infrastructure. For instance, unprotected electronic equipment can short-circuit if it becomes inundated by floodwaters. This could lead to outages in street lighting, traffic signals, and even city and government computer systems.

Flooding has many potential causes. In Southern California, the primary cause of flooding is usually heavy rain occurring during the winter storm season. Most precipitation in California arrives either via atmospheric rivers or the ENSO cycle. Atmospheric rivers are channels of moist air located high in the atmosphere. The ENSO cycle is a regional meteorological phenomenon in the southern Pacific Ocean consisting of ocean water and air temperature variations. These variations give rise to two distinct phases: El Niño, the warm and wet phase, and La Niña, the dry and cold phase. When the El Niño phase is active, California will likely receive higher-than-normal precipitation levels. These higher-than-normal levels of rainfall can quickly overwhelm the capacity of certain sections of land to drain the precipitation before the rainwater begins to pool effectively.

A failure in infrastructure may also cause flooding. For example, a water main or sewage pipeline that bursts could cause flooding if left uncontained for a significant period of time. A more serious infrastructure failure, such as the failure of dams, reservoirs, or levees, could cause extensive flooding.

Dam and Levee Failure

Dam, reservoir, and levee failure can result from several causes, such as earthquakes, rapidly rising floodwaters, and structural design flaws. These hazards can occur instantaneously or very gradually, depending on the source of the failure. Inundation associated with these events can cause loss of life, damage property, and result in other impacts, such as displacement of persons residing in the inundation path and loss of critical infrastructure.

LOCATION AND EXTENT

Surface Flooding

The Federal Emergency Management Agency (FEMA) designates which areas in the United States are susceptible to flooding and how likely they are to experience flooding. FEMA uses a complex classification system to categorize the level of risk for each section of land. The two most well-known measures of flood event likelihood are the 100-year flood and 500-year flood zones. These designations don't refer to floods that occur every 100 or 500 years but to the likelihood of occurring yearly. For example, a 100-year flood zone has a 1 in 100—or 1% chance—of occurring in any given year, while a 500-year zone has a 1 in 500—or 0.2% chance—of occurring in any given year. These likelihood measures are combined with each locale's specific geography to produce specific flood "zone" designations. **Table 3-13** shows a detailed list of all the flood zone categories used by FEMA.

TABLE 3-13: FEMA FLOODPLAIN ZONES

Zone	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.

FEMA also uses Base Flood Elevation (BFE) to determine the minimum depth of the floodwaters during one of these flood events. For example, an area with a three-foot BFE can expect to see a minimum floodwater depth of three feet with potentially additional depth in particularly severe flood events.

FEMA has designated most of Upland as lying within Zone "X," generally meaning the City isn't in danger of a 500-year flood. The City is at risk from the kind of urban flooding caused by unusually high amounts of rain, overwhelming the storm drains and flood control channels.

The City of Upland participates in the National Flood Insurance Program (NFIP) with FEMA through annual mapping review and building compliance activities. The City continues to maintain compliance with the National Flood Insurance Program.

Table 3-14 identifies relevant data regarding Upland from the NFIP.

TABLE 3-14: NFIP DATA FOR UPLAND

Total Number of Policies:	**23**
Total Premiums:	$17,861
Coverage in Force:	$7,640,000
Total Number of Closed Paid Losses:	19
$ of Closed Paid Losses:	$184,044.96
# of Repetitive Loss (RL) Properties	1
# of Severe Repetitive Loss (SRL) Properties	0
CRS Class Rating	—
Source: FEMA (https://www.fema.gov/about/openfema/data-sets#nfip), 2025	

Figure 3-12 depicts the city's 100-year, and 500-year flood zones as mapped by FEMA.

Dam and Levee Failure

Inundation from the following dams and reservoirs could potentially result in flooding in Upland in the event of failure.

The San Antonio Dam, located at the northwest corner of San Antonio Heights, is owned and operated by the Los Angeles District, U.S. Army Corps of Engineers. It's normally empty except during or immediately after periods of significant runoff. Inundation of Upland due to dam failure is considered unlikely unless dam failure occurs due to a combination of two relatively rare events: significant seismic activities on the Cucamonga Fault and unseasonal precipitation.

Other potential threats of water release come from four Ontario owned/operated water reservoirs located within Upland's city limits:

- 13th Street and Campus Avenue
- 8th Street and Campus Avenue
- Euclid Avenue and 8th Street
- Fern Avenue and 8th Street

Figure 3-13 shows the projected inundation zones associated with uncontrolled releases from San Antonio and other local dams.

Figure 3-12. FEMA-Designated 100- and 500- Year Flood Zones in Upland

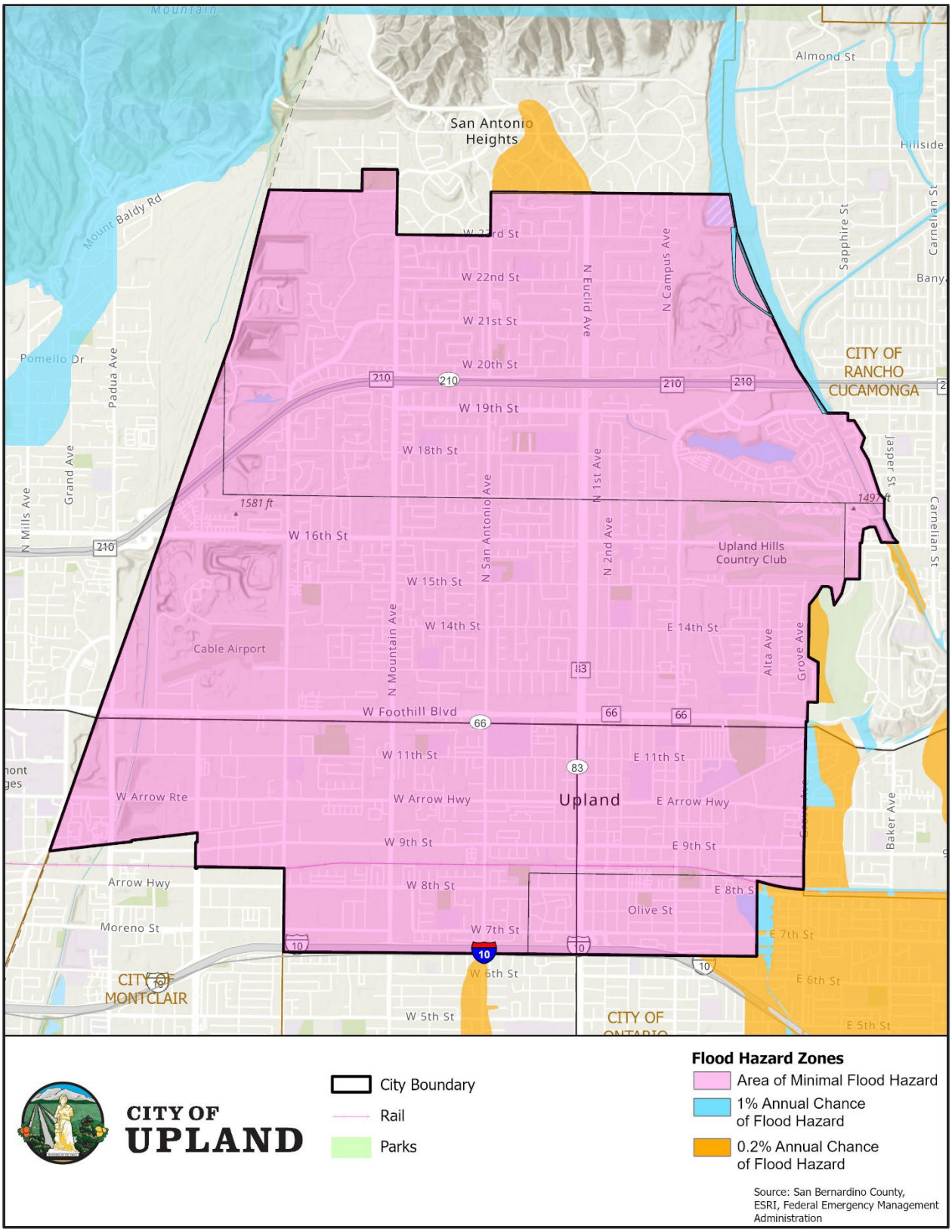
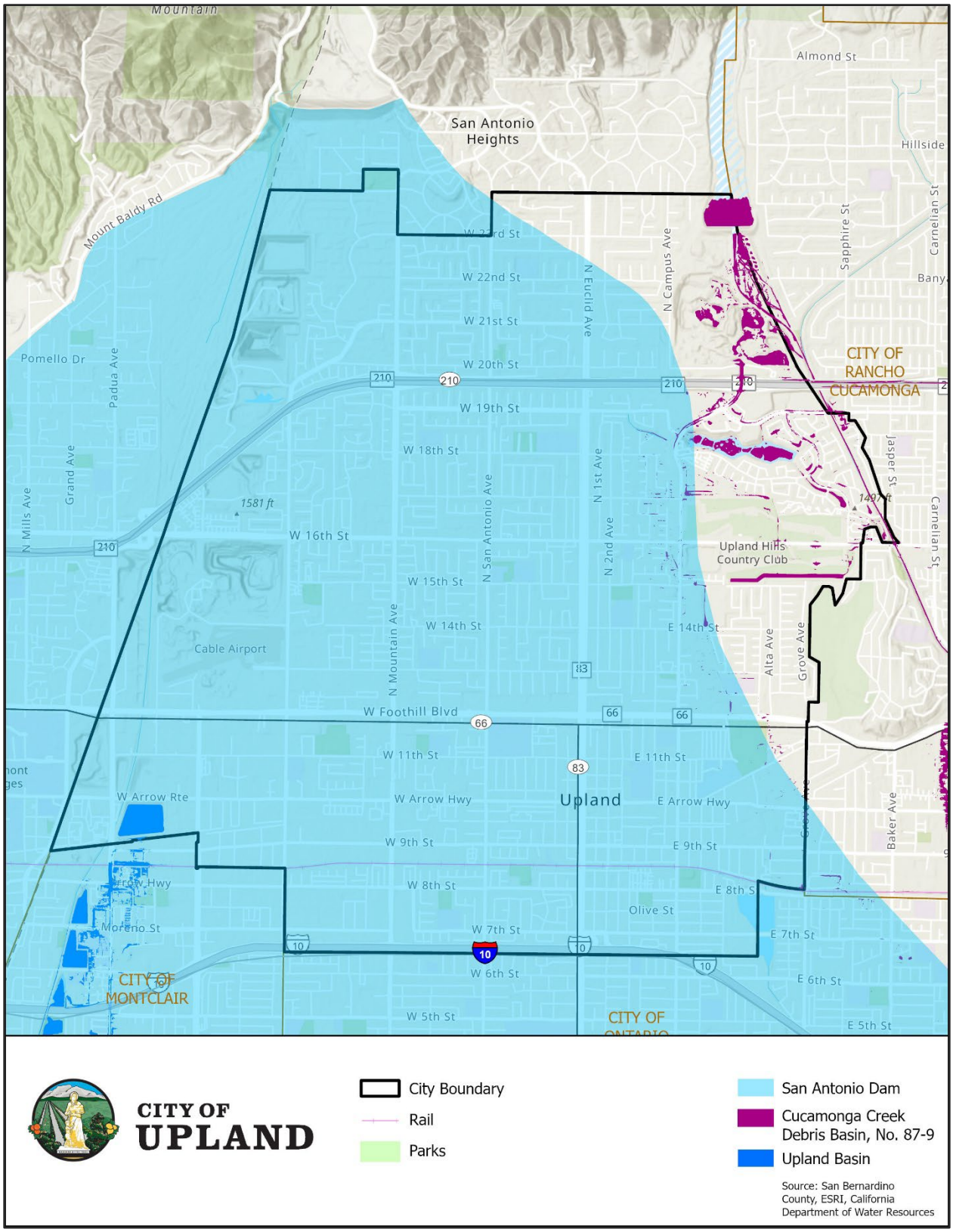


Figure 3-13. Projected Dam Inundation Zones In and Around Upland



PAST EVENTS

Surface Flooding

Upland has experienced repeated flooding incidents resulting from unusually high volumes of rain falling in a short period. Two occurrences in 2016 and 2019 saw flooding on Euclid Avenue and Mountain Avenue, respectively. In 2022, 9.14 inches of rain fell on Lytle Creek in the San Gabriel Mountains in the 48 hours prior to November 8, while 7.2 inches fell on San Sevane Flats nearby. Local creeks filled, joining the runoff from significant rains on the 8th (Ontario Airport reported 1.61 inches on that day) and causing storm channels to overflow. San Bernardino Fire reported making swift-water rescues in Devore, Upland, and Ontario. At least one person drowned during the storm.[61]

Ponding events can occur on any flat surface where sufficient drainage is unavailable. These include parking lots, landscaped areas, lawns, or roadways. Since ponding is so small in scale, it's impossible to predict exactly where in the City they will occur or how severe they will be.

Dam and Levee Failure

California's dam infrastructure varies in age (some are decades old, while others are more recently constructed), type, and size. While there have been no recorded dam failure events in Upland, there have been several catastrophic dam failure events in California.

- **San Francisquito Canyon Dam.** One of the earliest dam failures in California history. The dam experienced a structural failure because of insufficient geotechnical engineering analysis, leading to inadequate construction by the then Los Angeles Bureau of Water Works and Supply. At midnight on March 13, 1928, the 205-foot-tall structure failed catastrophically, unleashing a 120-foot-high wave of water traveling 18 miles per hour down the San Francisquito 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. Victims' bodies were reportedly recovered from the ocean as far south as the Mexican border. The disaster is considered one of the worst engineering failures in US history.[62]
- **Baldwin Hills Dam.** 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 was breached. With the cooperation of local law enforcement, they successfully evacuated and saved nearly 1,500 people downstream from the reservoir. Five lives were lost, 65 homes were destroyed, and nearly $11 million worth of property damage was incurred.[63]
- **Brea Dam.** The Brea Dam failed on February 22, 2005, following an extensive episode of winter rains, causing water to spill over its crest. The Fullerton Golf Course and

[61] Floodlist.com. "USA – 1 Dead, 2 Missing After Record Rain Triggers Floods in California." https://floodlist.com/america/usa/floods-southern-california-november-2022

[62] Riley, K. March 2018. 90 Years Later, the St. Francis Dam Failure Remains a Vital Safety Lesson. Association of State Dam Safety Officials. https://damsafety.org/sites/default/files/files/StFrancis_DecadeAnniv%202018.pdf

[63] Association of State Dam Safety Officials. Case Study: Baldwin Hills Dam. https://damfailures.org/case-study/baldwin-hills-dam/

sections of Bastanchury Road were flooded with water, but no lives were lost. The golf course was damaged, and the floodwaters eroded an adjacent storm channel.[64]

- **Oroville Dam.** In February 2017, the collapse of concrete in the main spillway caused a 60-foot-deep hole to develop in the lower third of the spillway during normal operations undertaken to lower the reservoir before a moderately large storm. A subsequent storm and the inability to fully use the primary spillway led to the filling of the reservoir and its unlined (natural) emergency spillway for the first time. After two days of usage, erosion of the unlined hillside and head cutting (erosion upstream towards the earthen dam), as well as concerns regarding the stability of the emergency spillway, caused an evacuation of nearly 200,000 people downstream. This prompted immediate repairs and a re-evaluation of this dam facility and many others throughout the State of California.[65]

Risk of Future Events

Surface Flooding

Localized instances of ponding occur at least annually or multiple times a year in cities across Southern California. During drought periods, precipitation levels may decrease and lower the likelihood of ponding. In most years, though, it is almost certain that Upland will experience some type of flood event. Larger-scale flood events have been rare in Upland. However, Upland could experience some degree of large-scale flooding with inundation levels greater than one foot in depth during a particularly severe rainstorm or after a dam failure. All expectations are that the probability of floods/storms occurring again in the future is likely. As discussed in Hazard Scoring **Table 3-4** (above), there's a probability of between 0.1% and 0.01% chance of a flood occurring annually.

Dam and Levee Failure

Due to the presence of several dams and reservoirs near Upland, areas of the City could be at risk of inundation should a significant dam failure occur. The potential consequences of dam failure are death or injury, people being 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 U.S. Army Corps of Engineers evaluates, and rates dams based on confirmed or unconfirmed safety issues, the probability of failure, and the potential consequences. Due to embankment erosion, the Army Corps of Engineers Dam Safety Program has given the structure a DSAC II rating, which means it has a high risk of failure without remediation efforts. As depicted in Hazard Scoring **Table 3-4** (above), the probability of dam/levee failure occurring is unlikely with an annual chance of occurrence of less than 0.001%.

[64] Rancho Santiago Community College District. nd. Part IV-D – Dam Failure. https://rsccd.edu/Departments/Risk-Management/Documents/Risk%20Management/IV-D%20Dam%20Failure.pdf

[65] California Office of Emergency Services. 2023. California State Hazard Mitigation Plan. https://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/state-hazard-mitigation-plan

CLIMATE CHANGE CONSIDERATIONS

Surface Flooding

Climate change is expected to exacerbate the conditions leading to Upland's urban flooding. Climate change will cause more intense local, regional, and global weather patterns, intensifying atmospheric rivers. At this time, it is unknown exactly how climate change will impact ENSO frequency, but its effects are anticipated to become more intense. Winter storm precipitation amounts in Southern California will increase based on atmospheric rivers and ENSO changes. This increases the likelihood of an exceptional rain event in Upland that could overwhelm the capacity of the region's flood control system to contain and drain all the precipitation.

Due to climate change, droughts are also expected to increase in length and frequency. Soils dried by extensive drought periods are less able to absorb and drain water, likely increasing flood possibility. Overall, climate change is expected to create conditions that will raise the likelihood of flooding in Upland.

Dam and Levee Failure

Climate change could increase the risk of dam failure in the future. More intense rainstorms may increase the likelihood of reservoir infrastructure becoming overwhelmed, including the dams that control floodwaters from inundating Upland and the rest of San Bernardino County. Indirectly, increased climate change-induced rains may cause more erosion, compromising dams' structural integrity and the foundation on which they sit.

CHAPTER 4 –
THREAT AND VULNERABILITY

Each of the hazards discussed in **Chapter 3** can have varying effects on different populations and community assets in Upland. For example, while an extreme heat event will be equally severe across all of Upland, some people may be harmed more than others. This chapter analyzes how various hazard conditions may affect Upland, and which populations and community assets face greater threats.

Threat Assessment Process

The threat assessment process looks at the harm that a hazard may cause to three different groups: the physical threat to key facilities, the threat to vulnerable populations, and the threat to any other community assets (noncritical facilities, key services, etc.).

Critical Facilities and Facilities of Concern

Critical facilities (CFs) consist of properties and structures that play important roles in government operations and their services to the community. Examples of CFs include:

- Local government offices and yards
- Community centers
- Public safety buildings, such as police and fire stations
- Schools
- Any other properties a city deems essential for its operations

CFs may also serve dual roles if a city designates them as public assembly points during an emergency. A public entity often owns CFs, but many are owned and operated privately, such as utilities and telecommunication infrastructure. FOCs are facilities that play an important role in a city but aren't critical to its function. These can be city-owned or privately owned facilities, such as senior assisted living homes, parks, and storage facilities, to name a few.

The HMPC identified 87 CFs and 107 FOCs in Upland that fall into three categories based on their function or characteristics. **Table 4-1** shows the number of CFs and FOCs in each category, the total estimated value of the facilities in each category, and examples of the facilities in each category. Appendix D has a complete list of the CFs and FOCs. **Figure 4-1** displays the location of the CFs and FOCs in Upland.

The potential loss value is the total insured value of the CFs that fall within the hazard zone. It is intended to estimate a replacement cost if the property is completely or severely damaged. The actual repair costs could be smaller or larger than the provided estimate. The data relies on the City's insured asset values; therefore, information about facilities not owned by the City isn't shown (e.g., bridges, private buildings). In some instances, replacement cost information wasn't made available. Where this occurs, "N/A" is used in the table.

TABLE 4-1: CRITICAL FACILITIES AND FACILITIES OF CONCERN			
	Number of Facilities		
Type	Critical	Concern	Potential Loss
City facility	23	2	$33,997,380
Community Center/Facility	0	6	$11,450,650
Infrastructure	64	0	$76,640,650
Medical Facility	0	5	**
Parks Facility	0	23	$5,811,980
Schools	0	17	**
Transportation Infrastructure	0	4	$1,340,900
Other	0	50	$42,794,320
TOTAL	**87**	**107**	**$172,035,880**
* Based on the City of Upland insured replacement values ** Replacement values are unavailable as they are not City-owned.			

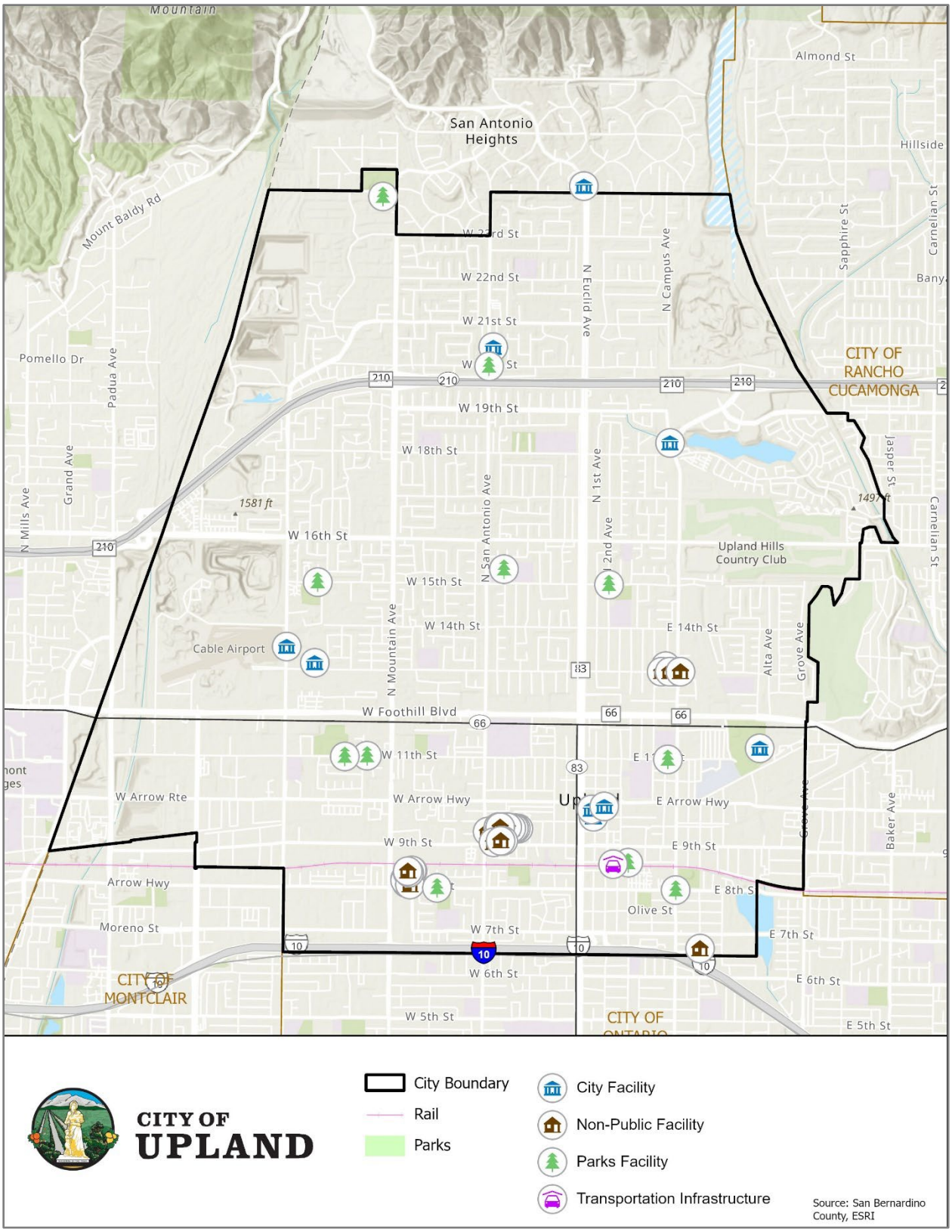
Based on the available data provided by the City, there's a minimum of $172,035,880 worth of City-owned assets. The greatest potential for loss among the City-owned assets comes from the "Infrastructure" category. The next category with the greatest loss potential is the "Other Facilities of Concern" category, followed by the "City Facility" category.

To better understand the magnitude of impacts, this Plan identifies representative percentages of potential impact based on the total valuation of City assets. For planning purposes, it's reasonable to assume that impacts wouldn't exceed 50% of the total asset value citywide. The following are parameters to help understand how much a proposed investment/improvement compares to the existing assets within the City:

- 1% Impact: $1,720,359
- 5% Impact: $8,601,794
- 10% Impact: $17,203,588
- 20% Impact: $34,407,176
- 50% Impact: $86,017,940

The likelihood of simultaneous 100% damage to all facilities is extremely remote. Most impacts are anticipated to be isolated to specific locations based on the hazard. This estimate doesn't include the value of the City's underground infrastructure and surface drainage facilities.

Figure 4-1. Critical Facilities and Facilities of Concern



VULNERABLE POPULATIONS

Factors such as age (children or elderly residents), physical and/or mental condition, socioeconomic status, access to key services, and many other factors affect the ability of people to prepare for and protect themselves and their property from a hazard event. Even though some hazard events may impact all parts of Upland equally, people may experience the impacts differently. Higher-income households, for instance, are more likely to afford the cost of retrofitting their homes to resist flooding or move to a location that's less prone to flooding than a lower-income household. As a result, a higher-income household is less likely to experience significant damage during a flood event than a lower-income household, even if the same amount of rain falls on both.

A social threat analysis examines how hazard events are likely to impact different demographic populations in Upland and where these different populations live in the City. This includes assessing whether the people in an area of an elevated hazard risk are more likely than the average person to be considered a threatened population. The social threat analysis uses the following criteria to assess the threat to vulnerable populations:

- **Disability status:** Persons with disabilities may have reduced mobility and experience difficulties living independently. As a result, they may have little or no ability to prepare for and mitigate hazard conditions without assistance from others.
- **Income levels:** Lower-income households are less likely to have the financial resources to implement mitigation activities on their residences. Another challenge may be finding adequate time to research and access educational resources about hazard mitigation strategies. Furthermore, lower-income households are less likely to have the necessary resources to move to safer areas less at risk of being impacted by a hazard. The national poverty limit standard for the U.S. for a four-person family is approximately an income of $35,750 or less. For Orange County, the FY 2022 Low-Income Limit for a four-person family, according to Housing and Urban Development (HUD), is $108,400.
- **Seniors (individuals at least 65 years of age):** Seniors are more likely to have reduced mobility, physical and/or mental disabilities, and lower income levels, all of which may decrease their ability to prepare for and mitigate a hazard event.

Table 4-2 shows the metrics for Upland residents who meet at least one of the criteria for threatened populations.

The social threat analysis also shows the threat other populations may encounter. For example, people experiencing homelessness or people without access to lifelines (vehicles or communication networks) may experience greater hardship in evacuating or recovering from a disaster. Since data for these groups aren't readily available, there's no definitive way to determine the number of people in areas of elevated risk. This assessment will discuss how these other threatened groups may also be affected on a general level.

Table 4-2: Upland Vulnerable Population Metrics	
Vulnerable Population Metric	**Community-Wide Data**
Population	80,710
Households	28,775
Median household income	$108,029
Renter households	43.1%
Percentage of households with at least one person living with a disability	24.7%
Percentage of households living under the poverty limit	11.2%
Percentage of households with one-member aged 65+	31.0%
Area affected by hazard	15.67 sq miles
Sources: 2018-2022 U.S. Census Bureau American Community Survey; 2024 U.S. Census Bureau Estimates	

Data Limitations and Notes on Vulnerability Tables

Due to data limitations, the data comparing the hazard zone population with the citywide population comes from two separate sources. The citywide data comes from the U.S. Census Bureau's American Community Survey (ACS); the hazard-zone population data comes from ESRI's Business Analyst reports. As a result, there may be minor discrepancies when comparing the two data sets. The data relies on readily available 2024 U.S. Census Survey Projections and the 2018–2022 U.S. ACS. **Chapter 2** identifies additional census-related information, which may differ from the data in this Chapter based on the data available for the analysis.

Other Assets

In addition to the City's designated inventory of CFs/FOCs and vulnerable populations, hazard events could threaten other important assets to Upland. These assets may include services, artistic or cultural landmarks, or local economic activities. The threat assessment describes the potential harm to these other assets based on available information.

Disaster Declaration Connections

FEMA has issued the following major disasters, emergency declarations, and fire management assistance grants (**Table 4-3)** in San Bernardino County. While none of these events directly affected the City or required the activation of the Emergency Operations Center (EOC), it should be noted that City staff did participate in online meetings with the Regional EOC and regularly updated WebEOC (software platform for emergency management) with new information. Any incident type not listed in the table indicates that there were no declarations in San Bernardino County of that incident type (since 2020). Past events identified in this Plan have been identified in connection with these events in the "Past Events" sections within each Hazard Profile located in **Chapter 3** of this Plan.

TABLE 4-3. DISASTER DECLARATIONS – SAN BERNARDINO COUNTY (2020-2025)					
Year	**Declaration Number**	**Declaration Title**	**Incident Type**	**Affected the City**	**Activated EOC or Requested PA**
2024	FM-5537-CA	BRIDGE FIRE	Fire	No	No
2024	FM-5535-CA	LINE FIRE	Fire	No	No
2024	DR-4769-CA	CALIFORNIA SEVERE WINTER STORMS, TORNADOES, FLOODING, LANDSLIDES, AND MUDSLIDES	Severe Storm	No	No
2023	DR-4750-CA	CALIFORNIA TROPICAL STORM HILARY	Severe Storm	No	No
2023	DR-4699-CA	SEVERE WINTER STORMS, STRAIGHT-LINE WINDS, FLOODING, LANDSLIDES, AND MUDSLIDES	Severe Storm	No	No
2023	EM-3591-CA	SEVERE WINTER STORMS, FLOODING, AND MUDSLIDES	Flood	No	No
2023	EM-3592-CA	SEVERE WINTER STORMS, FLOODING, LANDSLIDES, AND MUDSLIDES	Flood	No	No
2021	DR-4569-CA	WILDFIRES	Fire	No	No
2021	FM-5381-CA	BLUE RIDGE FIRE	Fire	No	No
2020	DR-4482-CA	COVID-19 PANDEMIC	Biological	Yes	Yes
2020	EM-3428-CA	COVID-19	Biological	Yes	Yes
2020	FM-5350-CA	EL DORADO FIRE	Fire	No	No
2020	FM-5325-CA	APPLE FIRE	Fire	No	No
2020	FM-5301-CA	HILLSIDE FIRE	Fire	No	No
DR = Major Disaster EM = Emergency Declaration FM = Fire Management Assistance Grant					
In 2025, Southern California experienced catastrophic wildfires in Los Angeles County (Palisades and Eaton Fires) that were identified in Disaster Declarations, however San Bernardino County was not impacted directly by these incidents.					

Threat Profile: Seismic Hazards

Physical Threat

Fault Rupture

The City has one AP Zone identified by the California Department of Conservation: the Cucamonga Fault, which cuts through San Antonio Heights. **Figure 4-2** depicts this hazard zone. No CFs or FOCs are located within the designated 500-ft. AP hazard buffer zone. Any future development in these areas could be at risk of damage from fault rupture should there be a large seismic event within the AP zone.

Seismic Shaking

Many physical assets in the City are estimated to experience the same seismic shaking intensity, ranging from 0.8501 to 1.05g (shaking intensity in relation to earth's gravity). Therefore, all facilities could be damaged during a significant seismic event, which could be extremely costly for the City. If all facilities were damaged at the same time during a seismic shaking event, it can be assumed that the City would incur a percentage of the maximum potential loss of its physical assets. Assuming 20% of the City's assets are impacted, this potential loss could amount to over $45 million. Underground physical assets, like pipelines or utilities, could be damaged if the intensity of the seismic shaking is severe enough. In such a scenario, natural gas and water delivery service to Upland homes and businesses would not be available until repairs are completed. **Table 4-4 and Table 4-5** display the potential scenario and losses incurred should shaking reach the described threshold. **Figure 4-3** displays the CFs and FOCs within the City's seismic shaking potential hazard zones.

Table 4-4: Critical Facilities & Facilities of Concern (Seismic Shaking 0.9501g)

	Critical Facilities		Facilities of Concern	
Type	**Number**	**Potential Loss***	**Number**	**Potential Loss***
City facility	21	$24,151,040	2	$8,733,340
Community Center/Facility	0		6	$11,450,650
Infrastructure	48	$51,159,310	0	**
Medical Facility	0		5	**
Parks Facility	0		17	$5,209,900
Schools	0		16	**
Transportation Infrastructure	0		4	$1,340,900
Other	0		50	$42,794,320
Total	**69**	**$75,310,350**	**100**	**$69,529,110**

* Based on the City of Upland insured replacement values

**Replacement values are unavailable as they are not City-owned.

Figure 4-2. CFs and FOCs Located Near Fault Rupture Zones

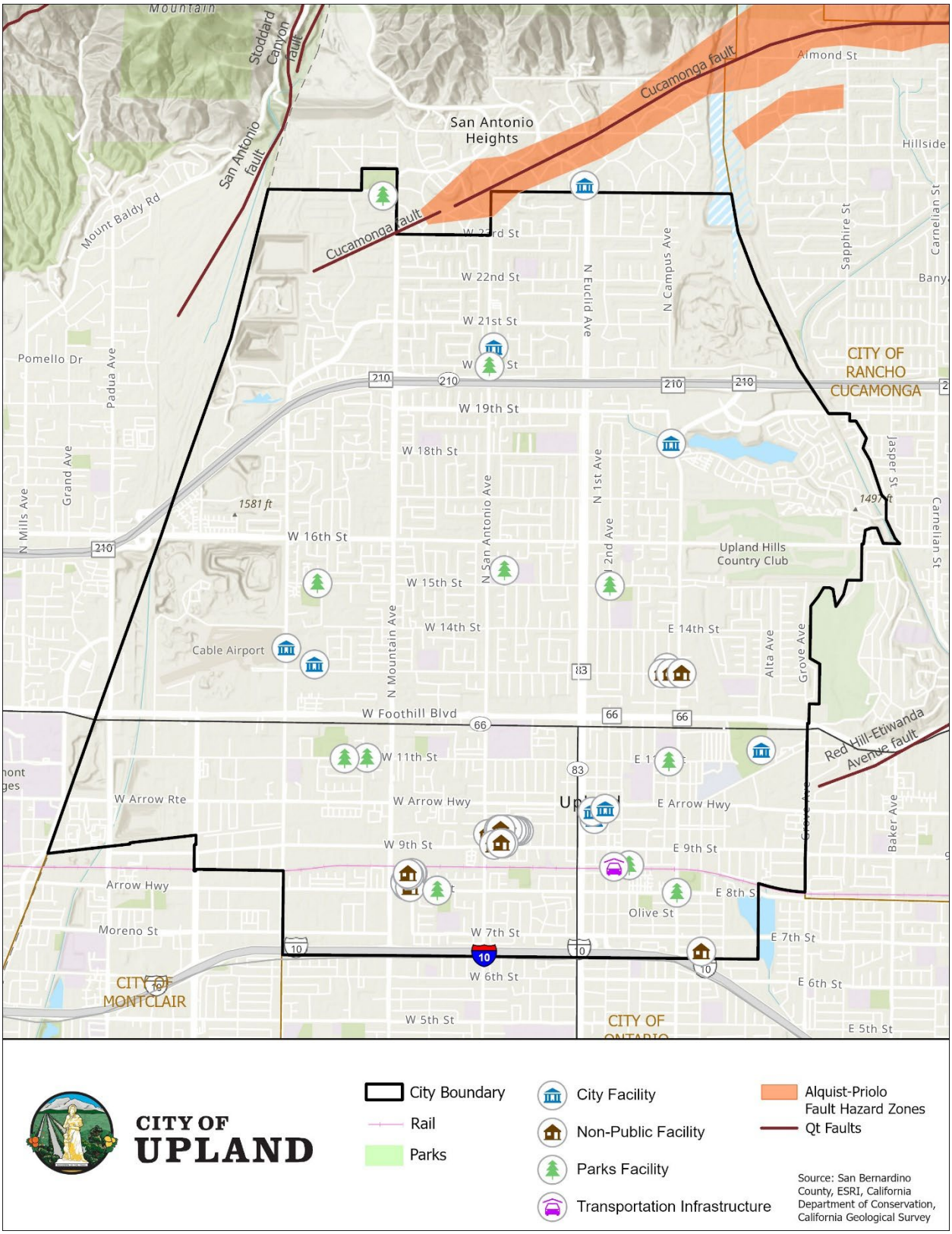


Figure 4-3. CFs and FOCs Located in Potential Seismic Shaking Hazard Zones

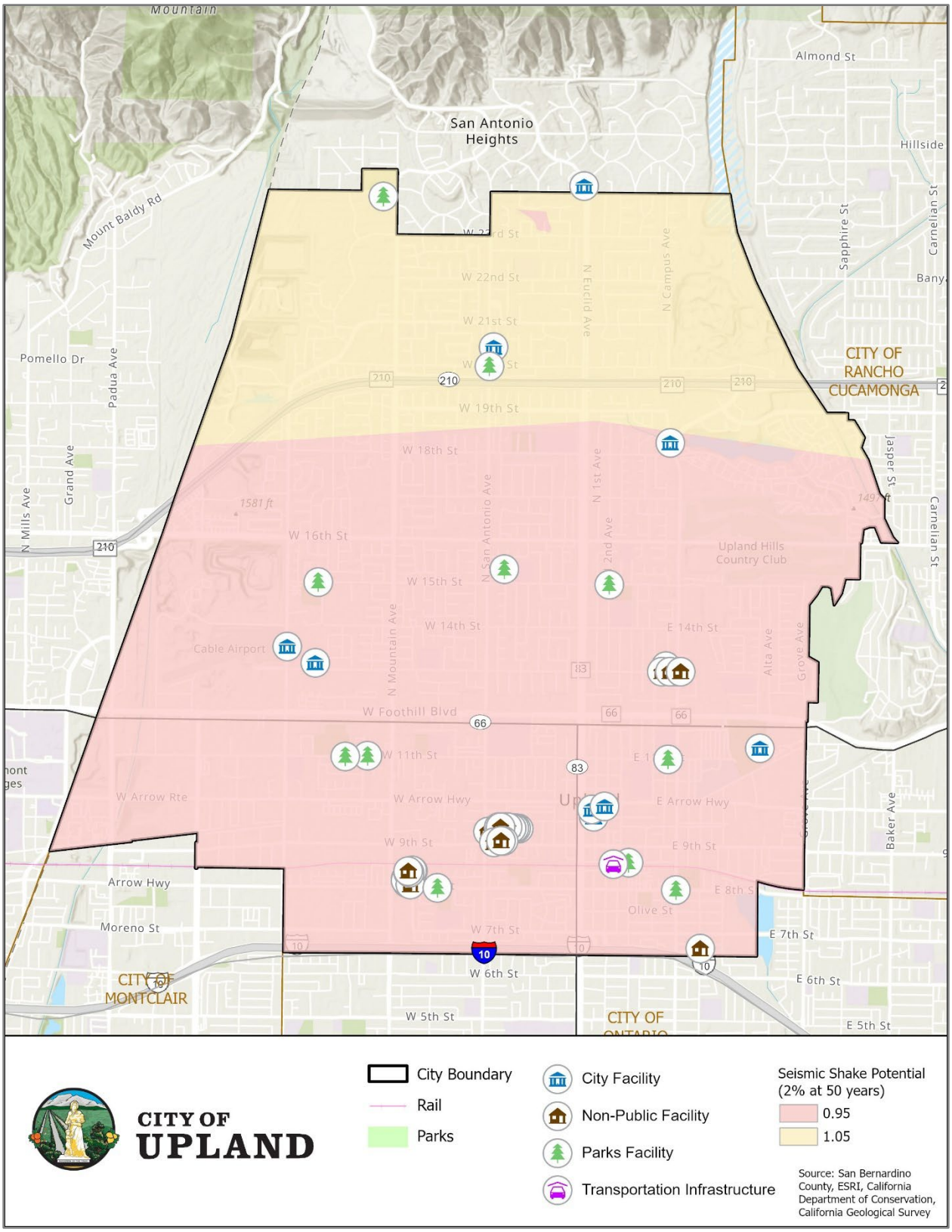


TABLE 4-5: CRITICAL FACILITIES & FACILITIES OF CONCERN (SEISMIC SHAKING 1.05G)				
	Critical Facilities		Facilities of Concern	
Type	Number	Potential Loss*	Number	Potential Loss*
City facility	2	$1,113,000	0	
Infrastructure	16	$25,481,340	0	
Parks Facility	0		6	$602,080
Schools	0		1	**
Total	**18**	**$26,594,340**	**7**	**$602,080**
* Based on the City of Upland insured replacement values **Replacement values are unavailable as they are not City-owned.				

SOCIAL THREAT

The risk of a seismic event is a danger to all Upland households and businesses; however, some populations are at higher risk than others.

Fault Rupture

To analyze the social threat associated with fault rupture, the City identified the populations within the AP Zone, covering approximately 0.55 square miles (3.5%) of the City. These areas include households with higher median household incomes, higher percentages of people living with a disability, and high percentages of households with one-member aged 65+. **Table 4-6** profiles this hazard-threatened population.

TABLE 4-6: FAULT RUPTURE (500-FT BUFFER ZONE) THREATENED POPULATIONS		
Threatened Population Metric	Living within Fault 500-ft. Buffer Zone	City of Upland
Population	2,079	80,710
Households	789	28,775
Median household income	$150,479	$108,029
Renter occupied households	12.7%	43.1%
Percentage of households with at least one person living with a disability	36.0%	24.7%
Percentage of households living under the poverty limit	8.1%	11.2%
Percentage of households with one-member aged 65+	46.7%	31.0%
Area affected by hazard	0.55 sq. miles	15.67 sq. miles
Sources: 2018–2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates		

Seismic Shaking

Seniors, pregnant women, and persons with disabilities may be at higher risk in a seismic shaking event as they may have limited mobility, which could complicate or prevent safety actions (such as drop-cover-hold on) and delay or prevent safe evacuation. Renters and people with lower incomes are also more threatened by seismic shaking, since they may live in homes that are not properly retrofitted to withstand the stresses of a seismic event. These groups may not have the financial resources (or, if renting, the legal responsibility) to repair their homes or move to new housing if their homes become uninhabitable.

Table 4-7 compares the population within the seismic shaking hazard zones to the citywide population. Approximately 14.6% of Upland residents (14.3% of Upland households) live within the 0.95 to 1.05g seismic shake zones. The households at risk are on the whole richer (with a median income 47.5% higher than that for the City as a whole), far more likely to own their home, and roughly 41% more likely to have a member aged 65 years or older.

TABLE 4-7: SEISMIC SHAKING THREATENED POPULATIONS

Threatened Population Metric	Seismic Shaking (0.9501 to 1.05g)	City of Upland
Population	11,779	80,710
Households	4,130	28,775
Median household income	$159,370	$108,029
Renter occupied households	9.8%	43.1%
Percentage of households with at least one person living with a disability	28.8%	24.7%
Percentage of households living under the poverty limit	5.4%	11.2%
Percentage of households with one-member aged 65+	43.7%	31.0%
Area affected by hazard	4.25 sq. miles	15.67 sq. miles

Sources: 2018–2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates

OTHER THREATS

Fault Rupture

Seismic events that cause surface fault rupture tend to damage roads and structures in impact areas. The length of rupture is typically a component of the seismic event's magnitude. The stronger the event, the greater the distance that rupture can occur. Strong events can create a larger problem with other identified hazards, such as dam inundations and flooding.

Seismic Shaking

Most earthquake-related property damage is inflicted through seismic shaking. It's the force that damages or destroys buildings, wrecks roads and bridges, disables infrastructure networks, and injures or kills people. All else being equal, the more intense the shaking, the worse the damage.

Earthquake early-warning systems afford utility operators additional time to shut off gas, water, and power transmission to try to control potential leaks following a seismic event. Authorities may also have enough warning to halt the use of elevators or bridges, or to safely shelter or evacuate workers from hazardous locations. This allows utility providers to remain inactive, reducing further impact, until authorities determine it's safe to reactivate service. The length of this time will vary depending on the event's magnitude and distance from the City. A significant earthquake would necessitate utilities to remain off for a few hours or several days. The City and the region would lose the economic activity that normally occurs. Structures such as downed telephone poles or power transmission towers may also block roadways and prevent first responders from reaching victims or evacuees who need assistance.

Changes in Population and Land Use Development

Fault Rupture

According to the current Land Use Element, the City's anticipated population growth over the next several years includes targeted development along Mountain Avenue, which reaches north into San Antonio Heights. The Cucamonga Fault trace crosses Mountain Avenue at West 23rd Street. Depending on the nature and location of this development, Upland's vulnerability to earthquake-related hazards may increase.

Seismic Shaking

Based on the current Housing Element data, the City's anticipated residential/commercial growth over the next five years is anticipated to be concentrated in several target areas in the central and southern parts of the City. In that these areas include older buildings and infrastructure likely to be replaced or renovated, this development may modestly decrease Upland's vulnerability to earthquake-related hazards. However, it's also likely that this development may be denser than what exists now, increasing the number of residents and businesses exposed to the seismic shaking hazard.

Climate Change Vulnerability

Fault Rupture

Climate change is not expected to directly affect the occurrence or magnitude of fault rupture, which is driven by tectonic processes. However, climate change may indirectly increase the consequences of fault rupture events.

More frequent extreme temperatures, drought, and intense precipitation can place additional stress on aging infrastructure, soils, and slopes near fault traces, potentially increasing damage severity and complicating post-earthquake repairs. Climate-related extremes may also reduce emergency response and recovery capacity, particularly if a seismic event occurs concurrently with or immediately following a heat wave, wildfire, or flooding event. These compound emergencies could strain response resources and prolong recovery.

Seismic Shaking

Climate change is not anticipated to influence seismic shaking intensity or frequency but is expected to increase vulnerability to its impacts.

Rising temperatures and extreme heat may accelerate the deterioration of buildings, transportation systems, and underground utilities, increasing the potential for damage during seismic shaking. Climate-related stress on power, water, and communications systems may also extend service disruptions following an earthquake.

Climate change may further exacerbate social vulnerability, particularly for seniors and individuals with disabilities, if seismic events coincide with extreme heat or prolonged utility outages. Additionally, earthquakes occurring during drought or heavy precipitation periods may trigger cascading hazards, such as wildfire ignitions, flooding, or landslides, increasing overall response complexity and losses.

Threat Profile: Fire

PHYSICAL THREAT

Structures and physical assets in Upland that aren't equipped with fire suppression technology or fire mitigation design features are at risk of fire. Generally, these buildings are older, may not be well maintained, and may not meet current code requirements and regulations. While all structures can be affected by wildland or urban fires, older buildings may have increased vulnerability to these hazards.

Wildland Fire

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped Very High Fire Hazard Severity Zones (VHFHSZ) within both the City's Local Responsibility Area (LRA) and the State Responsibility Area (SRA). The LRA is a government-designated area where a local agency, city, or county is responsible for fire protection, not the state. An SRA is where the state is responsible for wildland fire protection. **Figure 4-4** identifies Upland's wildland-urban interface (WUI) area, including the CFs and FOCs and historic wildfire perimeters in and around the City. **Tables 4-8 through 4-10** identify the CFs and FOCs within these zones. While these areas have a high degree of vulnerability to wildfire, other areas of the City may also be susceptible due to ember cast. Sometimes a wildfire ignition may occur due to power lines contacting overgrown trees, causing a spark that ignites the tree or surrounding vegetation.

Wildland / Urban Interface Fire

Given that the entire northern edge of San Antonio Heights is a VHFHSZ, as is most of the City's western border, a significant amount of Upland's developed land is at heightened risk of fire. Recent urban conflagrations such as those in Santa Rosa (2017), Lahaina (2023), and Pacific Palisades and Altadena (2025), once rare in the 20th century, are becoming more common as extreme weather events drive wildfires into urban and suburban spaces. These events have destroyed thousands of homes and businesses and killed or injured hundreds of people in a short time.

Upland is especially vulnerable to a WUI fire becoming an urban conflagration in these areas:

1) **VHFHSZ along I-210.** The western end of the zone intrudes into built-out suburban housing or the type that has proved to be especially prone to propagating wind-blown fire.

2) **VHFHSZ in San Antonio Heights.** A fire beginning in this zone, driven by downslope winds of the sort that supercharged the Palisades and Eaton (Altadena) fires, would find no natural firebreak until the I-210.

3) **Three VHFHSZs in southwest Upland.** These zones push into not only the City's industrial area, but also into older, densely developed single-family housing.

TABLE 4-8: CRITICAL FACILITIES & FACILITIES OF CONCERN (VERY HIGH FIRE HAZARD SEVERITY ZONES)

	Critical Facilities		Facilities of Concern	
Type	**Number**	**Potential Loss***	**Number**	**Potential Loss***
Infrastructure	18	$18,141,900	0	
Transportation Infrastructure	0		1	**
Total	**18**	**$18,141,900**	**1**	**

* Based on the City of Upland insured replacement values
**Replacement values are unavailable as they are not City-owned.

TABLE 4-9: CRITICAL FACILITIES & FACILITIES OF CONCERN (WUI)

	Critical Facilities		Facilities of Concern	
Type	**Number**	**Potential Loss***	**Number**	**Potential Loss***
City facility	3	$1,113,000	0	
Infrastructure	18	$12,774,060	0	
Parks Facility	0		4	$405,980
Schools	0		1	**
Total	**21**	**$13,887,060**	**5**	**$405,980**

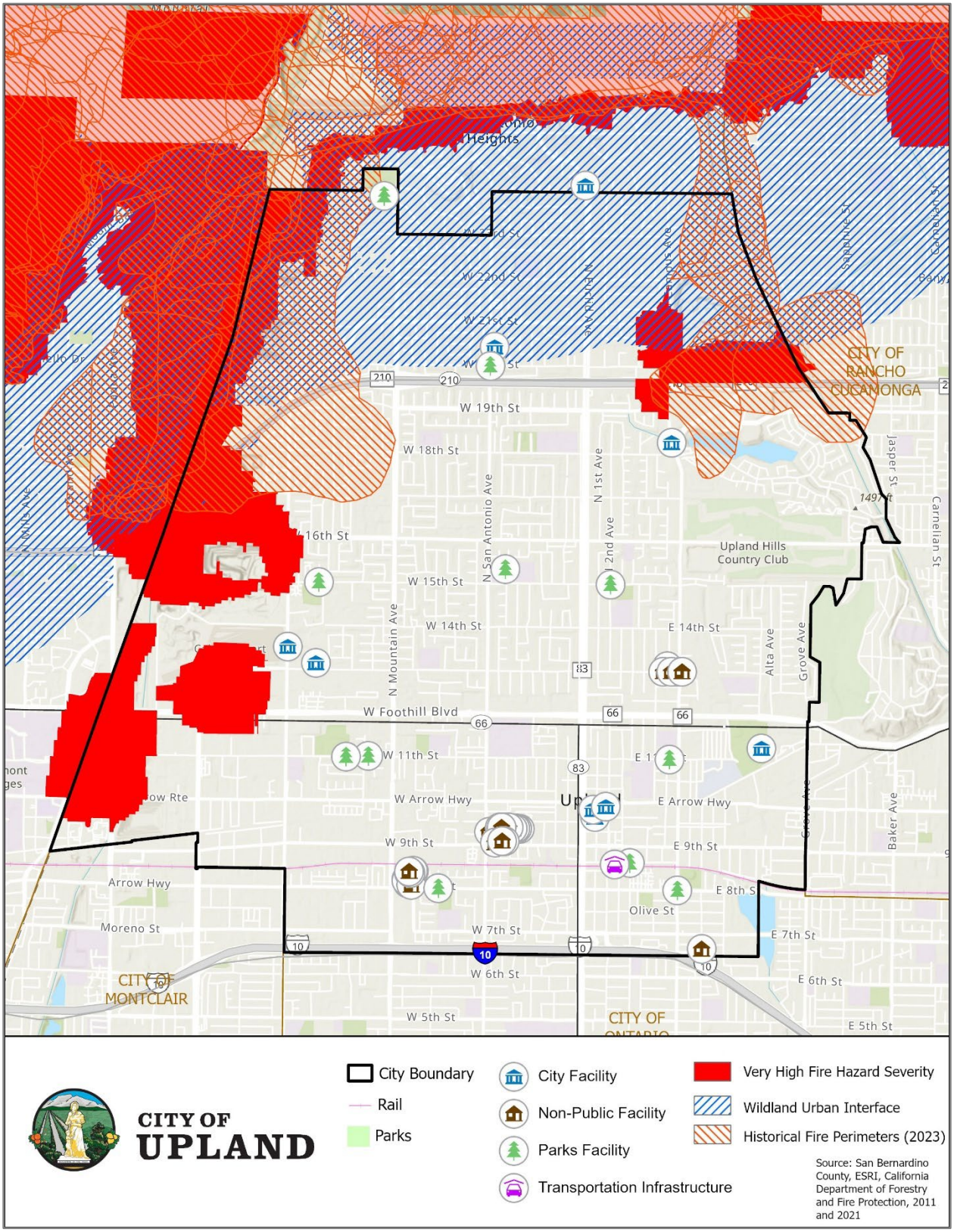
* Based on the City of Upland insured replacement values
**Replacement values are unavailable as they are not City-owned.

TABLE 4-10: CRITICAL FACILITIES & FACILITIES OF CONCERN (HISTORICAL WILDFIRE PERIMETER)

	Critical Facilities		Facilities of Concern	
Type	**Number**	**Potential Loss***	**Number**	**Potential Loss***
Infrastructure	6	$15,920,140	0	
Total	**6**	**$15,920,140**	**0**	

* Based on the City of Upland insured replacement values

Figure 4-4. CFs and FOCs Located in the Wildland Urban Interface (WUI) and Historical Wildfire Perimeters



Social Threat

A fire hazard poses an immediate threat to seniors and persons with disabilities. These groups may have limited mobility or diminished environmental awareness. For example, a senior who lives alone may not know if a fire ignites in their house until a room fills with smoke or a flashover occurs, at which point escape may be more difficult or impossible. A fire that starts in or spreads to senior residences in Upland could be highly threatening to those populations. Persons with disabilities may require special mobility devices or caregiver assistance to evacuate, which may not be readily available when a fire occurs.

Wildland Fire

Approximately 3% of Upland's population (2.9% of households) lives within a VHFHSZ, primarily within the City's western and northern portions. **Table 4-11** shows that nearly a quarter of these households have at least one person living with a disability, over 13% of these households live under the poverty line, and nearly 30% of these households have one member aged over 65+. On the other hand, these households have a much higher median income than the City as a whole.

Table 4-11: Very High Fire Hazard Severity Zone Threatened Populations

Threatened Population Metric	VHFHSZ	City of Upland
Population	2,431	80,710
Households	854	28,775
Median household income	$162,605	$108,029
Renter occupied households	18.7%	43.1%
Percentage of households with at least one person living with a disability	23.7%	24.7%
Percentage of households living under the poverty limit	13.7%	11.2%
Percentage of households with one-member aged 65+	29.4%	31.0%
Area affected by hazard	1.73 sq. miles	15.67 sq. miles

Sources: 2018–2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates

Wildland / Urban Interface Fire

Approximately 10.2% of Upland's residents live within the WUI. **Table 4-12** shows that nearly 30% of these households include at least one person with a disability, and 44.5% of these households have one member aged over 65+.

Table 4-12: Wildland / Urban Interface Fire Threatened Populations

Threatened Population Metric	WUI	City of Upland
Population	8,258	80,710
Households	3,002	28,775
Median household income	$157,213	$108,029
Renter occupied households	6.8%	43.1%

Percentage of households with at least one person living with a disability	29.5%	24.7%
Percentage of households living under the poverty limit	4.3%	11.2%
Percentage of households with one-member aged 65+	44.5%	31.0%
Area affected by hazard	2.76 sq. miles	15.67 sq. miles
Sources: 2018–2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates		

Other groups facing increased threat levels include people with lower incomes and renters. Renters make up nearly 7% of Upland's WUI households. While WUI households in general enjoy a significantly higher median income than the City as a whole, some 4.3% of these households live under the poverty line. Renters and economically disadvantaged individuals are more likely to live in substandard housing built with outdated materials known to be flammable. They may also live in housing units with improperly designed or unmaintained electrical or heating systems that could cause a fire. Renters may not possess the financial resources or authority to rebuild their homes or relocate to new homes after a fire incident.

Other Threats

Both wildfires and urban fires can consume power lines and force utility operators to shut off electrical and gas transmission activity, leading to utility outages in Upland homes and businesses. Fires or burning debris may block or surround streets, preventing residents from evacuating, and hindering emergency response crews from reaching the source of the fire. Anyone living toward the end of a cul-de-sac faces an elevated threat of being trapped if the fire occurs or spreads to the mouth of the street. Fire may use trees or vegetation in parks and open space areas to bridge what otherwise would be natural firebreaks or drive people away from what they might consider areas of refuge.

Public Safety Power Shutoffs (PSPS) are a significant issue for many communities throughout California. Multiple circuits affect the City, and the potential for large-scale events affecting residents and businesses is an ongoing concern. If a PSPS outage hits Upland's neighboring cities, Upland's resources could be strained as residents of affected areas seek refuge in communities with power; if Upland is also hit, it will face a potentially significant care-and-shelter challenge for its own residents. Outreach to residents and businesses to help them understand and prepare for these events will be an important aspect of the City's overall hazard mitigation strategy.

Changes in Population and Land Use Development

Wildland Fire

If a large, damaging wildfire were to occur, it's feasible that population patterns could fluctuate. Future land use designations, redevelopment, or new development in these areas could be restricted or prohibited, especially in the WUI and the VHFHSZ. Also, the increasing unaffordability and unavailability of fire insurance due to larger, more frequent fire losses may make building or selling homes in the WUI or VHFHSZ economically impossible.

Wildland / Urban Interface Fire

As we're seeing now in the Pacific Palisades and Altadena, a large urban conflagration can destroy thousands of homes and drive thousands more people out of their damaged homes in the span of a few hours. The experience of other mass disaster evacuations shows that people forced to live away from their homes and neighborhoods for more than a year rarely return. This could be Upland's fate: fewer residents, fewer homes, less economic activity, and a protracted recovery from a hugely traumatic event.

Climate Change Vulnerability

Climate change will likely increase the City's vulnerability to wildfire impacts. Increasing temperatures could alter the moisture content of plant materials, potentially worsening future drought conditions. More volatile climatic conditions may also encourage severe windstorms of the sort that made the Palisades and Eaton fires so difficult to control for so long.

Threat Profile: Human-Caused Hazards

Physical Threat

Hazardous Materials Release

Hazardous materials can cause damage to Upland's people and physical assets if they are released into the environment. Corrosive hazardous materials can damage the CF or FOC building exteriors. Flammable hazardous materials can start fires and cause any nearby CFs or FOCs to flash over and ignite. Generally, sites closer to the origin for releasing hazardous materials are at more risk than those further away.

Table 4-13 shows the numbers of Upland facilities threatened by a hazardous materials release within 500 feet of a site storing or using hazardous materials. The total potential loss estimated for these locations is approximately $3.7 million. **Figure 4-5** depicts these sites in relation to the City's CFs and FOCs.

Table 4-13: Critical Facilities and Facilities of Concern (Hazmat Buffer 500ft)

	Critical Facilities		Facilities of Concern	
Type	**Number**	**Potential Loss***	**Number**	**Potential Loss***
Infrastructure	3	$1,651,480	0	
Parks Facility	1	$767,440	0	
Transportation Infrastructure	1	$1,340,900	0	
Total	**5**	**$3,759,820**	**0**	

* Based on the City of Upland insured replacement values

Note that this count includes only fixed-site CFs and FOCs. Hazmat releases are a constant threat along major transportation routes such as I-10, I-210, and the railroad right-of-way. Also, upsets at businesses using or storing hazardous materials may not affect CFs or FOCs but may have a significant impact on neighboring businesses or homes.

Landfill Subsidence

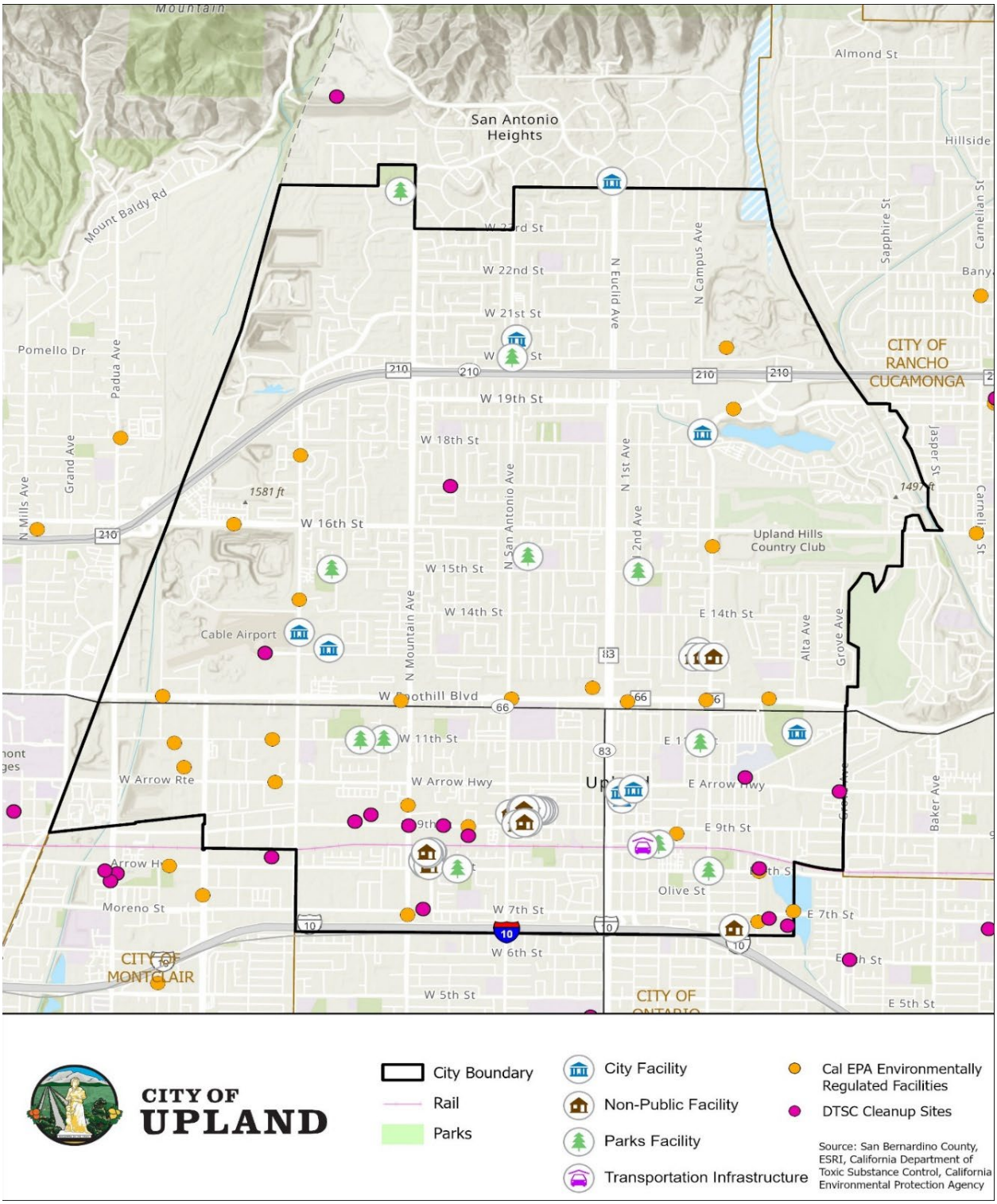
Subsidence events can result in the damage of buildings and structures causing monetary damages. The loss to owners can range depending on the actual amount of damage caused. As subsidence is not typically considered to be a sudden event, damages could be mitigated if discovered early, however there are instances of rapid sinking causing damage to building foundations, resulting in sudden collapse. Damages could also affect infrastructure such as natural gas distribution pipelines, sewer and water pipelines, or electric power conveyance lines. The damages experienced from landfill subsidence have primarily involved asphalt cracking and settlement requiring patching and site grading.

Transportation Incidents

Transportation incidents include aircraft and train crashes, high-capacity road transport (read: tour or school bus) crashes, and bulk pipeline ruptures.

- Aircraft crashes can happen anywhere, depending on the local flight paths and nearby airports. Cable Airport, located near Upland's southwest industrial area, oversees mainly general aviation traffic and small turboprop commuter charters. General aviation-related accidents typically happen on approach or departure and usually have the same impact as a bad car crash. However, the San Berardino and San Gabriel valleys are busy approach and departure routes for Ontario, Orange County, and Los Angeles International Airports, as well as business and military traffic. Wide-bodied passenger and cargo airliners regularly fly over and near Upland. Any accident involving these aircraft could end up on Upland's doorstep.
- The former ATSF rail right-of-way runs across southern Upland. Metrolink operates regular commuter rail service along this right-of-way. BNSF freight operations use the same trackway. As happened in Placentia, Upland, and elsewhere, a Metrolink/freight crash could create both a mass-casualty incident and a hazmat release in downtown Upland.
- A Southern California Gas transmission pipeline cuts across the southern edge of Upland just north of I-10.
- Heavy road traffic uses I-10 and I-210 every day. Also, semis and large-capacity buses travel on Euclid Avenue, Foothill Boulevard, and Arrow Highway. Traffic accidents involving truck-borne hazardous materials or 50-passenger buses could create a mass-casualty incident, a hazmat release, or both in crowded parts of the City.

Figure 4-5. CFs and FOCs Located Near Hazardous Materials Sites (500ft Buffer)



Cybercrime Incidents

As mentioned in **Chapter 3**, cybercrime can affect anyone, even if a particular person doesn't have a computer. Cybercriminals and cyberterrorists have attacked mobile phone networks, water purification plants, traffic control networks, public safety dispatch centers, government offices, hospitals, banks, and schools. The hazard area is the entire populated landscape in every sufficiently advanced economy on Earth.

While cybercrime and cyberterrorism typically don't cause physical damage, they often render digital systems unusable or untrustworthy. Some hacks can cause certain industrial processes to physically damage their host machinery (such as robots, valves, or equipment such as autoclaves and centrifuges). Attacks on ground, rail, or air traffic control systems can cause transportation accidents.

Mass Casualty / Fatality Incidents

There's no way to predict which of Upland's facilities or assets may be impacted by a mass casualty/fatality incident since there are so many common causes for these incidents. As mentioned earlier, MCIs/MFIs can be the result of natural or human-caused disasters, traffic accidents, hazmat releases, mass-shooting incidents, or terrorism.

While mass shooters and terrorists generally have different motives, they tend to be similarly opportunistic: any sufficiently accessible and busy soft target can be their arena. Mass shootings have occurred in any public venue one can think of. While many national security agencies persist in thinking terrorists pick their targets the way western air forces do, history has shown that the vast majority of terrorist targets are more diffuse and prosaic: cafes, theaters, shopping malls, banks, playgrounds, schools, places of worship, nightclubs, and symbols of whatever government or ideology they oppose (McDonalds and Citibank overseas; IRS offices and family-planning clinics in the U.S.).

Whatever the cause of the MCI/MFI, the cost to the City will depend on the nature and destructiveness of the incident, the level of response required, and whether Upland itself is the target or a victim of chance.

- A major airliner crash in the City may cause a large number of fatalities and substantial destruction on the ground. However, much of the response and recovery cost would be borne by the airline and federal agencies, and Upland would be in no way to blame for it.
- A mass shooting at the Colonies Crossroads shopping center, on the other hand, may cause several casualties and fatalities and little physical damage. But public fears of poor security, mistakes in incident response and control, and that in some way Upland should have "done better," could lead to a catastrophic loss of business at the center and reputational loss for the City that may take months or years to repair.

SOCIAL THREAT

Hazardous Materials Release

The threat of a hazardous materials release event affects those closest to a source of hazardous materials, including industrial sites, gas stations, gas transmission lines, or sewer mains. **Table**

4-14 shows the City's vulnerable populations living within 500 feet of hazardous materials storage/waste sites. The median household income for these site types is nearly $20,000 lower than the City as a whole. This suggests that more impoverished populations may live near hazardous materials locations, indicating potential environmental justice concerns should be considered. This data also suggests higher percentages of households with at least one person living with a disability, higher percentages living under the poverty limit, and slightly fewer percentages of households compared to the rest of the City living with at least one-member aged 65+.

Groups such as older people, low-income persons, or renters face a greater risk of exposure since they may not have the financial resources necessary to retrofit their homes against infiltration by hazardous materials or move away to a home that is further from the potential sources of hazardous materials release events. Additionally, public, and private schools, preschools, residential care, and skilled nursing facilities in this area are at risk of being impacted.

As discussed previously, Upland residents and businesses situated next to major transportation infrastructures, such as highways or major arterial streets, also face a greater threat of being affected by the release of hazardous materials, since vehicles transporting hazardous materials may release their contents into the environment if involved in a collision.

TABLE 4-14: HAZARDOUS MATERIALS THREATENED POPULATIONS (500FT BUFFER)

Threatened Population Metric	Hazardous Materials	City of Upland
Population	2,006	80,710
Households	688	28,775
Median household income	$88,844	$108,029
Renter-occupied households	56.3%	43.1%
Percentage of households with at least one person living with a disability	30.4%	24.7%
Percentage of households living under the poverty limit	9.8%	11.2%
Percentage of households with one-member aged 65+	28.0%	31.0%
Area affected by hazard	0.87 sq. miles	15.67 sq. miles

Sources: 2018–2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates

Figure 4-6 depicts the overall community health score for the City as derived from the California Office of Environmental Health Hazard Assessment (OEHHA) tool CalEnviroScreen. This mapping tool helps identify California communities that are most affected by many sources of pollution and where people are often especially vulnerable to pollution's effects. This tool uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. The scores are mapped so that different communities can be compared. An area with a high score experiences a much higher pollution burden than areas with low scores.

Figure 4-7 depicts the FEMA National Risk Index score for Upland. The National Risk Index is a data set and an online tool to help illustrate the United States communities most at risk for 18 natural hazards (including coastal flooding, cold wave, drought, earthquake, hail, heat wave, hurricane, ice storm, landslide, lightning, riverine flooding, strong wind, tornado, tsunami,

volcanic activity, wildfire, and winter weather). The italicized hazards are those that can affect Upland.

Landfill Subsidence

Subsidence can and does threaten human life, both through direct structural failures and by exacerbating other environmental hazards. Sinking ground can rupture gas lines, causing explosions, and break sewage or water pipes, leading to contamination and the sudden formation of sinkholes. Increased flooding in subsiding urban areas often leads to standing water and the potential spread of waterborne diseases and pests. While the location of the former landfill is used as a storage facility for recreational vehicles, it is surrounded by residential uses, which could be affected if exposure to landfill materials occurs or leakage of effluent or gases occurs.

Figure 4-6. OEHHA CalEnviroScreen Rating for Upland

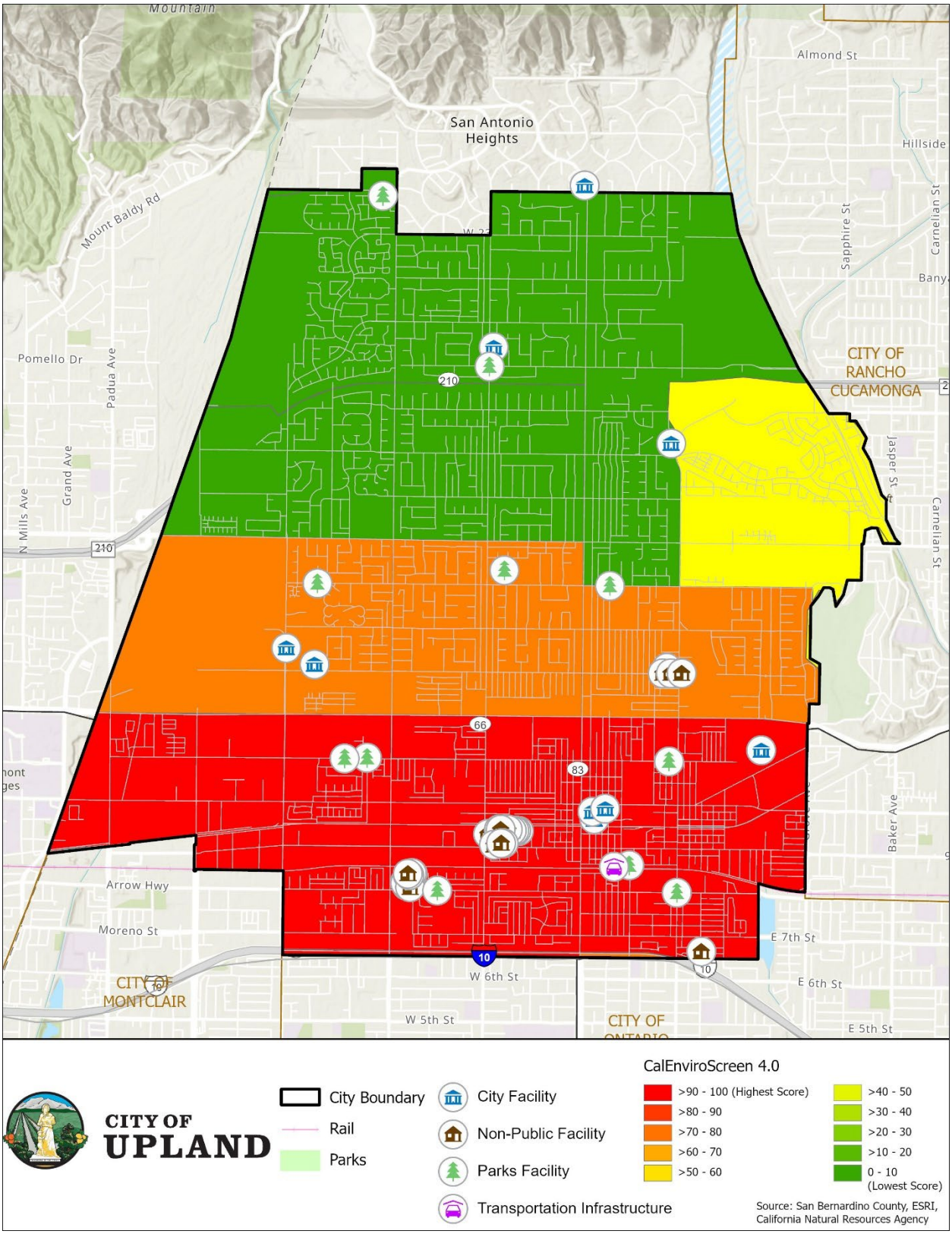
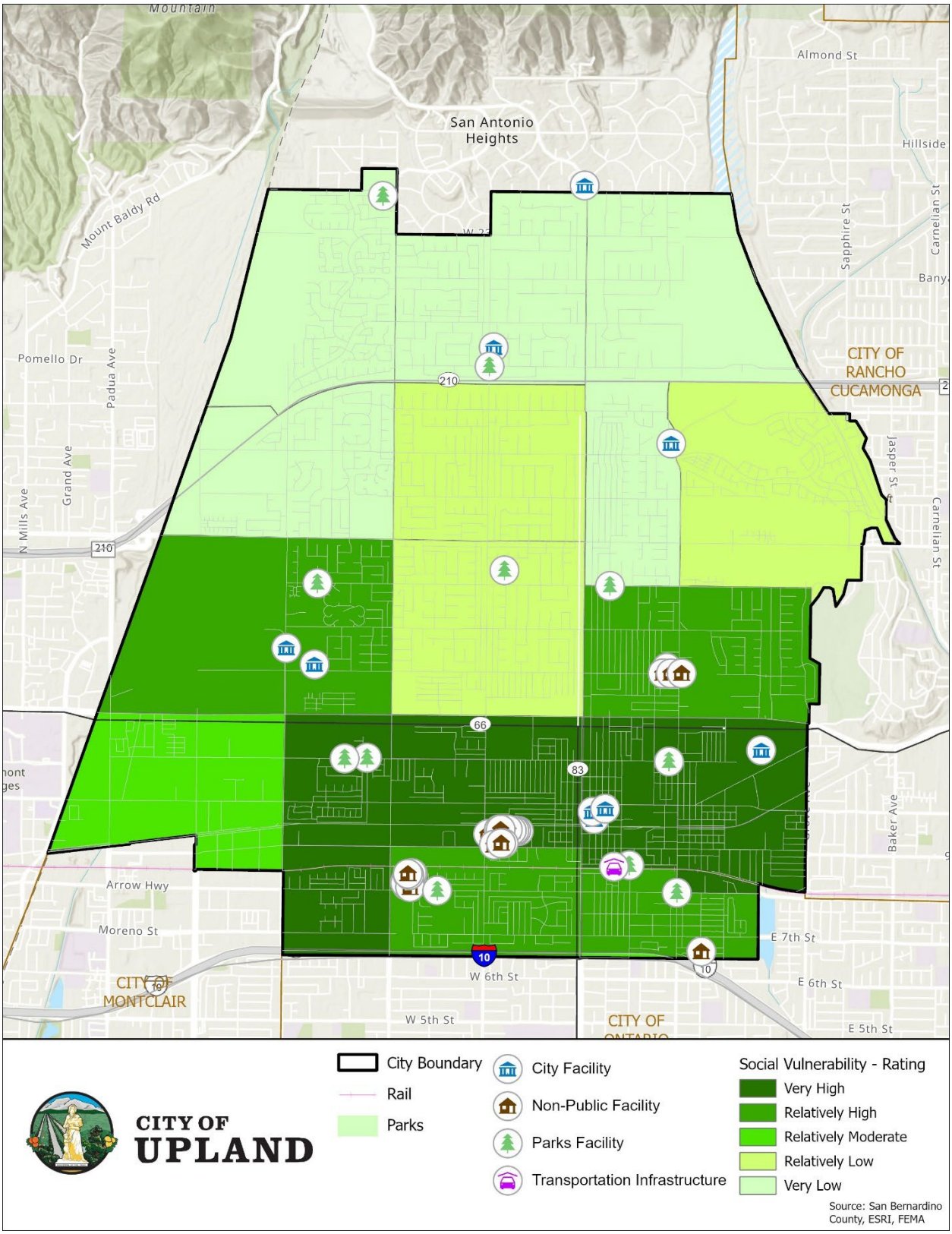


Figure 4-7. FEMA National Risk Index Scoring for Upland



Transportation Incidents

As previously mentioned, transportation incidents happen on an almost daily basis and generally don't affect large numbers of people. This complicates the process of determining which populations may be more vulnerable to being affected by transportation incidents, either as participants or bystanders.

Some situations make intuitive sense. People who live near a railroad right-of-way are more likely to be affected by a rail accident; people living or working next to major thoroughfares are more likely to feel the effects of a significant truck or bus accident. Beyond that, though, the sureties become fewer. For instance, does proximity to Cable Airport increase the possibility that a Beechcraft might land on one's roof? Only in an extremely limited sense. Buildings that happen to be directly under the final approach or initial departure paths might have a slightly elevated risk, but the overall amount of exposure is low, as aircraft move quickly and spend only a few seconds in proximity to any given place.

One exception is proximity to a major pipeline, especially one carrying a highly reactive or flammable substance. **Figure 4-8** shows the approximate path of the SoCalGas transmission pipeline under downtown Upland. Gas pipeline ruptures and explosions aren't unknown in the U.S. and can be caused by any number of conditions. **Table 4-15** details the City's vulnerable populations living within 500 feet of that pipeline. As with hazmat exposure in general, these residents have a median income of only four-fifths of the citywide figure and are over half again more likely to be renters.

TABLE 4-15: GAS PIPELINE THREATENED POPULATIONS (500FT BUFFER)

Threatened Population Metric	Hazardous Materials	City of Upland
Population	4,954	80,710
Households	1,715	28,775
Median household income	$80,193	$108,029
Renter-occupied households	62.7%	43.1%
Percentage of households with at least one person living with a disability	22.7%	24.7%
Percentage of households living under the poverty limit	12.0%	11.2%
Percentage of households with one-member aged 65+	24.0%	31.0%
Area affected by hazard	0.52 sq. miles	15.67 sq. miles

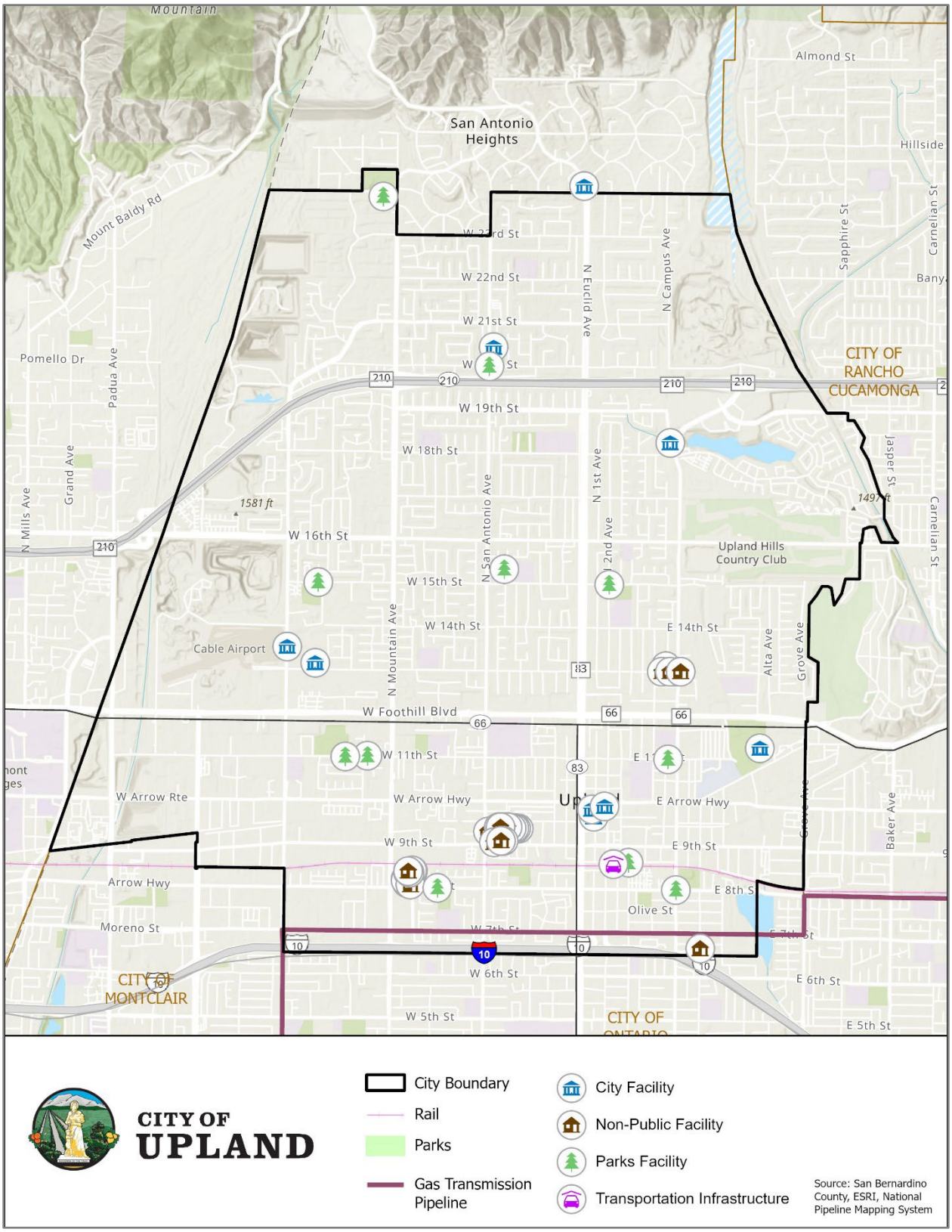
Sources: 2018–2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates

Cybercrime Incidents

Cybercrime is location-independent; it targets functions, not buildings. Neighbors can be affected very differently depending on their choices of bank, phone provider, government service, doctor, or shopping preference.

In general, the most affected populations are those that have fewer choices for services or less ability to flex quickly in the face of sudden changes in service availability. These populations may include people with lower incomes, older people, people with disabilities, and the transit dependent.

Figure 4-8. Approximate Route of a Southern Gas Transmission Pipeline in Upland



Mass Casualty / Fatality Incidents

Since mass casualty incidents/acts of terrorism could occur anywhere in Upland, all groups are potentially threatened by the impacts of these incidents; however, the extent of the threat would depend upon the type and magnitude of the event. For example, an active shooter situation may be isolated to a single location, whereas a larger-scale incident may affect multiple locations. Some locations are more likely to be targeted than others, including but not limited to medical facilities, government buildings, financial institutions, or businesses that cater to particular ethnic groups. Populations frequently visiting these areas may face a greater threat than the average person. Seniors, pregnant women, and people with disabilities, for instance, are more likely to frequently visit the local medical facilities than other subpopulations in the City. If an incident occurs at a medical facility or within the community (overwhelming medical resources), these groups may face an increased impact from the incident.

An incident at a government building or financial institution may be more likely to threaten seniors or lower-income individuals relying on in-person transactions instead of online options. As such, their use of these in-person services may place them in harm's way. Seniors and persons with limited income may be challenged if there is a need to shelter in place or evacuate during an incident requiring additional services, assistance, and/or medical treatment.

Other Threats

Hazardous Materials Release

A hazardous materials release could threaten the City's, and potentially the region's, transportation networks. Large parts of the local road network may be closed to keep people away from areas contaminated with hazardous materials as remediation and cleanup activities progress. If a highly corrosive hazardous material is released, it could potentially cause significant damage to the exteriors of any homes or businesses in the area surrounding the release. Hazardous materials could also harm the City's urban forest, resulting in the premature death of vegetation in the affected areas.

Transportation Incidents

A major transportation incident—such as a serious aircraft crash or pipeline explosion—may cause severe damage to a business district or neighborhood. This may cause significant disruption as people struggle to find alternative shelter or temporary business premises. City and county agencies may need to cooperate to provide recovery services even if there's no likelihood of getting reimbursement from the carrier or the state. Also, other infrastructure (roads, water, electricity, communications) may need to be restored quickly to facilitate recovery.

Cybercrime Incidents

A cyberattack on one service or infrastructure sector may create cascading effects for others. For instance, a successful hack against a telecommunications provider may deprive government, private industry, and the population of internet access, leading to degraded services and organizational shutdowns.

Recovery from a cyberattack may take weeks and may involve losses of data or network functionality. Inconveniences inflicted on customers and system users may decrease foot traffic and revenue. The victim organization may face increased expenses in hiring temporary

employees or consultants, buying additional security hardware or software, and paying skyrocketing legal fees and settlements as penalties and lawsuits proliferate.

Mass Casualty / Fatality Incidents

A mass casualty or fatality incident can cause widespread psychological impacts among upland residents, including acute stress, anxiety, grief, and a persistent sense of fear or loss of safety that extends well beyond those directly affected. Over time, these effects may manifest as community-wide trauma—such as post-traumatic stress symptoms, depression, and social withdrawal—particularly if recovery and mental health support are delayed or insufficient.

CHANGES IN POPULATION AND LAND USE DEVELOPMENT

Hazardous Materials Release

A change in population pattern would occur only if a hazardous materials release were severe enough to require people to move. It's unlikely that hazardous materials releases will affect land use and development because the development review process should take steps to mitigate or minimize impacts from hazardous materials release.

Locations that store, produce, and dispose of hazardous materials are highly regulated within the City and monitored regularly. Land use and development patterns may change through this process and the development review process. Based on the current General Plan data, the City's anticipated residential/population growth over the next five years will likely increase Upland's vulnerability to hazardous materials releases.

Landfill Subsidence

In areas of potential susceptibility to subsidence, policies and mitigation actions could be enacted to reduce land use conflicts and ensure development of the closed facility and surrounding properties is safe and secure. Site monitoring after closure also increases safety of surrounding properties and reduces the potential exposure of landfill gases/materials to the populations inhabiting neighboring properties.

Transportation Incidents

Transportation incidents are too transitory and unpredictable to cause any lasting changes in population or land use. The infrastructure that begets these incidents is too permanent to move or eliminate.

Cybercrime Incidents

Cybercrime is unlikely to change development patterns or the size of the City's population. Its effects are short-lived by design; cyber criminals want to make a quick buck, then move on. Also, because cybercrime is geography-independent, moving people or facilities to avoid it would be pointless exercise.

Cyberterrorism could potentially affect population through repeated, unmitigated attacks against critical infrastructure. Residents and businesses will tolerate having their water, phone, or electrical service interrupted only so many times before they lose confidence in their service providers and move elsewhere. This is a highly unlikely scenario and would require service providers to display extraordinary levels of incompetence or inattention to bring it about.

Mass Casualty / Fatality Incidents

The frequency and severity of MCIs/MFIs could respond to economic upsets, political upheaval, crumbling infrastructure, changes in traffic patterns, and rising temperatures (researchers have found a correlation between high temperatures and violent crime rates[66,67]). These same conditions can themselves cause populations to shift and land uses to change and can be causal factors in accidental (train crashes, pipeline explosions) and deliberate (mass shootings, terrorism) MCIs/MFIs.

Climate Change Vulnerability

Hazardous Materials Release

Climate change could indirectly increase the City's vulnerability to the impacts of a hazardous materials release as climate-related hazard events occur. Increased precipitation intensity may overwhelm containment infrastructure or could cause an increase in hazardous materials releases. Climate-related hazards could also exacerbate the effects and impacts of such events. For example, heavier rains could lead to more runoff from a contaminated site with hazardous materials.

Landfill Subsidence

Increased temperatures and more intense precipitation from climate change could worsen the effects of landfill subsidence. As temperatures increase and more extreme events occur, the materials used to cap the landfill could degrade quicker or require repairs more frequently. In addition, as more intense rain events are projected, these events could introduce water into the capped landfill (if exposed) or created exposures due to erosion.

Transportation Incidents

As noted in **Chapter 3**, increased rain, flooding, high winds, and ground subsidence may undermine transport infrastructure (roads, bridges, railroad rights-of-way), creating hazards that contribute to more road accidents involving high-profile and high-weight vehicles.

Cybercrime Incidents

It's possible but as yet unproven that the ill effects of climate change may aggravate existing societal tensions and inspire more people to digitally attack organizations, they consider complicit in the slow degradation of living standards.

[66] H. Choi, S. Heo, D. Foo, Y. Song, R. Stewart, J. Son, M. Bell. "Temperature, Crime, and Violence: A Systematic Review and Meta-Analysis." 2024; Environmental Health Perspectives, Vol. 132, Issue 0, CID: 106001. https://ehp.niehs.nih.gov/doi/abs/10.1289/EHP14300

[67] City University of New York Graduate Center. "How Volatile Temperatures Shape Violent Crime." Sep. 21, 2023. https://www.gc.cuny.edu/news/how-volatile-temperatures-shape-violent-crime

Mass Casualty / Fatality Incidents

The impacts of a changing climate may exacerbate existing social, political, religious, and ethnic tensions, leading to more mass violence. The same impacts may degrade roads, bridges, railroad trackways, and other infrastructure, causing more serious accidents with higher casualties and fatalities.

Threat Profile: Severe Weather

Physical Threat

Extreme Heat

Extremely high temperatures can cause roads to deform and buckle as the pavement expands in the heat, especially in poorly maintained areas. Power lines and other electrical grid components are less effective in higher temperatures and may be damaged by extreme heat events. Buildings with dark roofs or pavement will absorb more heat than surfaces with vegetation or lighter materials that are better at reflecting the sun's energy. This urban heat island effect is strongest during hot periods when the sun is strongest.

Drought

There is no indication that drought will abate either in Upland or greater Southern California in the future. All expectations are that droughts will continue and increase in severity, ending in periods of intense rainfall followed by renewed drought. Prolonged dry periods harm the physical environment by killing vegetation, weakening trees that then become hosts for invasive pests, and inspiring outsized aquifer drawdowns that may cause land subsidence. Parks and open areas become deserts. Ornamental uses of water, such as fountains and pools, disappear along with their cooling effects.

Severe Wind

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 haven't been retrofitted for high wind conditions may suffer greater damage than newer/updated structures. Utility lines and wooden utility poles face an elevated threat from wind, as do buildings without reinforced roofs.

The most dangerous effect of severe windstorms lies in their ability to turn small wildfires into firestorms. Neither the Palisades nor the Eaton fires would've spread as quickly and significantly increased in size without the hurricane-force winds behind them, casting embers miles downwind and pushing the flames into built-up areas. Repeatedly, high winds in California and elsewhere have expanded small wildfires into large incidents in a short period of time, often short-circuiting evacuation and rescue operations and leading to human tragedies.

SOCIAL THREAT

Extreme Heat

While a heat event can be relatively harmless for those with a reliable means of 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 take medicines that interfere with their bodies' internal heat regulation, 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 2024 point-in-time Count performed by the San Bernardino County Homeless Partnership, approximately 4,255 adults and children experienced homelessness in the county, 71.8% of them unsheltered. Approximately 96 of these individuals live in Upland.[68] During a heatwave, these people are very vulnerable to heatstroke, especially if they can't 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 heatwave. Many lower-income households live in older, poorly insulated, energy-inefficient housing and can't afford to run their air conditioning if they have any. Landlords may not allow tenants to install window-mount air conditioners in buildings that have no central air conditioning. During these events, extreme heat may affect larger portions of the City's population that ordinarily wouldn't be considered "vulnerable" under normal circumstances.

Drought

Drought harms people indirectly in many ways. It promotes dust, and thus respiratory diseases. Dust infiltration makes homes and businesses harder to keep clean. Water restrictions, higher water fees, and, potentially, increased food costs place additional stress on residents and businesses. Social tensions may rise as people who follow water restrictions come into conflict with those who cheat.

Drought can also shrink open bodies of water (such as lakes and ponds) and, by limiting replenishment and circulation, cause them to become stagnant, creating breeding areas for mosquitoes.[69] The California Department of Public Health documented a rise in West Nile Virus cases during the 2013–16 drought; decreased availability of open water forced birds and mosquitos into closer contact, promoting spread of the disease to humans.[70]

As usual, the people most hurt by these collateral drought effects are children, senior citizens, those with existing health conditions, and people with lower incomes.

[68] San Bernardino County Homeless Partnership. "2024 Continuum of Care Homeless Count and Survey Report." https://www.sbcounty.gov/uploads/sbchp/SBC-2024-Homeless-Count-Report.pdf

[69] https://www.cdc.gov/nceh/drought/animals.htm

[70] http://www.latimes.com/local/lanow/la-me-ln-california-drought-mosquito-activity-20150408-story.html

Severe Wind

Windstorm events can harm people throughout Upland. They have the most effect on the safety of people experiencing homelessness and people who work outdoors. Dust, pollen, smoke, debris, and so on whipped up by the wind can cause or worsen respiratory ailments and increase visits to urgent care clinics, doctors' offices, and emergency rooms.

Lower-income residents, who may not have the financial resources to purchase homes built or retrofitted to withstand powerful winds, may also have difficulty recovering from wind events.

OTHER THREATS

Extreme Heat

Extreme heat for any length of time can exacerbate other hazards and risks the City faces. For example:

- Heatwaves nearly always cause spikes in electricity demand, which can cause brownouts or blackouts.
- Heat spoilage because of power outages or lack of cooled storage can cause food insecurity, especially among people with lower incomes.
- Violent crime and domestic abuse rates rise during significant heatwaves.
- Both domestic and wild animals may be unable to cool themselves through normal behaviors, leading to injury or death.
- Especially during dry conditions and high winds, extreme heat may encourage the ignition and spread of wildfires.

Drought

In modern society, drought is primarily an economic hazard. Farmers may be forced to fallow land they can't irrigate, potentially raising food costs. Businesses that rely on a steady, affordable water supply—hotels, restaurants, nurseries, pool supply shops, car washes—may lay off employees or close, reducing available services and increasing unemployment. City-run recreational facilities, such as swimming pools and water parks, may also close or raise fees.

Counterintuitively, soil baked hard by prolonged drought may also increase flooding hazards when the rain finally returns. The ground loses its ability to absorb water naturally, forcing higher-than-normal runoff that can overwhelm the City's storm drains and storm channels.

Severe Wind

Severe windstorms create financial and operational strain on both the public and the City in various ways.

- Wind damage to electrical infrastructure may cause blackouts or brownouts.
- Windstorms can uproot trees and landscaping, further burdening the owners to replace or repair the losses. Trees located in City parks may also be damaged or destroyed.

- Field workers may have to stop working if winds are sufficiently strong. Job sites that stay open despite the wind may experience more on-the-job injuries.
- Strong winds can capsize high-profile vehicles (such as semi-trucks) on the road, endangering the vehicle operators and other drivers and snarling traffic.
- Various types of aircraft may not be able to take off or land if crosswind components become too high on runways.

Changes in Population and Land Use Development

Extreme Heat

While extreme heat may not change land use development over the short term, continually rising temperatures may drive away residents who cannot live in warmer conditions. Builders may incorporate more green practices and systems into their new structures to provide more thermal protection, but that won't help the City's large installed base of homes and businesses that pre-date these advances and haven't been retrofitted.

Drought

Continuing water shortages have forced population migrations in the past, including the great 1930s Dust Bowl drought that brought hundreds of thousands of people into California. There's no reason they can't happen again. Faced with increased illness, expensive water, and invasive water-use restrictions, Upland residents and businesses may simply move to someplace that has challenges they find less daunting.

Confronted with a chronic water shortage, the City may have to enact a moratorium on new water hookups or on new development in general. This may kill housing or commercial projects that were years in the making, subject the City to legal action, and deprive the City of future economic benefits from the foregone development.

None of these drought effects—human, property, or financial—are catastrophic by themselves. Upland won't fail as an enterprise or entity because of any foreseeable drought. However, the cumulative effect over time may create a smaller, poorer, less dynamic Upland that offers fewer economic and personal opportunities to its residents, visitors, and businesses.

Severe Wind

Severe windstorms occur periodically (primarily during the fall months) and generally don't affect Upland residents or businesses enough to force them to migrate out of the City. It's unlikely that severe wind alone will affect land use and development.

As discussed in the *Hazard Profile: Fire* section of this document, a major wind-driven fire can change everything. An Eaton Fire-type catastrophe will have critical effects on both Upland's population and its land-use policies. The City's leaders should pay close attention to the ongoing process of rebuilding Altadena for a foretaste of what might happen in Upland.

Climate Change Vulnerability

Extreme Heat

Climate change will likely increase the City's vulnerability to extreme heat impacts because of the anticipated temperature increase in intensity, duration, and frequency.

Drought

As mentioned before, climate change is likely to make all existing climate hazards more extreme, including drought. Longer and more severe droughts will cause more physical and economic damage, while the brief bursts of torrential rain separating dry periods will bring floods and erosion.

Severe Wind

Climate change will likely increase the City's vulnerability to severe weather impacts because of the increase in anticipated storm intensity and frequency along with anticipated temperature increases.

Threat Profile: Infrastructure Failure

Physical Threat

Power failure can result from scheduled maintenance, powerplant upsets, faults in the transmission infrastructure (power lines, transformers, sub-stations), other disasters (such as earthquakes, wildfires, or floods), PSPS actions, accidents, sabotage, or excess demand. They may be limited in reach or widespread.

Power failure may directly or indirectly cause failures in other types of infrastructure. This is especially difficult to predict within the City, as it can affect any City CF or FOC anywhere at any time. Traffic control systems, communications networks, water distribution, and emergency services are just some critical services or infrastructure that a power failure can disrupt. Intermittent or unexpected power loss can cause physical damage to computer equipment and other electronics associated with all types of key infrastructure.

Public safety facilities are usually equipped with backup generators to ensure continuity of operations in the event of power failures; however, generators can sometimes fail and always need to be refueled. If fuel providers are unable to pump diesel from their depots because of the outage, the City's generators may have to shut down 24–48 hours for lack of fuel.

Social Threat

As with most hazards, children, seniors, low-income communities, and people with disabilities or other access and functional needs are most vulnerable to power failures.

- People with health issues who rely on electrical medical equipment may be at risk of serious injury or death if they can't operate or recharge their supportive equipment during a power failure.

- Providers of vital medical services for chronic conditions (such as kidney dialysis centers) may have to cancel or postpone appointments if their facilities don't have reliable power to operate.
- A power failure occurring during hot weather threatens all the vulnerable groups mentioned above if they can't move to a cooler location.
- Low-income residents may not be able to afford to replace food spoiled from the loss of refrigeration if a power failure lasts for more than a few hours.
- The people served by schools, preschools, residential care, or skilled nursing facilities located in the impact area may be at risk for cold- or heat-related conditions.

Other Threat

A frequent factor in sudden power failures—line surges—can cause severe downstream consequences.

- The wiring and outlets in older structures may not meet current building code requirements. This not only may pass line surges directly to vulnerable electronics inside the building and has also been known to start fires inside wall cavities and wall or ceiling boxes.
- Many businesses and residents may not use proper equipment to help prevent line surges from damaging computers or other consumer electronics. Businesses and City government may also suffer damage in HVAC, industrial control, and communications systems if the surge burns out critical components or power supplies.
- Surge suppressors or ground fault circuit interceptors (GFCIs), once tripped, may require skilled technicians to reset or replace them, especially if they're embedded in industrial equipment. This could cause failures in other key infrastructures that are otherwise undamaged.

Changes in Population and Land Use Development

According to the current General Plan projections, the City's anticipated population growth over the next several years may increase Upland's vulnerability to infrastructure failure. Increasing demand for electricity in general, adding to the strain placed on existing infrastructure to accommodate population growth could lead to more frequent load shedding and brownouts if utilities don't manage capacity growth well.

Ever-higher electricity rates may drive some Upland residents and businesses to decamp for more benign climates in the near future.

Climate Change Vulnerability

If, as anticipated, climate change brings hotter days, higher winds, and heavier rains to Upland, power failures may become more common.

- Extreme heat is a primary environmental contributor to power failures. Electrical demand skyrockets while the generation and transmission infrastructure is heat-stressed and usually at or above capacity.

- High winds may damage the grid directly by knocking down power lines and poles. If the winds are driving wildfire, the affected utility may activate its PSPS plan and bring down distribution circuits preventatively.

Threat Profile: Flood

Physical Threat

Surface Flooding

FEMA classes nearly all of Upland as an area of minimal flood hazard. No City CFs or FOCs exist in any of the FEMA 100-Year and 500-Year Flood Zones. **Figure 4-9** displays these FEMA flood zones in relation to the City's CFs and FOCs.

Table 4-16 depicts these statistics for the 100-Year and 500-Year FEMA Flood zones.

Table 4-16: Critical Facilities and Facilities of Concern Located in the San Antonio Dam Inundation Zone

Category	Critical Facilities	Facilities of Concern	Potential Loss*
City facility	23	1	$33,997,380
Community Center/Facility	0	6	$11,450,650
Infrastructure	62	0	$75,815,970
Medical Facility	0	5	**
Parks Facility	0	23	$5,811,980
Schools	0	16	**
Transportation Infrastructure	0	4	$1,340,900
Other	0	50	$42,794,320
Total	85	105	$171,211,200

* Based on the City of Upland insured replacement values
**Replacement values are unavailable as they are not City-owned.

Dam and Levee Failure

Three dam or levee areas—San Antonio Dam, Cucamonga Creek Debris Basin, and Upland Basin—pose a threat to downstream areas if their containment structures fail or excessive rain overwhelms their capacity.

Various factors, such as the amount of water released, the distance between the failure site, and the topography of the surrounding land, will influence the extent to which physical assets in Upland are threatened. **Figure 4-10** depicts the various dam/reservoir inundation zones in and around the City. San Antonio Dam has a large storage capacity that could cause widespread inundation in Upland and Ontario if the reservoir waters are released due to a dam breach; it's the only one of the three that poses a threat to the City's CFs and FOCs (**Table 4-16)**.

Figure 4-9. FEMA-Designated 100- and 500- Year Flood Zones in Upland

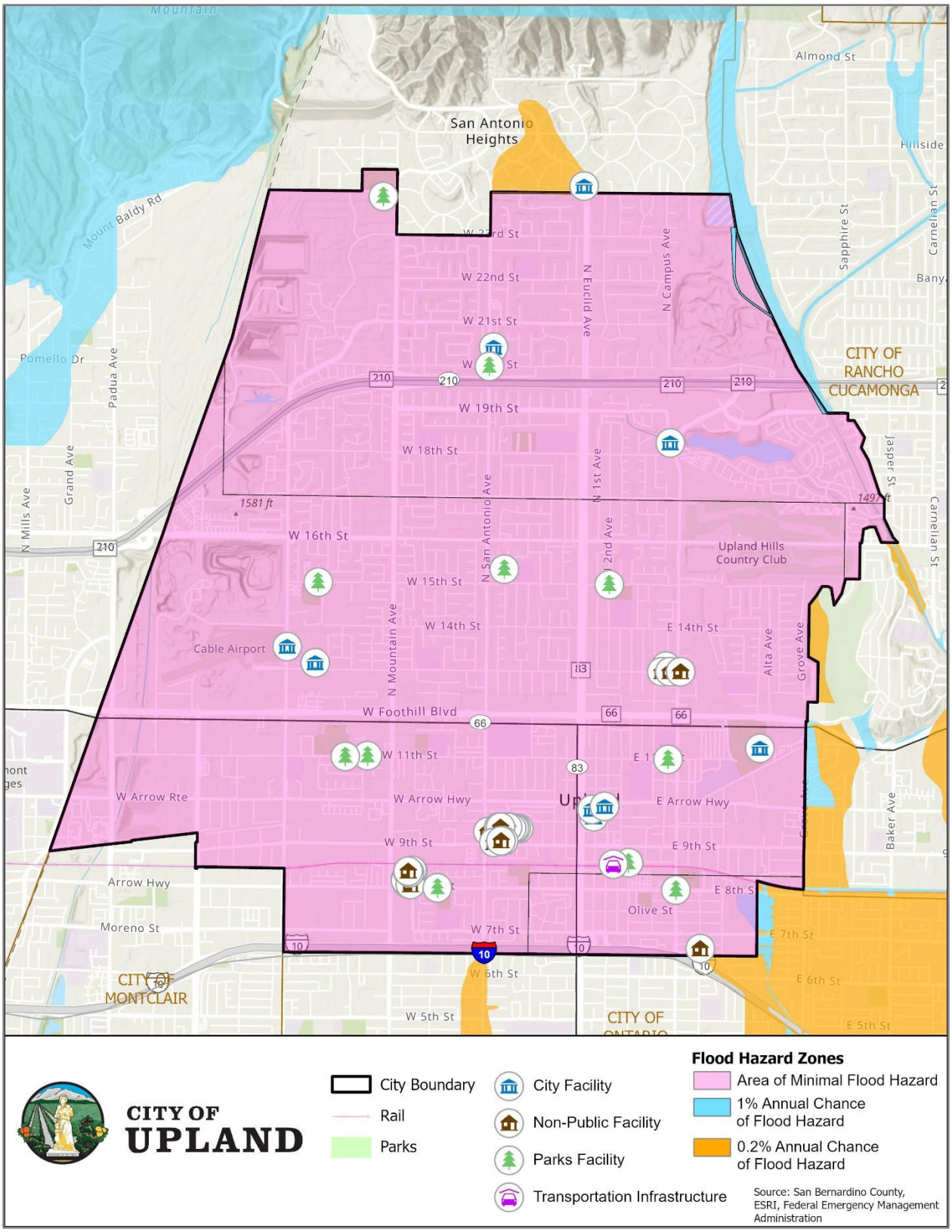
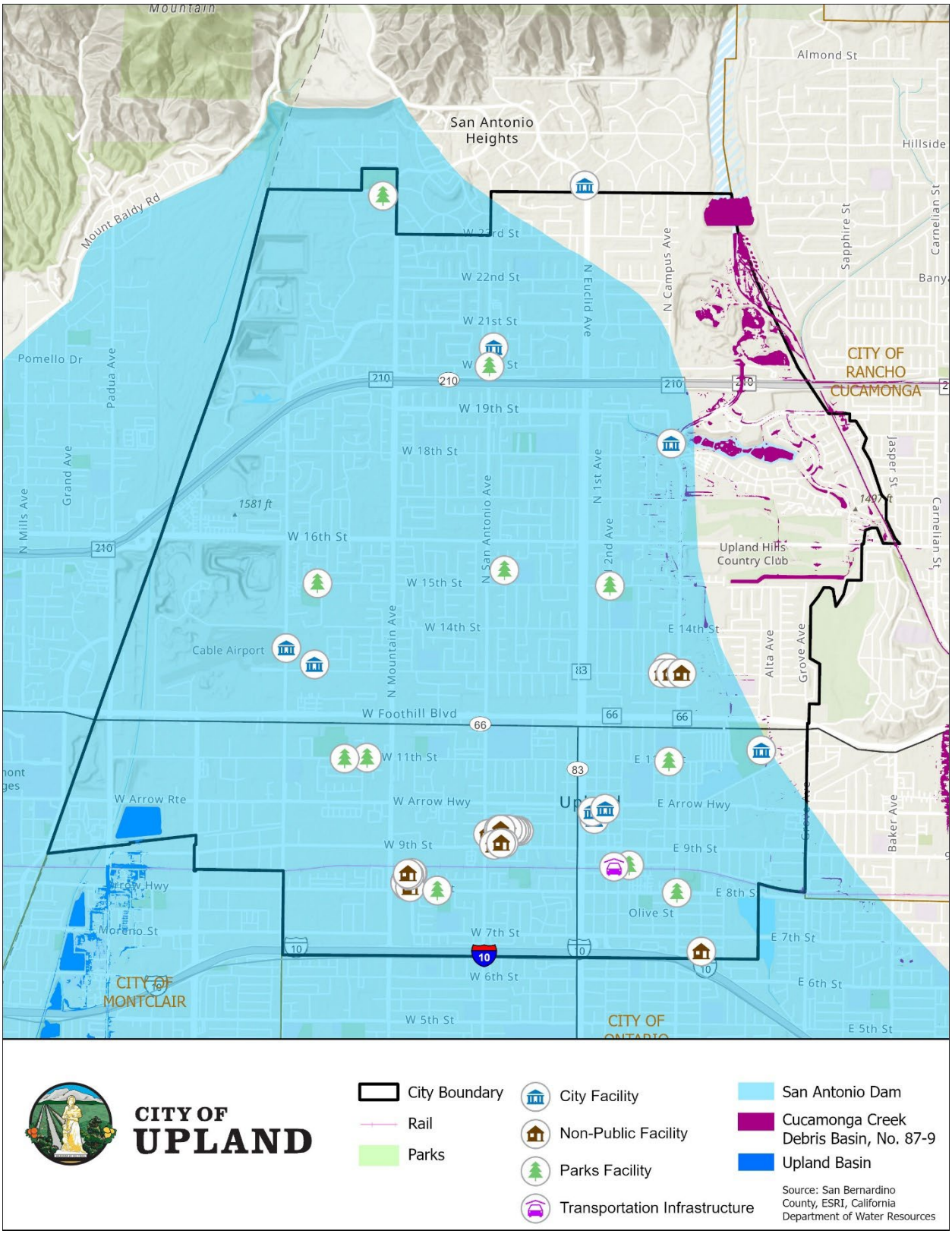


Figure 4-10. Dam and Levee Inundation Zones In and Around Upland



Social Threat

Surface Flooding

Because nearly all of Upland is outside the FEMA 100- and 500-year flood zones, City residents are vulnerable to floods only in minor ways, such as navigating standing water at backed-up street storm drains.

Dam and Levee Failure

Unfortunately, the San Antonio Dam inundation zone covers almost 84% of the City's area and nearly 88% of its population. **Table 4-17** shows the details of the three impoundment inundation zones. The demographics of the San Antonio Dam inundation zone closely match those of the entire City because the zone is nearly the entire city. The demographics for the Cucamonga Creek Debris Basin are significantly older and more upmarket: the median income is 54% higher than that of the City as a whole, only 3.6% of the 28 households live under the poverty limit, but 50% of those households include at least one member aged 65 years or over (versus 31% for the City as a whole.) As a counterpoint, the population of the Upland Basin inundation zone is notably younger, poorer, and more likely to rent than the City's population at large.

Table 4-17: Impoundment Failure Hazard-Threatened Populations in Upland

Threatened Population Metric	Cucamonga Creek Debris Basin	Upland Basin	San Antonio Dam	Upland
Population	79	306	70,974	80,710
Households	28	171	25,349	28,775
Median household income	$162,231	$105,274	$102,085	$108,029
Renter occupied households	35.7%	66.1%	45.4%	43.1%
Percentage of households with at least one person living with a disability	10.7%	18.1%	25.6%	24.7%
Percentage of households living under poverty limit	3.6%	23.5%	12.1%	11.2%
Percentage of households with one-member aged 65+	50.0%	10.0%	30.4%	31.0%
Area affected by hazard	0.21 sq. mi.	0.04 sq. mi.	13.13 sq. mi.	15.67 sq. mi.

Sources: 2018-2022 U.S. Census Bureau's American Community Survey; 2024 U.S. Census Bureau's Estimates

Other Threats

Surface Flooding

Flooding may temporarily stop any type of transportation in the City. Debris from floodwaters can block roadways, hinder vehicle access, and potentially affect emergency response services. One foot of rushing water is enough to carry small vehicles. A severe flood may prevent people who own smaller vehicles from driving to work, reducing economic activity. Severe flooding that causes serious damage to homes and businesses may also reduce economic activity until repair work is completed.

Dam and Levee Failure

Dam failures are often triggered by other events (e.g., seismic shaking, intense rainstorms, etc.). There would most likely be widespread service disruptions in Upland if this type of event occurred. Floodwaters would quickly inundate the City, disrupting utilities like water, power, heating, and other services such as communications or transportation infrastructure. Residents may find street lighting and traffic signals are temporarily disabled. Debris may be carried in the rapid inundation of water, blocking roads and impeding traffic flow. Water would likely inundate roadways and other low-lying, flat areas, such as parking lots, open spaces, and schoolyards. In severe scenarios, mobility in these areas would likely be restricted or impossible. Any unprotected or unhoused mechanical or electronic equipment not properly elevated would become waterlogged and inoperable until technicians can conduct repairs or replacements.

Changes in Population and Land Use Development

Based on the current General Plan projections, the City's anticipated population growth over the next several years is also anticipated to increase Upland's potential vulnerability to flood and dam-failure hazards.

If the FEMA 100-year flood zone grows in the years ahead, homeowners and businesses presented with the costs of flood insurance—if it's still available—and code compliance may decide to move to less-threatened areas in Upland or neighboring cities.

San Antonio Dam is a vital part of San Bernardino County's flood-control system and isn't going anywhere. As more people move into Upland, they'll necessarily move into the dam's inundation zone.

Climate Change Vulnerability

Surface Flooding

Climate change will likely increase the City's vulnerability to flooding impacts because of the anticipated increase in the intensity and frequency of atmospheric rivers spawned by changes in local, regional, and global weather patterns. This increases the likelihood of an exceptional rain event in Upland that could overwhelm the capacity of the region's flood control system to contain and drain all the precipitation.

Droughts are also expected to increase in length and frequency. Soil dried by extensive droughts is less able to absorb and drain water, increasing the possibility of urban flooding.

FEMA periodically revamps its flood hazard maps. As conditions change, it's possible that the City's 100- and 500-year flood zones will grow and encompass more people or critical facilities.

Dam and Levee Failure

While the San Antonio Dam impoundment is usually dry, history has shown that extraordinary periods of heavy rain can fill even dry reservoirs very quickly. The proliferation of atmospheric rivers spurred by climate change will create more opportunities to rapidly fill and potentially overtop the dam, with grim consequences. The Cucamonga Creek and Upland basins may also overflow more often.

CHAPTER 5 –

HAZARD MITIGATION STRATEGY

Strategy Development Process

Upland's hazard mitigation strategy is a comprehensive set of actions intended to reduce the impact of hazard events. These hazard mitigation actions will help protect the safety and well-being of residents, visitors, CFs and FOCs, other buildings and structures, key services, the local economy, and other important community assets. Some actions will also help with emergency preparedness, allowing for a more effective community response to hazard events. Preparedness actions are not required for an LHMP, but they support and complement mitigation activities. The HMPC chose to include them as part of the overall hazard mitigation strategy.

Use Of Hazard And Threat Assessment

The HMPC relied partly on the hazard profiles and threat assessments in this Plan to develop the mitigation strategy's actions. A comprehensive set of mitigation actions was prepared to respond to the relevant hazard situations and protect residents, businesses, and community assets in Upland. The HMPC ensured that the mitigation actions would help 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 HMPC also drafted mitigation actions to help protect the most vulnerable community members and the most vulnerable local assets.

Capabilities Assessment

As part of the effort to draft mitigation actions, the City completed a capabilities assessment, which included reviewing existing policies, personnel, and technical resources to support hazard mitigation activities in Upland. The hazard mitigation actions build off these resources' existing success and leverage their capabilities to support improved resiliency in the community. The capabilities assessment looked at the following types of resources:

- **Personnel resources:** City employees and volunteers, and employees and volunteers at other agencies
- **Plan resources:** Advisory or enforceable plans adopted by the City or other agencies
- **Policy resources:** Policies adopted and implemented by the City or other agencies
- **Technical resources:** Data and tools available to the City
- **Financial resources:** Funding mechanisms available to the City that support mitigation activities

CAPABILITIES IMPROVEMENT/EXPANSION

The ability to expand current mitigation capabilities will generally be reliant upon the budgeting allocated for each department/program for that fiscal year. The level at which these programs may or may not be expanded upon, will be dependent upon the amount of funding received. FEMA has released a series of guides over the past few years which highlight some of the ways in which jurisdictions can expand mitigation. Some strategies for increasing current mitigation capabilities may include:

- The City should actively identify, adopt, and enforce the most current set of development codes and standards available. Strongly encouraging new development to be constructed to higher standards than currently required, increasing resilience within the community.
- Engaging parts of the community that may not be actively involved in mitigation efforts.
- Expanding the number and types of organizations involved in mitigation planning and implementation, increasing both efficiency and bandwidth.
- Fostering new relationships to bring underrepresented populations and partners to the hazard's mitigation planning process.
- During the annual LHMP review, the committee should look for opportunities to fund and expand/enhance the effectiveness of current mitigation actions.

Table 5-1 shows the capabilities assessment for Upland.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT

Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Legal and Regulatory Capabilities		
Upland City General Plan – Housing Element (2014)	The City is in the midst of updating the Housing Element for the 2021-2029 planning period. The current Housing Element contains the following material: • Discusses demographics, such as age and race. • Includes a description of the household, including size, income, and home ownership. • Discusses new housing growth needs. • Discusses sustainability and energy efficiency. • Addresses building code. The current Housing Element can be found at: https://www.uplandca.gov/general-plan-map The latest draft Housing Element can be found at: https://www.uplandca.gov/2021-2029-housing-element-update	**Expansion and Improvement:** The Housing Element and LHMP will be aligned to describe the City and its population.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Upland City General Plan – Land Use Element (2015)	The Land Use Element serves as a guide to the ultimate development pattern for the City, both within its incorporated boundaries and sphere of influence. The Land Use Element: • Designates the distribution, location, and balance of land uses. • Describes the desired build-out of Upland. • Describes building intensity standards for each land use. • Communicates population density. • Ensures compatibility between land uses. The entire Land Use Element can be found at: https://www.uplandca.gov/general-plan-map	**Expansion and Improvement:** The City will align the Land Use Element and LHMP to describe developmental trends, hazards, and potential development in hazard areas.
Upland City General Plan – Safety Element (2015)	The Safety Element identifies potential hazards: • Noise • Flooding • Hazardous material release • Seismic and other geologic hazards • Wildland and urban fires • Airport-related hazards It discusses design standards for new development as they relate to identified fire, seismic, flooding, and noise hazards. The Safety Element can be found at: https://www.uplandca.gov/general-plan-map	**Expansion and Improvement:** The LHMP will be linked by reference to the General Plan's Safety Element. The City will adopt the approved LHMP as part of the General Plan to meet the requirements of AB 2140. As the City revises the Safety Element, it will include applicable material from the LHMP for hazard analysis and goals.
Area Specific Plans	Upland maintains twelve specific plans for various areas within the City. These plans govern the land use and development within the designated Specific Plan areas, using the overarching precepts of the General Plan as a foundation. The Upland specific plans can be found at: https://www.uplandca.gov/specific-plans	**Expansion and Improvement:** The LHMP will take the specific plans into account when determining development trends, hazards, and mitigation opportunities.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Capital Improvement Program	The CIP outlines the annual appropriations in the City's budget for capital projects involving City infrastructure, such as street and park improvements, building construction, and various kinds of major facility maintenance. Expenditure plans that detail funding sources and expenditure amounts support capital improvement projects. They are often multi-year projects that require funding beyond the one-year period of the annual budget.	**Expansion and Improvement:** Mitigation actions that involve construction or retrofits to City buildings, facilities, and infrastructure may be included in the Capital Improvement Program.
Upland Municipal Code – Chapter 2.20, Emergency Organization and Function	This section of the Municipal Code provides for the preparation and implementation of plans for the protection of people and property within the City during an emergency, the direction of the emergency organization, and the coordination of Upland's emergency functions with all other public agencies, corporations, organizations, and affected private persons. This section of the Municipal Code can be found at: https://ecode360.com/44421866#44421867	**Expansion and Improvement:** The emergency management organization described in the Municipal Code represents a framework for understanding preparedness activities. It can inform the LHMP as to how the City prepares to respond to hazards.
Upland Municipal Code – Title 15, Buildings and Construction (2023)	Upland's Buildings and Construction codes include several individual codes and regulations, including the City's Building Code, Electrical Code, and Fire Code, which govern the construction of new and renovated buildings. The state publishes these standards and local governments adopt them, sometimes with amendments to address local issues. They are typically updated every three years, although more minor updates may occur in the interim. The Buildings and Construction safety codes can be found at: https://ecode360.com/44427157#44427157	**Expansion and Improvement:** The City can update Buildings and Construction codes with local amendments that require new or renovated buildings to better resist damage or harm to occupants during a disaster, and so may support hazard mitigation activities.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Upland Municipal Code – Titles 16-18, Zoning Code	The City's Zoning Code is a set of regulations for different land uses in the community. It establishes standards for where different types of development and land use activity may occur (including defining hazard-prone areas where different development and land use standards may apply), how they look, how they can be operated, and the necessary permitting and approval processes for development. The Zoning Code is an implementation tool of the City's General Plan and plays a significant role in determining Upland's appearance and community characteristics. The zoning code can be found at: https://ecode360.com/44487561#44487561	**Expansion and Improvement:** Understanding land-use policy and regulatory requirements is essential to developing mitigation strategies and activities. Mitigation actions that govern the siting, construction, and operation of new development can be implemented through the Zoning Code.
Floodplain Management Regulations – Municipal Code Chapter 15.56 (2008)	Upland's Floodplain Management Regulations are required for the City's participation in the National Flood Insurance Program. Under the terms of these regulations, construction activities within the 100-year flood plain must feature flood-resilient design features. The regulations also limit the types of land-use activities that can be conducted within the 100-year floodplain. The Floodplain Management Regulations can be found at: https://ecode360.com/44427325#44427325	**Expansion and Improvement:** Amendments to Upland's Floodplain Management Regulations could help implement mitigation actions that address the vulnerability of buildings in the 100-year floodplain.
Seismic Hazard Identification Program – Municipal Code Chapter 15.48	Upland's Seismic Hazard Identification Program aims to identify individual structures within certain building classes that may pose heightened threats to their occupants due to the nature and manner of their construction. The Program will require owners of potentially hazardous buildings to submit engineering studies of those buildings to the City's Building and Safety Department for review. Owners of buildings determined to pose a hazard will have to submit to the City a plan for addressing the hazard. These regulations can be found at: https://ecode360.com/44427245#44427245	**Expansion and Improvement:** Mitigation actions that relate to the seismic resiliency of seismically unsafe buildings in Upland may be implemented through amendments to this set of regulations. Mitigation actions related to the resiliency of other building types (including other hazards) may be implemented through a similar set of standards.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
City Emergency Operations Plan (EOP)	Explains how the City will respond to a major emergency or disaster and coordinate between the Emergency Operations Center (EOC) and field-level incident commanders. The EOP includes a description of each hazard; the concept of operations during a major emergency or disaster; the role of the EOC; and the coordination that occurs between the EOC, County departments, and other local, state, and federal governments in times of disaster.	**Expansion and Improvement:** The LHMP informs the hazards section of the EOP, as the two are closely correlated.
San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan (2022)	The San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan (SBCMHMP) identifies hazard events present in the unincorporated areas of San Bernardino County and recommends mitigation actions to reduce the harm from these events. The SBCMHMP can be found at the following link: https://www.sbcounty.gov/uploads/OES/documents/Hazardous-Mitigation-Plan.pdf	**Expansion and Improvement:** The county and Upland can share resources and best practices for hazard mitigation activities. Similar mitigation actions in the counties and Upland's plans can help create more regional consistency. Mitigation actions that require coordination with the San Bernardino County Office of Emergency Services or other county agencies may be integrated into the SBCMHMP.
California Building Standards Code (2022)	The California Building Standards Code is a compilation of three types of building standards from three different origins: • Building standards that state agencies have adopted without change from the International Building Code. • Building standards that have been adopted and adapted from national model codes to address California's ever-changing conditions. • Building standards authorized by the California legislature that constitute amendments not covered by national model codes, which have been created and adopted to address California concerns.	**Expansion and Improvement:** Adherence to building codes, including local codes, regulates growth and controls land use patterns. Addressing known hazards as codes are updated results in lowered risk and potentially fewer losses.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
California Emergency Services Act	California Government Code §§8550-8669.7 codifies the California Emergency Services Act. It covers the entire range of disaster and emergency powers and responsibilities of state and local government dealing with any natural or human-caused disasters or a state of war. The California Emergency Services Act can be found at: https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?lawCode=GOV&division=1.&title=2.&part=&chapter=7.&article=1.&goUp=Y	**Expansion and Improvement:** The City shall maintain a current version of the Emergency Services Act to inform the City Council and staff of changes to disaster mitigation and preparedness activities and processes in the state.
California State Hazard Mitigation Plan (2023)	California's Multi-Hazard Mitigation Plan identifies and analyzes the various natural and human-caused hazards in California. It includes descriptions of these hazards, summaries of past hazard events, assessment of how these hazards may harm people and other assets in California, and projections of future hazard conditions. The California SHMP can be found at: https://www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/hazard-mitigation/state-mitigation-planning/	**Expansion and Improvement:** The City can use the 2023 SHMP as a source of information to refine the hazard profiles and vulnerability assessments in future LHMPs.
National Flood Insurance Program	The National Flood Insurance Program (NFIP) makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. The City will continue to participate in the NFIP program and will make changes accordingly.	**Expansion and Improvement:** City websites and social media accounts will include information on the value of NFIP insurance for properties located in flood hazard areas and how to buy the insurance.
Administrative and Technical Capabilities		
Development Services Department	The Development Services Department is responsible for conducting short- and long-term planning activities in Upland, approving building permits and business licenses, and inspecting private properties. Through these activities, the Development Services Department enforces the City's Buildings and Construction codes and related standards, as well as all land-use regulations.	**Expansion and Improvement:** The Development Services Department staff can conduct any mitigation actions related to land use, construction of new structures or retrofits to existing ones, and operating conditions of private property.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Finance Division	Upland's Finance Division—part of the City's Administrative Services Department—is responsible for the City's financial operations. It conducts budgeting activities, manages the City's payroll, provides general accounting services, and prepares financial reports.	**Expansion and Improvement:** Finance Division staff can support efforts to improve local resiliency by integrating mitigation actions into the City budget and administering mitigation-related grants.
Fire Department	Upland contracts with the San Bernardino County Fire District for firefighting, fire protection, and emergency medical response services in the community. This includes mitigation activities that reduce the likelihood of fires or limit the damage from such events. Department activities also include efforts to prepare for local disasters and support a more effective response. The Fire Department is responsible for mitigation actions that involve resiliency to wildfire.	**Expansion and Improvement:** Provide training for staff to enable them to see potential hazards better and take action to report them. Use the Fire Marshall to provide input into the LHMP mitigation action plan.
Police Department	The Upland Police Department is responsible for law enforcement, criminal investigation, traffic control, and emergency response. Mitigation actions that fall within the Police Department's purview include those related to the safe movement of traffic and the security of community members during emergencies.	**Expansion and Improvement:** Provide training to officers to enable them to see potential hazards better and take action to report them.
Public Works Department	The Upland Public Works Department is responsible for engineering, permitting, maintenance, and operation of the City's infrastructure, including public buildings, streets, sidewalks, roadway medians, alleys, public parking lots, traffic signals, streetlights, and so on. The Department also manages the solid waste and recycling programs as well as the City's storm water program and sewer collection main lines.	**Expansion and Improvement:** Public Works engineers and technicians manage the city's infrastructure. They possess a critical understanding of the risks posed by hazards and potential mitigation activities to address the risks to lifeline infrastructure. Their input into developing infrastructure mitigation strategies and actions is critical.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Water Division	Upland's Water Division, part of the City's Public Works Department, provides its residents with a safe and reliable supply of high-quality drinking water. The water delivered meets all state and federal drinking water standards for quality and safety. To ensure the best quality water possible is produced, the City continually evaluates Upland's water supply using sophisticated equipment and advanced procedures. Upland has access to local and imported water supply resources through its own direct water rights and through ownership arrangements with a number of private water districts.	**Expansion and Improvement:** The Water and Wastewater Department staff may implement any mitigation actions that involve Upland's water sources, how much water the community uses, the City's water or wastewater-related infrastructure, or other issues related to water and wastewater services.
Floodplain Manager	The duties and responsibilities of the Floodplain Administrator include: • Permit review • Flood hazard reduction • NFIP program administration • Construction inspections	**Expansion and Improvement:** The Floodplain Administrator supports compliance with NFIP requirements, advocates for appropriate development in flood hazard areas, and provides technical expertise on effective flood mitigation activities. These actions can support mitigation activities.
Planning Commission	This seven-member Commission, established by state law—studies, proposed developments that may affect the community's growth and environment. This Commission determines whether proposed developments will meet the City's technical, environmental, and aesthetic standards. The Commission holds public hearings to review development plan compliance with the City's zoning regulations and General Plan.	**Expansion and Improvement:** Provide continued education opportunities for Planning Commission members to maintain state-of-the-art knowledge of new code and regulatory requirements.
Upland Emergency Management Program	The San Bernardino County Fire District Office of Emergency Services provides emergency management services to Upland by providing the City with an Emergency Services Officer (ESO). This ESO is responsible for the development of the City's disaster plans, disaster training and exercise program, and oversight of the City's EOC.	**Expansion and Improvement:** The ESO works closely with the City and whole community to ensure all emergency management functions are effectively implemented. The ESO can enforce consistency between the LHMP and other emergency plans.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
City Attorney	The City Attorney provides legal advice to the City Council and City Manager and reviews and approves resolutions and ordinances.	**Expansion and Improvement:** Provide opportunities for the City Attorney to review updates to regulatory information to provide expert review of county and state resolutions and ordinances that address hazard mitigation
City Clerk	The City Clerk administers local elections, all legislative actions, and public transparency functions. The City Clerk is also a compliance officer for federal, state, and local statutes, including the Political Reform Act and the Brown Act.	**Expansion and Improvement:** The City Clerk is integral to the LHMP adoption process. She/he makes sure the adoption resolution meets all administrative requirements.
Community GIS	Provides complex mapping and data management of City facilities, land use, and potential hazards. It supports the visualization of complex data sets using geolocation and data correlation.	**Expansion and Improvement:** Acquire and conduct training for GIS technicians on the latest versions of ArcGIS. Integrate GIS into the City EOC.
San Bernardino County Office of Emergency Services	The San Bernardino County Office of Emergency Services (SBC OES) is responsible for emergency planning, hazard mitigation, and emergency response and recovery activities throughout the county, in collaboration with local communities. SBC OES helps coordinate activities between the county and cities, conducts emergency training and exercises, and manages emergency grants, among other activities.	**Expansion and Improvement:** Mitigation actions involving coordination with county agencies or other cities may be facilitated through work with SBC OES. SBC OES can also support Upland's own hazard mitigation activities by providing funding or other resources.
San Bernardino County Operational Area Coordinating Council	Upland is a participant on the San Bernardino County Operational Area Coordinating Council (OACC). The OACC consists of one primary representative from each jurisdiction within the Operational Area. It works along with local governments, SBC OES, the California Office of Emergency Services, and the Federal Emergency Management Agency to better prepare and plan for potential disasters within California.	**Expansion and Improvement:** OACC's functions of enabling the exchange of critical preparedness information and discussion of resource management better prepare Upland, the county, and the state to respond to human-caused and natural disasters.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
San Bernardino County Flood Control District	The San Bernardino County Flood Control District—part of the county's Department of Public Works—is responsible for constructing and maintaining flood control infrastructure in San Bernardino County, such as drainage basins and channels. The District also is a partial operator of the Seven Oaks Dam on the headwaters of the Santa Ana River. The courses of the Santa Ana River and Warm Creek, as well as various drainage channels throughout Upland, fall under the District's purview.	**Expansion and Improvement:** Mitigation actions that involve changes to flood control infrastructure in Upland will likely require support and coordination with the County Flood Control District.
San Bernardino Valley Municipal Water District	The San Bernardino Valley Municipal Water District (SBVMWD) is responsible for long-term water supply in the San Bernardino Valley. The District acts as a water wholesaler, obtaining water from various sources and distributing it to local water suppliers. The SBVMWD imports water from the State Water Project and manages most of the valley's groundwater basins.	**Expansion and Improvement:** The City can work with SBVMWD on mitigation actions that relate to local water supply and water use.
Inland Empire Utilities Agency	Inland Empire Utilities Agency (IEUA) receives State Water Project-imported water from the Metropolitan Water District of Southern California. This water passes through the Water Facilities Authority's Agua de Lejos treatment plant in Upland, of which Upland owns a 22% interest. IEUA completed regional pipeline facilities and began delivering recycled water in 2013, which serves large landscape irrigation customers in the City.	**Expansion and Improvement:** The City can work with IEUA on mitigation actions that relate to local water supply and water use.
San Antonio Water Company	The San Antonio Water Company (SAWCo) is a private mutual water utility that is 68% owned by the City of Upland. SAWCo provides approximately 50% of the City's water through local groundwater and surface water from San Antonio Canyon. The surface water is treated at the City's San Antonio Water Treatment Plant. SAWCo is responsible for sourcing water, maintaining water delivery infrastructure, and administering water conservation and related programs for its service territory.	**Expansion and Improvement:** Mitigation actions involving water supply and use can be implemented in collaboration with the SAWCo.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
West End Consolidated Water Company	The West End Consolidated Water Company (WECW Co) is a private mutual water utility that is 93% owned by the City of Upland. WECWCo provides about 15% of the City's water through its ownership of six groundwater wells. It is responsible for sourcing water, maintaining water delivery infrastructure, and administering water conservation and related programs for its service territory.	**Expansion and Improvement:** Mitigation actions involving water supply and use can be implemented in collaboration with the WECWCo.
Riverside Urban Area Security Initiative (UASI)	The UASI program enhances the preparedness level of high-threat communities. With support from the UASI and related Homeland Security grant programs, stakeholders in the Riverside/San Bernardino urban areas are engaged in a multi-disciplinary and multi-jurisdictional partnership to improve local capacity to prepare for, protect against, respond to, and recover from catastrophic incidents.	**Expansion and Improvement:** Continue participation through San Bernardino County's representation in the UASI leadership.
Southern California Association of Governments (SCAG)	Functions as the Metropolitan Planning Organization for Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties. The federal government mandates SCAG to research and draw up plans for transportation, growth management, hazardous waste management, and air quality.	**Expansion and Improvement:** Attend SCAG meetings. Continue to participate in SCAG-sponsored programs. Routinely coordinate with SCAG staff to stay informed of current planning initiatives.
California Governor's Office of Emergency Services	The California Governor's Office of Emergency Services (Cal OES) is responsible for reducing hazards through mitigation activities, conducting emergency planning, supporting emergency response and recovery activities, and mediating between local and federal agencies on emergency-related issues. Cal OES guides hazard mitigation planning activities, shares best practices, and distributes funding opportunities.	**Expansion and Improvement:** The City can work with Cal OES to obtain funding to implement LHMP mitigation strategies and receive future updates.
Cal-Adapt	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 future hazard planning and explain how hazard conditions are expected to change. Cal-Adapt can be found at: https://cal-adapt.org/	**Expansion and Improvement:** The City can use Cal-Adapt to monitor anticipated changes in future climate conditions and adjust mitigation actions accordingly.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
California Department of Transportation	The California Department of Transportation (Caltrans) has design, construction, operation, and maintenance jurisdiction over designated state and federal highways, including CA-66, CA-83, CA-210, and Interstate I-10.	**Expansion and Improvement:** The City will coordinate with Caltrans to implement mitigation measures related to ensuring the resilience of state-designated routes.
South Coast Air Quality Management District	The South Coast Air Quality Management District (South Coast AQMD) develops plans and regulations designed to achieve public health standards by reducing emissions from business and industry. South Coast AQMD's Governing Board adopts plans and regulations for the region, then submits them to the California Air Resources Board and the federal EPA.	**Expansion and Improvement:** Some of the City's mitigation actions involve installing diesel generators for power backup. The City will have to coordinate with South Coast AQMD to obtain permits to operate these generators and to remain within clear air goals while operating them.
Federal Emergency Management Agency	The Federal Emergency Management Agency (FEMA) is responsible for hazard mitigation, emergency preparedness, and emergency response and recovery at the national level. FEMA provides hazard mitigation guidance to state and local governments, including information on best practices and compliance with federal requirements for hazard mitigation plans. It also provides a number of grants for hazard mitigation activities.	**Expansion and Improvement:** FEMA can assist Upland with developing mitigation actions and support their implementation through grants. The agency also provides guidance that Upland will use in future updates to its LHMP.
American Red Cross	The American Red Cross is a humanitarian assistance organization that provides disaster relief services in the aftermath of emergency events. This includes operating emergency disaster shelters, distributing meals and relief supplies, and providing basic health services.	**Expansion and Improvement:** There may be opportunities for the Red Cross to support mitigation activities related to community engagement and education.
BNSF Railway	The BNSF Railway is one of the country's major freight railroad companies. It owns the main north-south railway line in Upland, along with various spur lines, and operates a rail yard immediately north of the City.	**Expansion and Improvement:** Mitigation actions that relate to the resilience of Upland's railway and related issues will need to be implemented in coordination with BNSF.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Southern California Edison	Southern California Edison (SCE) provides electricity to most of Southern California. It also owns and operates the high-voltage electrical transmission lines and most of the electrical substations in the community. SCE's Public Safety Power Shutoff program may shut off electrical service to parts of Upland when high-fire-risk weather conditions arise.	**Expansion and Improvement:** The City will need to coordinate with SCE regarding mitigation actions that involve the resilience of Upland's neighborhood and high-voltage transmission lines and other electrical infrastructure. SCE can also support other mitigation actions that involve electricity.
Southern California Gas Company	The Southern California Gas Company (SoCalGas) is the natural gas service provider for most of Southern California, including Upland. In addition to providing natural gas services, it owns and operates the natural gas infrastructure in and around the community.	**Expansion and Improvement:** The City will need to coordinate with SoCal Gas on implementation of mitigation actions that involve natural gas use or relate to the resilience of natural gas infrastructure.
Financial Resources		
General Fund	Upland's General Fund is revenue that the City collects from sales tax, property tax, other taxes, license and permit fees, fines, and various other sources. Unlike other sources of revenue that are often restricted to specific types of projects or programs, General Fund revenue may be used for any City expenses. Currently, most General Fund revenue is spent on City staff salary and benefits.	**Expansion and Improvement:** The General Fund can provide the financial resources to implement mitigation actions that cannot be feasibly funded through other mechanisms, including paying for additional staff as needed.
Water Utility Fund	The Water Utility Fund is a separate fund amassed from the fees charged to City water customers. Salaries for water employees are paid from these funds, along with maintenance and operations of water systems, capital improvements to water infrastructure, and other charges related to these services.	**Expansion and Improvement:** The Water Utility Fund may support mitigation actions that involve water service or infrastructure in Upland.
Community Development Block Grants (CDBG)	The federal CDBG program provides funding for eligible senior activities such as in-home care, art classes, counseling, and home-delivered meals. HUD also provides disaster recovery assistance in the form of flexible grants to help cities, counties, and states recover from Presidentially declared disasters, especially in low-income areas, subject to the availability of supplemental appropriations.	**Expansion and Improvement:** Where applicable, CDBG grants should be used to fund mitigation projects that enhance the resiliency of low-income and underserved communities.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Hazard Mitigation Grant Program (HMGP)	Provides support for pre- and post-disaster mitigation plans and projects.	**Expansion and Improvement:** Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
State Homeland Security Grant Program (SHSGP)	SHSGP is a FEMA grant passed through the State of California and the San Bernardino Operational Area, to public safety agencies within the county. The grant's purpose is to build capabilities to protect against, prevent, respond to, and recover from terrorist acts and other types of emergencies or disasters. Project funds are available under the following four categories: Equipment, Planning, Training, or Exercise.	**Expansion and Improvement:** Familiarize staff with the proposal and review process at the OA and state level. Work with the Approval Authority to include Investment Justifications for Upland-related projects.
California Proposition One Bond Programs	Authorizes $7.545 billion in general obligation bonds to fund ecosystems and watershed protection and restoration, water supply infrastructure projects, including surface and groundwater storage, and drinking water protection.	**Expansion and Improvement:** Provides monetary opportunities for projects that are outside traditional mitigation projects.
Building Resilient Infrastructure and Communities (BRIC)	Provides support for pre-disaster mitigation plans and projects. *The BRIC program still exists; however, it is not currently being funded.	**Expansion and Improvement:** Train staff on NOI procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
Flood Mitigation Assistance Grant Program (FMA)	Mitigates structures and infrastructure that have been repetitively flooded.	**Expansion and Improvement:** Train staff on NOI procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Education and Outreach Capabilities		
Ready Upland–Disaster Preparedness Web content	The Ready Upland content on the City website offers residents and businesses a guide to disaster preparedness. It discusses evacuation, making an emergency plan, stocking supplies, staying informed, and getting involved. Ready Upland can be found at: https://www.uplandca.gov/readyupland	**Expansion and Improvement:** Provide links to county, state, and federal preparedness information.
City Social Media Accounts:	In addition to normal City business and events, Upland's social media accounts provide alert and warning information, safety and evacuation procedures, and information on home and individual preparedness. The City's social media accounts include: • Facebook • Instagram • X	**Expansion and Improvement:** Repost emergency-related news and directions from neighboring cities, county, state, and federal social media during disasters. Post preparedness-related material that links to the appropriate sources.
Community Emergency Response Team (CERT)	Upland's CERT program educates residents about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using the training learned in the classroom and during practical exercises, CERT members can assist others in their neighborhood or workplace immediately following an event when professional emergency responders are not immediately available to help.	**Expansion and Improvement:** Include material in CERT curriculum that provides updates to progress in the mitigation action plan, including links to the appropriate website page. CERT volunteers can also assist with mitigation-related outreach activities.
San Bernardino County Smart 911 Emergency Alerts	The county's Emergency Alerts program can send high-speed mass notifications via telephone, email, and text messages during emergencies and disasters. This system can be targeted to specific geographic areas.	**Expansion and Improvement:** The City will continue to conduct community outreach to increase the number of residents who are subscribers.

TABLE 5-1: CITY OF UPLAND CAPABILITIES ASSESSMENT		
Resource	**Resource Description**	**Connection to Current Mitigation/Future Opportunities for Expansion and Improvement**
Cal OES Family Readiness Guide	The Guide provides a comprehensive toolkit for making a family emergency plan. The Cal OES Family Readiness Guide can be found at: https://www.caloes.ca.gov/wp-content/uploads/Preparedness/Documents/Cal_OES_Family_Readiness_GuideENG.pdf	**Expansion and Improvement:** Provide a link to the Readiness Guide on the City website and Facebook account.
Ready.gov	FEMA's comprehensive disaster preparedness and response website for businesses and residents. It includes information about drafting family and business emergency plans, building go kits, acquiring emergency supplies, and how to react to various types of disasters. https://www.ready.gov/	**Expansion and Improvement:** Provide a link to Ready.gov on the City web page and Facebook account.

Hazard Mitigation Strategies

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 informed the development of mitigation actions and functioned as checkpoints to help City staff determine implementation progress.

EVALUATION OF POTENTIAL HAZARD MITIGATION ACTIONS

The HMPC prepared a set of potential mitigation actions based on hazard profiles, threat and capability assessments, community survey results, discussions among HMPC members, and existing best practices. Next, the HMPC evaluated these potential actions using the following criteria:

- FEMA requires local governments to evaluate potential mitigation actions' monetary and non-monetary costs and benefits. While local governments are not required to assign specific dollar values to each action, they should identify the general size of costs and benefits. The HMPC may elect to include measures with high costs or low benefits, but such measures should benefit the community and make appropriate use of local resources.
- FEMA also 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?

The HMPC also reviewed and revised the potential hazard mitigation actions using the STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria (**Table 5-2**). The HMPC did not formally assess every potential mitigation action under all STAPLE/E criteria but used the criteria to guide and inform the discussion. The HMPC also discussed how the criteria might evaluate grant applications the City may submit to receive funding for LHMP implementation.

Changes to Previous Mitigation Actions

A review of the mitigation actions from the 2016 Upland LHMP has identified that these existing actions are still relevant and have been incorporated into this Plan update. None of the previous actions were removed from this plan and have been shaded in blue in **Table 5-3**. All actions from the 2016 LHMP were carried over to this plan, and none were removed.

TABLE 5-2: STAPLE/E CRITERIA	
Issues	**Criteria**
Social	• Is the action socially acceptable to Upland community members? • Would the action mistreat some individuals? • Is there a reasonable chance of the action causing a social disruption?
Technical	• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the hazard's effects? • Will the action create new hazards or make existing hazards worse? • Is the action the most useful approach for Upland to take, given the City and community members' goals?
Administrative	• Does the City have the administrative capabilities to implement the action? • Are there existing City staff who can lead and coordinate the implementation of the measure, or can the City reasonably hire new staff for this role? • Does the City have enough staff, funding, technical support, and other resources to implement the action? • Are there administrative barriers to implementing the action?
Political	• Is the action politically acceptable to City officials and other relevant jurisdictions and political entities? • Do community members support the action?
Legal	• Does the City have the legal authority to implement and enforce the action? • Are there potential legal barriers or consequences that could hinder or prevent the implementation of the action? • Is there a reasonable chance that the implementation of the action would expose the City to legal liabilities? • Could the action reasonably face other legal challenges?
Economic	• What are the monetary costs of the action, and do the costs exceed the monetary benefits? • What are the start-up and maintenance costs of the action, including administrative costs? • Has the funding for action implementation been secured, or is a potential funding source available? • How will funding the action affect the City's financial capabilities? • Could the implementation of the action reasonably burden the Upland economy or tax base? • Could there reasonably be other budgetary and revenue impacts to the City?
Environmental	• What are the potential environmental impacts of the action? • Will the action require environmental regulatory approvals? • Will the action comply with all applicable federal, state, regional, and local environmental regulations? • Will the action reasonably affect any endangered, threatened, or otherwise sensitive species of concern?

Hazard Mitigation Actions

Based on the criteria and evaluation processes used during Plan development, the HMPC prepared a prioritized list of mitigation actions (**Table 5-3**) to improve Upland's resilience to hazard events. These actions collectively form Upland's hazard mitigation strategy.

The list of actions also includes preparedness activities that are intended to improve emergency response for the City and community members when hazard events occur or are imminent. Although these actions are not considered mitigation activities, they are expected to decrease the harm the community faces from hazard events and so support the same goals as mitigation actions.

Table 5-3 identifies the 2025 mitigation strategies and actions proposed by the City as part of this LHMP process. In addition to the list of actions, the table also identifies potential funding sources, responsible departments, relative cost estimates, timeframes, and priorities for these actions, which are described further below. In addition to mitigation action and strategies, several preparedness activities were identified and denoted with the letter "P."

Potential Funding Sources

Table 5-3 identifies the potential funding sources that may be used to implement mitigation strategies. These funding sources include the following federal and state sources:

- **Building Resilient Infrastructure and Communities (BRIC):** A competitive FEMA grant program to support states, local communities, tribes, and territories.
- **Flood Mitigation Assistance Program (FMA):** A competitive grant program that provides funding to states, local communities, federally recognized tribes, and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program.
- **Hazard Mitigation Grant Program (HMGP):** Provides funding to state, local, tribal, and territorial governments to rebuild in a way that reduces or mitigates future disaster losses in their communities. This grant funding is available after a presidentially declared disaster.
- **State Homeland Security Grant Program (SHSGP):** This FEMA grant is passed through Cal OES and the San Bernardino Operational Area to public safety agencies within the county. The grant helps build capabilities to protect against, prevent, respond to, and recover from terrorist acts and other types of emergencies or disasters.
- **Emergency Management Performance Grant Program (EMPG):** The federal government, through the EMPG Program, provides necessary direction, coordination, and guidance and provides necessary assistance, as authorized in this title, to support a comprehensive all-hazards emergency preparedness system.
- **Other Grants:** Other grants may include State of California grants associated with climate change, water infrastructure, homeland security, transportation, or other funding sources that periodically become available. The list below provides some common sources:

- Climate Adaptation Planning Sustainable Transportation Planning Grant Program - Department of Transportation
- Sustainable Communities Competitive – Department of Transportation
- CAL FIRE Wildfire Prevention Grants Program – Department of Forestry and Fire Protection
- Integrated Climate Adaptation and Resiliency Program's Climate Adaptation Planning Grant – Office of Planning and Research
- Small Community Drought Relief Program – Department of Water Resources
- Addressing Climate Impacts – Department of Fish and Wildlife
- Cleanup Loans and Environmental Assistance to Neighborhoods (CLEAN) Program – Department of Toxic Substances Control
- Clean Water State Revolving Fund (CWSRF) Program Construction – State Water Resources Control Board
- Drinking Water State Revolving Fund (DWSRF) Construction – State Water Resources Control Board
- Water Recycling Funding Program (WRFP) Construction Grant – State Water Resources Control Board
- Equitable Community Revitalization Grants (ECRG) – Department of Toxic Substances Control
- Water Recycling Funding Program (WRFP) Planning Grant – State Water Resources Control Board
- Infrastructure State Revolving Fund (ISRF) Program - Infrastructure and Economic Development Bank

Responsible Department

Table 5-3 includes the identification of key responsible departments that will be focused on future implementation of mitigation strategies and actions identified by the City.

Relative Cost Estimates

The HMPC identified relative cost estimates to meet the hazard mitigation planning process's cost estimation requirements 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 ($):** $75,000 or less
- **Medium cost ($$):** $75,001 to $4,999,999
- **High cost ($$$):** Greater than $5,000,000

TIMEFRAMES

Table 5-3 includes timeframes that provide general timing durations due to the nature of the mitigation actions identified by the City. The following timeframes are used based on the following conditions:

- **Ongoing (Annually):** Actions that identify this timeframe are the types of actions that City staff would conduct annually.
- **Ongoing:** Actions that identify this timeframe include periodic activities that City staff would conduct in response to a request by internal (City departments) or external (residents, businesses) forces.
- **Long Term:** Actions identified within this timeframe are considered low-priority actions that the City would like to continue to track but doesn't feel they would be able to implement in the current planning implementation timeframe.

For actions that use these terms, it is intended to identify that the action may add to existing capabilities and not have a particular start, end date, or occur periodically. This is typically used for actions that include new policies, tasks, or standard operating procedures intended to mitigate future risks. If a single year is stated in the timeframe column, this indicates the year the action will begin

PRIORITIZATION

As part of the mitigation actions development and review, the HMPC also prioritized the actions. The prioritization efforts looked at the risks and threats of each hazard, financial costs and benefits, technical feasibility, and community values. HMPC members were asked to identify their priority actions through a voting exercise. Items are prioritized based on the number of votes each mitigation action receives from the HMPC members. These quantitative scores were then converted to low, medium, and high priority qualitative categories.

Based on the criteria and evaluation processes used during Plan development, the HMPC prepared a prioritized list of mitigation actions **Table 5-3** to improve Upland's resilience to hazard events.

2025 Hazard Mitigation Actions Plan

Based on the criteria and evaluation processes used during Plan development, the HMPC prepared a prioritized list of mitigation actions to improve Upland's resilience to hazard events. These actions collectively form Upland's hazard mitigation strategy.

The list of actions also includes preparedness activities that are intended to improve emergency response for the City and community members when hazard events occur or are imminent. Although these actions are not considered mitigation activities, they are expected to decrease the harm the community faces from hazard events and so support the same goals as mitigation actions.

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Emergency Preparedness Activities						
P01	Conduct regular emergency preparedness drills and training exercises for City staff.	General Fund, EMPG	Emergency Management, Fire	$	Ongoing	Medium
P02	Expand participation in the Upland Community Emergency Response Team (CERT) program.	General Fund, EMPG	Emergency Management, Fire	$	Ongoing	Low
P03	Verify that community evacuation plans include provisions for community members who don't have access to private vehicles or are otherwise unable to drive.	General Fund, EMPG	Emergency Management, Fire	$	Ongoing	Medium
P04	Continue to provide effective emergency notifications through multiple media formats, in languages appropriate for the community, about pending, imminent, or ongoing emergency events. Plan to make information accessible to people with access and functional needs.	General Fund, EMPG	Emergency Management, Fire	$	Ongoing	Medium
P05	Continuously update response procedures for first responder departments to properly address new hazard events as they emerge.	General Fund, EMPG	Emergency Management, Fire	$	Ongoing	Low
P06	Increase the number of City staff members who have CalOES Safety Assessment Program (SAP) credentials.	General Fund, EMPG	Emergency Management, Fire, Building and Safety Division, Community Development Department	$$	Ongoing	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
P07	Establish or update agreements with local schools so that school facilities can function as evacuation sites during major emergencies.	General Fund, EMPG	Emergency Management, Fire	$	Ongoing	Medium
Multiple Hazards						
MH01	Install digital signage in key locations to aid in public outreach and information dissemination during emergency events.	General Fund, EMPG	Emergency Management, Fire, Public Works Department	$	2027	Low
MH02	Amend Municipal Code Title 17, Part 3, §17.15.220.H(3) to allow emergency-related public service messages to constitute up to 50% of messages displayed during a one-hour period on all permitted electronic changeable-copy signs during a proclaimed emergency.	General Fund	Emergency Management	$	2026	Low
MH03	Conduct routine updates to Facility Conditions Assessments for City-owned infrastructure and other utilities and coordinate with other agencies to ensure inspections of other important infrastructure. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Building and Safety Division	$$	Annually	Low
MH04	Collaborate closely with community groups to increase awareness of hazard events and resiliency opportunities among socially vulnerable community members, including those experiencing homelessness. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Community Development Department, Community Services Department	$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
MH05	Closely monitor changes in the boundaries of mapped hazard areas resulting from land use changes or climate change and adopt new mitigation actions or revise existing ones to ensure continued resiliency. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Community Development Department	$	Annually	Low
MH06	Integrate policy direction and other information from this Plan into other City documents, including the General Plan, Emergency Operations Plan, and Capital Improvements Program. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	All Departments	$	Following All Plan Updates	Medium
MH07	Monitor funding sources for hazard mitigation activities. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Fire	$	Annually	Low
MH08	Integrate climate change mitigation and adaptation information and analysis into future LHMP updates and other City plans, where practicable. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	All Departments	$	Following All Plan Updates	Low
MH09	Update the City's Master Plans periodically (in conjunction with the LHMP and CIP) to incorporate new data/ mapping and/or address emerging issues. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department, Community Development Department	$$	Following LHMP/CIP Updates	Medium
MH10	Create an inventory of all senior centers, mobile home parks (especially those located in the VHFHSZ), and other vulnerable populations to ensure that this population group is accounted for in emergency scenarios where evacuation is required. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Fire, Community Services Department	$	Annually	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Seismic Hazards (Fault Rupture, Seismic Shaking)						
EQ01	Develop projects and programs to install automatic gas shut-off valves in residential, commercial, and public buildings.	HMGP, HUD	Development Services (Building and Safety), Public Works	$	Long Term	Low
EQ02	Conduct an educational campaign to incentivize and promote medium-scale seismic retrofits, such as window films to minimize shattering, rooftop-mounted equipment anchors, masonry chimney bracing, and other preventative measures to reduce damage to private buildings.	General Fund, EMPG, HMGP Grants, California Earthquake Authority Grants, Other Grants	Fire, Community Development Department	$	Long Term	Low
EQ03	Develop a small project-based retrofit program to assist homeowners with simple earthquake mitigation activities (i.e., water heater straps, furniture anchoring, gas shut-off tools, and other emergency supplies) to reduce strain on City resources during an event.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Fire	$	Long Term	Low
EQ04	Develop and sponsor projects and programs to brace new or relocated mobile homes to resist earthquakes	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants	Building and Safety Division		2027	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
EQ05	Conduct a seismic analysis of all City-owned key facilities and retrofit vulnerable facilities.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department	$	2027	Medium
EQ06	Require periodic inspection by the Office of Building and Safety of all critical, essential, and high-occupancy buildings to identify potential hazards in the event of a major earthquake. When hazards are identified, require mitigation by the owner.	General Fund, EMPG, California Earthquake Authority Grants, Other Grants	Building and Safety Division	$	2027	Low
EQ07	To the extent feasible, construct all new City-owned facilities to remain operational in the event of a major earthquake.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department	$$$	2028	Low
EQ08	Retrofit key critical facilities with seismically rated window film treatments that prevent glass windows from shattering during a strong seismic event.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department	$$	2028	Low
EQ09	Improve local understanding of the threat of a major earthquake by conducting a citywide assessment modeling potential losses due to destroyed and damaged structures, and interruptions to key services.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Building and Safety Division	$	2028	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
EQ10	Analyze the City's building and housing stock to create an inventory of seismically vulnerable buildings (unreinforced masonry, soft-story construction, non-ductile concrete buildings) within the city and conduct an educational program providing information on how to begin the process of seismically retrofitting these buildings.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department, Community Development Department	$$	2027	Medium
Fire (Wildland Fire, Wildland / Urban Interface Fire)						
F01	Develop and sponsor an enhanced public education program based on targeted needs that encourages the public to take responsibility for wildfire protection.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low
F02	Develop and sponsor a defensible space management program to support CA Public Resource Code § 4291.	Cal Fire Grants, Other Grants	Fire	$	Long Term	Low
F03	Require development applicants in areas of identified fire risk to prepare a site-specific fire protection plan.	General Fund	Community Development Department	$	Long Term	Low
F04	Require applicants to fund expansion of local fire protection services by payment of appropriate impact fees.	General Fund	Development Services	$	Ongoing	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
F05	Continue to disseminate an informational brochure on design and construction standards required in the Fire Hazard Overlay through the Division of Building and Safety.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Building and Safety Division	$	Ongoing	Low
F06	Promote the proper maintenance and separation of power lines and efficient response to fallen power lines, particularly in the WUI and VHFHSZs.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire, Public Information Officer	$	Annually	Low
F07	Identify funding for existing non-conforming retrofits in fire-prone areas to use non-combustible building materials such as masonry, brick, stucco, concrete, steel, or others as appropriate. Establish defensible space zones around homes in these areas to reduce fire vulnerability.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$$	Annually	Medium
F08	Routinely participate in regional areas focused on wildfire preparedness and investigate the feasibility of developing additional defensible space and home hardening guidance for existing structures.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
F09	Create a rapid response plan from among Upland's and surrounding counties' first responders to secure hospital, nursing, and assisted-living facilities, especially those located within fire hazard severity zones.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	2027	Low
F10	Clear dead vegetation and invasive plants in flood control facility footprints, trails, parks, and open spaces, especially during and after a drought episode.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low
F11	Coordinate with surrounding jurisdictions on home hardening and vegetation management assessments to assist residents in understanding and addressing wildfire risk.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low
F12	Conduct regular fuel modification projects and clear vegetation to reduce fire hazard risks, such as removal of dead vegetation and invasive plants in parks, open spaces, and right-of-way embankments and creating larger buffers within the wildland-urban interface.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire, Public Works Department	$$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
F13	Create a fire-adapted landscape program to assist existing property owners with retrofits.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire, Community Development Department	$$	2027	Low
F14	Add emergency alert and warning signage along the hazard-prone areas in the VHFHSZ to provide critical information and evacuation instruction during fire emergencies.	General Fund, EMPG, BRIC/ HMGP Grants, Cal Fire Grants, Other Grants	Public Works Department	$$	2027	Low
Human-Caused Hazards (Hazardous Materials Release, Landfill Subsidence, Transportation Incidents, Cybercrime Incidents, Mass Casualty / Fatality Incidents)						
H01	Conduct active shooter training and exercises for City staff, residents, and businesses. (Hazard addressed: MCI/MFI)	General Fund, SHSGP Grants, UASI, Other Grants	Police Department, Fire	$	Annually	Medium
H02	Retrofit critical facilities, administration buildings, and other city-owned buildings deemed important, along with CPTED design elements and building materials. (Hazard addressed: MCI/MFI)	General Fund, SHSGP Grants, UASI, Other Grants	Police Department, Public Works	$$$	2028	High
H03	Coordinate and enhance datasets for schools, medical facilities, senior assisted-living facilities, and other critical facilities with the school district and other key entities within the City to better respond to mass-casualty incidents. (Hazard addressed: MCI/MFI)	General Fund, SHSGP Grants, UASI, Other Grants	Police Department, Fire	$	2027	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
H04	Discourage new sensitive land uses, including schools, parks, childcare centers, adult and senior assisted-living facilities, and community centers, from locating near identified hazardous material facilities. Discourage or prohibit new hazardous material facilities from locating near sensitive land uses. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	Community Development Department	$	Ongoing/ Annually	Medium
H05	Pursue full alignment of the General Plan with policies and actions outlined in state and regional plans, such as the California Accidental Release Prevention (CalARP) Program. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	Community Development Department, Fire	$$	2028	Low
H06	Continuously inspect businesses and other properties storing hazardous materials and create an inventory of storage locations that require updates, maintenance, or renovation. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	SB Health, Community Development Department, Fire	$	Annually	Medium
H07	Develop a parcel-level, GIS-based database, in coordination with San Bernardino County and the state, which tracks the status of hazardous materials storage and use, prioritized by potential threat to surrounding properties. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	Fire, Information Technology	$$	Long Term	High
H08	Obtain and introduce a cybercrime-awareness training program for all City employees, specifically including malware identification and digital hygiene. (Hazard addressed: Cybercrime)	General Fund, SHSGP Grants, UASI	Information Technology, Police	$	2027	High

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Severe Weather (Extreme Heat, Drought, Severe Wind)						
W01	Develop intradepartmental hazard teams for use in planning and support of public education and response to plan elements involving extreme weather events.	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Emergency Management	$$	Long Term	Low
W02	Develop a public information program to assist the public in early detection of potential wind hazard damage.	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Emergency Management, Information Technology, Public Information Officer	$$	Long Term	Low
W03	Expand current outreach to residents and businesses prior to severe winds on proper tree maintenance and identification of potentially hazardous trees. (Hazards addressed: Severe Wind)	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Public Information Officer	$	Annually	Low
W04	Remove or trim trees determined to be susceptible to blowing over during a severe wind event. Encourage the undergrounding of existing utilities. (Hazards addressed: Severe Wind)	General Fund, HMGP Grants, Other Grants	Public Works Department	$$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
W05	Promote passive cooling design (brise-soleil, long roof overhangs, locating windows away from southern facades, etc.) in new developments during the design review process. (Hazards addressed: Extreme Heat)	General Fund, California Climate Resilience Grants, Other Grants	Development Services (Building and Safety)	$	Medium Term	Low
W06	Expand current outreach to residents and businesses regarding extreme heat events. Educate residents on the dangers of extreme heat and identify actions they can take to mitigate the negative effects of extreme heat. (Hazards addressed: Extreme Heat)	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Public Information Officer	$	Ongoing	Low
W07	Launch a pilot program with smart water meters to track water usage in commercial and industrial properties across the City. (Hazards addressed: Drought)	General Fund, California Climate Resilience Grants, Other Grants	Development Services (Building and Safety), Public Works	$$	2028	Low
W08	Identify opportunities (grant funding, design assistance, etc.) to sponsor homeowner retrofits from lawns to low-water-consuming plants. (Hazards addressed: Drought)	General Fund, California Climate Resilience Grants, Other Grants	Development Services (Building and Safety)	$	Long Term	Medium
W09	Use drought-tolerant plants when installing new or redesigned City-owned landscapes. Limit non-drought tolerant turf to recreational fields and lawns, and only in instances where no feasible drought tolerant alternatives exist. (Hazards addressed: Drought)	General Fund, California Climate Resilience Grants, Other Grants	Public Works Department	$	Ongoing	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Infrastructure Failure (Power Failure, Public Safety Power Shutoff)						
IF01	Maintain at least one emergency power-generating station in all critical facilities that the City can use as an emergency public assembly area, such as the Civic Center, Community Centers, and any other locations designated in the future.	General Fund, EMPG	Emergency Management, Fire	$$$	2027	High
IF02	Update the Upland Emergency Operations Plan to identify backup power and communications provisions for critical facilities.	General Fund, EMPG	Emergency Management, Fire	$	2027	Medium
IF03	Install energy-efficient equipment upgrades in City facilities to increase the longevity of the fuel supply for backup generators.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$	2028	Low
IF04	Conduct a feasibility assessment of the installation of solar and battery backup systems at key critical facilities within the City.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$	2027	Medium
IF05	Install and harden encased emergency backup power generators at critical facilities and key infrastructure as deemed necessary. Prioritize installations for facilities that serve as key cooling/warming centers and evacuation centers.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$	2027	Medium
IF06	Install battery backup power supplies for traffic signals to ensure functionality in the event of power failure.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$$	2028	High

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Flood (Surface Flooding, Dam and Levee Failure)						
FL01	Investigate the use of permeable paving and landscaped swales for new construction and replacement of City-owned hardscaped areas.	General Fund, BRIC/ HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	2028	Low
FL02	Identify potential flood improvements that reduce inundation from both storm flows and potential dam inundation effects.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	2028	Low
FL03	Keep all flood control channels clear of debris and plant detritus that could affect channel capacity during heavy rainfall events. Install large grilles over storm drain inlets to screen out large debris.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	Annually	Low
FL04	Conduct frequent cleanings of storm drain intakes, especially before and during the rainy season.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	Annually	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action Item	Potential Funding Source	Responsible Agency	Relative Cost	Time Frame	Priority
FL05	Track areas where ponding frequently occurs during heavy rainfall and install new drains or upgrade existing ones to reduce ponding.	General Fund, BRIC/ HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	2028	Low
FL06	Identify all structures located in FEMA flood zones and determine the need to plot, analyze, and modify FEMA flood maps. If flood map revisions are possible, work with property owners to determine the desire to perform this activity on their behalf.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department, Administrative Services	$	2027	Low
FL07	Coordinate with dam owners/operators and 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, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department, Fire	$	2028	Low
FL08	Identify all structures located in dam or levee inundation zones. Develop evacuation procedures and public information strategies to expedite evacuation of threatened areas should a dam or levee threaten to fail.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department, Administrative Services	$	2027	Low

*** Relative Cost Categories**
$ - Less than $75,000
$$ - $75,001 to $4,999,999
$$$ - Greater than $5,000,000

Mitigation strategies identified in blue are actions from the 2016 Plan. No actions from that plan have been removed or completed and all actions have been incorporated into this update.

National Flood Insurance Program

Upland participates in the National Flood Insurance Program (NFIP), created by Congress in 1968 to provide flood insurance at subsidized rates to homeowners living in flood-prone areas. Individual communities can participate in the NFIP, although property owners who live in nonparticipating communities with flood-prone areas cannot 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. **Table 5-4** provides information about the City's NFIP participation.[71]

Continued participation in the NFIP is not a dedicated hazard mitigation action, although Upland will continue to do so and will remain in compliance with the program's requirements through continued enforcement of the City's Floodplain Management Regulations.[72] The Floodplain Management Regulations function as Upland's floodplain management ordinance, which all participating communities in the NFIP must adopt. These regulations apply to land within the mapped 100-year floodplain and limit the types of development and construction activities that can occur in this area. New construction must meet several flood-resistant standards, such as being anchored to better resist damage from moving floodwaters. Other standards apply to new subdivisions, utility projects, and manufactured homes. As part of the City's commitment to complying with the requirements of the NFIP, the City will make updates and revisions as needed to the Floodplain Management Regulations. These changes may be made because of changes in best practices, shifts in flood-prone areas, or other factors that allow the City to better protect against the threat of flood events. The City will also continue to incorporate changes in the location and designations of mapped floodplains into future planning documents, including future updates to this Plan.

TABLE 5-4: FLOOD INSURANCE PROGRAM PARTICIPATION DATA

Initial Flood Hazard Boundary Map (FHBM)	06/28/1974
Initial Flood Insurance Rate Map (FIRM)	03/18/1996
NFIP Participation Date	12/23/1981
Current Effective Map Date	09/02/2016

Although participation is not a dedicated hazard mitigation action, Upland will continue to participate in NFIP and comply with the program's requirements by enforcing the City's Floodplain Management Regulations (Municipal Code Chapter 5: Floodplain Management Ordinance). **Table 5-5** identifies the City's floodplain management regulations.

[71] FEMA (Federal Emergency Management Agency). "Participation in the National Flood Insurance Program." https://www.fema.gov/participation-national-flood-insurance-program

[72] Chapter 15.56 of the Upland Code of Ordinances https://ecode360.com/UP5026

TABLE 5-5: UPLAND FLOODPLAIN MANAGEMENT REGULATIONS	
Adoption of Minimum Floodplain Management Criteria and Implementation and Enforcement of Floodplain Management Regulations	Ordinance No. 1835. Floodplain Management Adopted in 2003
Designee to Implement NFIP	Chapter 15.56.100 Designation of Floodplain Administrator The Public Works Director, or his or her designee, as the designated appointee, is appointed to administer, implement, and enforce this chapter by granting or denying development permits in accord with its provisions.
Implementation of Substantial Improvement/ Substantial Damages Provisions	Chapter 15.56.130: Construction Standards
Note: Ordinances Hyperlinked	

These regulations apply to all areas of special flood hazards, flood-related erosion hazards, and mudslide (i.e., mudflow) hazards within the city. These regulations aim to promote public health, safety, and general welfare and minimize public and private losses due to flood conditions. This chapter also includes methods of reducing flood losses, the basis for establishing flood hazard areas, development permit requirements, duties and responsibilities of the City's Floodplain Administrator, the development standards that apply in flood-prone areas and required documentation and analysis for construction within these areas. As part of the City's efforts to comply with NFIP, Upland will make updates and revisions to these regulations periodically to ensure they are most effective at minimizing the threat of harm from flood events. These updates and revisions may be promoted by changes in local demographics, land use shifts, flood regime changes 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 2025, there were 23 properties in Upland insured under the NFIP, with a total insured value of approximately $7.64 million. There have been 19 claims filed for these insured properties. One property is known as a repetitive loss property, meaning that it has filed claims for flood damage at least twice. There are no severe repetitive loss properties in Upland.

CHAPTER 6 –

PLAN MAINTENANCE

For this LHMP to remain effective and useful to the community of Upland, it must remain up to date. An updated version of the LHMP will continue to guide Upland's hazard mitigation activities and help keep the City eligible for state and federal hazard mitigation funding. The HMPC has structured this LHMP so individual sections can easily be updated as new information becomes available and new needs arise, helping to keep this Plan current.

This chapter discusses updating this Plan to comply 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.

Plan Adoption

The Upland City Council is responsible for updating this Plan as well as all future updates. LHMPs are subject to review by FEMA to determine whether the Plan meets all applicable federal requirements and thus provides additional funding benefits to Upland. Once the Plan is consistent with FEMA's requirements, FEMA will notify the City that the Plan is Approved Pending Adoption. At this point, the City Council can formally adopt the Plan. Following adoption, the City will send a copy of the adopted Plan, including the resolution of adoption, to FEMA.

Plan Implementation

The Plan's effectiveness depends on the successful implementation of the mitigation actions. Implementation 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. HMPC members prioritized the hazard mitigation actions in **Table 5-3** in **Chapter 5**. These priorities will guide the implementation of these actions through new or existing City mechanisms as resources are available. The LHMP project manager is responsible for overseeing the implementation, promotion, and maintenance of this Plan and facilitating meetings and coordinating activities related to Plan implementation and maintenance.

Coordinating Body

Implementation will be the responsibility of the individual City departments and other agencies tasked with each mitigation action, as identified in the overall mitigation strategy. Implementation will be coordinated through the Hazard Mitigation Planning Committee. A list of current Committee members is provided in **Chapter 1**, **Table 1-1**.

In future years, representatives from the following City departments will be included in future Planning Committee meetings:

- City Manager
- Fire
- Police
- Public Works
- Administrative Services
- Community Services
- Development Services
- Emergency Preparedness

Staff from other organizations who participated during plan preparation shall be invited to participate in future planning meetings, plus any other applicable agencies. Based on the composition of the Planning Committee during the preparation of this Plan, the other organizations that will be invited to participate may include, but not be limited to:

- American Red Cross
- Cable Airport
- California Department of Transportation
- California Highway Patrol
- Caltrans
- Neighboring Jurisdictions:
    - City of Claremont
    - City of Montclair
    - City of Ontario
    - City of Rancho Cucamonga
- San Antonio Regional Hospital
- San Bernardino County Fire District
- San Bernardino County Office of Emergency Services
- San Bernardino County Sheriff's Department
- San Bernardino County Planning and Land Use
- San Bernardino County Public Health Department
- San Bernardino County Public Works
- San Bernardino County Transportation Authority
- Southern California Edison
- Southern California Gas
- Upland Chamber of Commerce
- Upland Unified School District

The Upland Assistant City Manager, Public Works, is the staff member responsible for coordinating the implementation of the LHMP and future meetings of the Planning Committee. The Assistant City Manager, Public Works, may designate this role to another staff member, if necessary.

Plan Maintenance Process

The City's plan maintenance process will rely on the Upland Mitigation Implementation Handbook, located in **Appendix E**. This handbook is intended to function as a stand-alone document that gives concise and accessible guidance to staff to implement and maintain the Plan. A key component is the specific mechanisms that the City can use to integrate this plan into the other City planning mechanisms.

Plan Monitoring And Evaluation

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

- A discussion of the timing of mitigation action implementation
- Evaluation and determination of success for mitigation action implementation
- Mitigation action prioritization revisions, if deemed necessary
- Integration of mitigation actions into other planning mechanisms, as needed

The first of these meetings will be held in the 2026–2027 fiscal year. To the extent possible, HMPC meetings shall 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 HMPC meets to evaluate the Plan, the following questions will be asked:

- What hazard events, if any, have occurred in Upland 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 concerns arisen, including hazard events in other communities or regions not covered by existing mitigation actions?
- Is new data available to inform the Plan's updates, including data relevant to the hazard profiles and threat assessments?
- Are there any new planning programs, funding sources, or other mechanisms to support hazard mitigation activities in Upland?

Plan Updates

The information in this Plan, including the hazard profiles, threat assessments, and mitigation actions, is based on the best available information, practices, technology, and methods available to the City and HMPC when 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 to remain relevant.

The HMPC may decide to make interim changes to the LHMP outside the five-year cycle of formal review and Council adoption. This may include updating the scope of an existing hazard or the risk it poses, adding a new hazard or eliminating an existing one, updating the status of mitigation actions, reflecting changes in local capabilities or funding vehicles, and so on. Changes of this nature do not trigger a new round of Cal OES and FEMA review, nor do they require City Council adoption.

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.

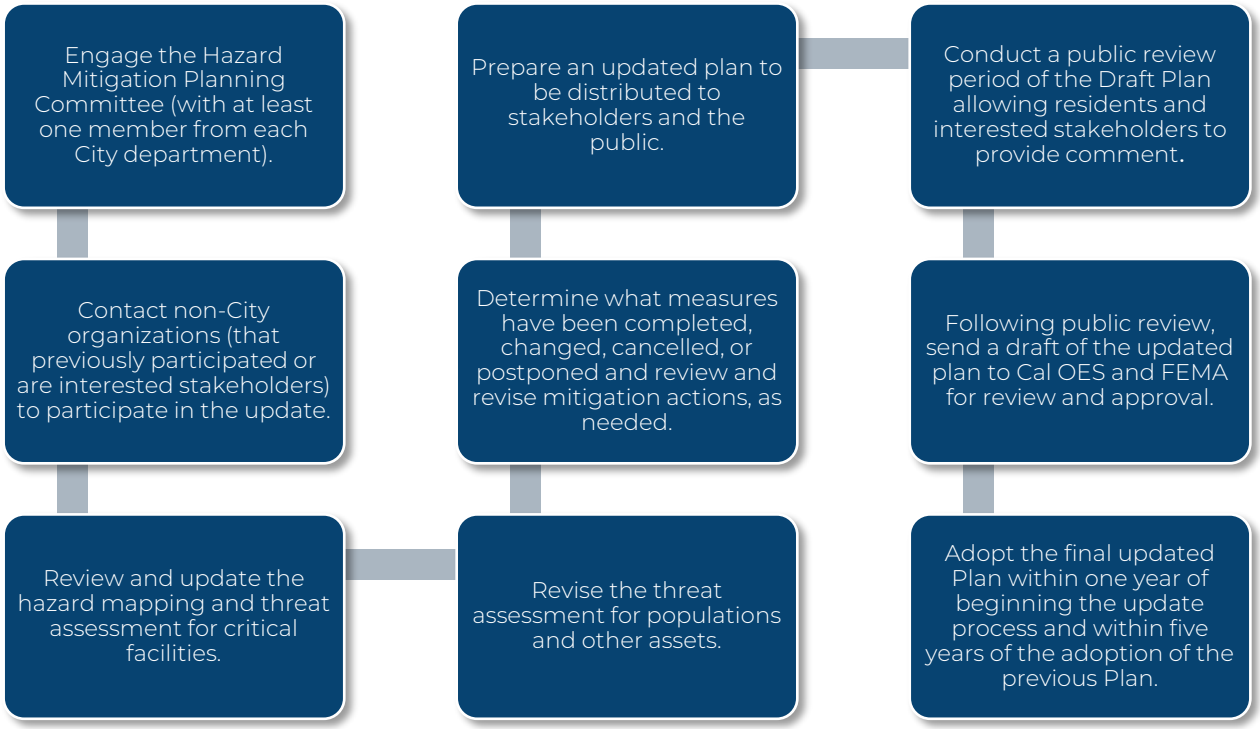
Update Method And Schedule

The update process will begin no later than four years after this Plan is adopted, allowing a year for the update process before the Plan expires. However, it is recommended that you begin the update process three years after plan adoption if the funding source for the plan will be a mitigation grant. Depending on the circumstances, the LHMP project manager or their designee may also choose to begin the update process sooner.

Some reasons for accelerating the update process may include:

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

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 necessary information, keeping the Plan relevant and current. The HMPC will determine the best process for updating the Plan, which should include the following steps:



Update Adoption

The Upland City Council is responsible for adopting this Plan and all future updates. As previously mentioned, adoption should occur every five years. The City shall begin the update process at least one year before expiration to ensure the plan remains active. If the City has a grant application that relies on the LHMP, an update to the plan should occur at least two years prior to expiration. Adoption shall take place after FEMA notifies the City that the Plan is Approvable Pending Adoption. Once the City Council adopts the Plan following FEMA's approval, the adopted plan shall be transmitted to FEMA.

Incorporation into Existing Planning Mechanisms

Incorporating the mitigation strategy into existing City plans, policies, programs, and other efforts helps to promote successful implementation. This Plan works in concert with the Upland General Plan, particularly the Safety Element. The Safety Element establishes a community-wide framework for hazard mitigation and preparation activities and integrates with the goals of this Plan. The LHMP expands on the topics and issues in the Safety Element and other applicable sections of the General Plan, translating the high-level community objectives into specific mitigation actions. General Plan policies should synchronize with the mitigation actions in the LHMP in future updates to the General Plan.

In addition to the General Plan, this LHMP shall 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 the City's Building and Construction Regulations.
- Revisions to requirements for new construction activities specifically within floodplains should result in changes to the City's Floodplain Management Regulations.
- Requirements related to seismic retrofits to existing buildings may be implemented through amendments to the City's Seismic Strengthening for Unreinforced Masonry 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 Zoning Code.

Appendix E provides guidance on best practices to accomplish this integration.

The 2016 LHMP was never integrated into other city documents or processes. Recognizing this, the City will take the necessary steps to ensure this integration occurs moving forward.

Continued Public Involvement

The City will continue to keep members of the public informed about the Planning Team's actions to review and update the Plan. When updating the Plan, the Planning Committee will develop a revised community engagement strategy that reflects the City's updated needs and capabilities. This strategy will include a schedule and plan for public meetings, recommendations about the appropriate use of the City website and social media accounts, and sample content for public outreach documentation. The Planning Team will also provide annual updates to City Council (and the community) about Plan implementation. Options for receiving feedback shall include a comment portal on the City's website as well as information presented to City Council.

Point of Contact

The Assistant City Manager, Public Works Department, is the primary point of contact for this Plan and for future updates. At the time of writing, the Assistant City Manager for the Upland Public Works Department is Damien Arrula, who can be contacted at (909) 291-2930 or darrula@uplandca.gov.

Appendix A – HMPC Meeting Materials

2026 City of Upland Hazard Mitigation Planning Committee Attendees

TABLE 1-1: UPLAND HAZARD MITIGATION PLANNING COMMITTEE (HMPC)		
Name	**Title**	**Department**
Jessica Gordon	Deputy Director	Public Works Department, Operations
Richard Gonzales	Deputy Director	Public Works Department, Utilities Division
Damien Arrula	Assistant City Manager	City Manager's Office
Marcelo Blanco	Chief of Police	Upland Police Department
Bob Critchfield	Engineering Manager	Public Works Department, Engineering Division
Robert Dalquest	Director	Development Services Department
Ed Diggs	Interim Utilities Manager	Public Works Department, Utilities Division
Jessica Escoto	Parks and Recreation Manager	Community Services Department, Recreation and Community Services Division
Loralee Farris	Planning Manager	Development Services Department, Planning Division
Norberto Ferreira	Chief Water Treatment Operator	Public Works Department, Water Quality Division
Tanya Garcia	Management Analyst	Public Works Department, Utilities Division
Richard Jeganathan	IT Manager	Administrative Services Department, Information Technology Division
Jason Lara	Utilities Supervisor	Public Works Department
Tracy Montez	Dispatch Supervisor	Upland Police Department
Christopher Morgan	Building Official	Development Services Department, Building and Safety Division
Stephen Parker	Assistant City Manager	City Management
Klasha Ray	Emergency Services Officer	San Bernardino County of Emergency Services
Justin Salgado	Emergency Services Officer	San Bernardino County of Emergency Services
Richard Smiderle	Operations Manager	Public Works Department, Operations Division
Staci Sullivan	Finance Manager	Finance
Lon Teague	Patrol Operation Commander	Upland Police Department
Cecilia Todd	Deputy Director of Human Resources and Risk Management	Administrative Services Department, Human Resources/Risk Management Division
Marc Warner	Utilities Supervisor	Public Work Department
Aaron Pfannenstiel	Consultant	Atlas Planning Solutions
Crystal Stueve	Senior Planner	Atlas Planning Solutions

City of Upland

LOCAL HAZARD MITIGATION PLAN UPDATE
HMPC MEETING #1 AGENDA

I. **Team Introductions**

II. **Local Hazard Mitigation Plan Overview**

III. **Project Goals and Expectations**

IV. **Hazard Mitigation Planning Team Roster**

V. **Data Needs (Critical Facilities List, vulnerable populations, recent/past hazards, GIS)**

VI. **Community Engagement and Outreach Strategy**

VII. **Hazard Identification/Prioritization**

VIII. **Next Steps and To-Do List**

Hazard Mitigation Planning Update Process	**October 2024 – June 2025**
Community Outreach	Ongoing
Administrative Draft LHMP	March 2025
Public Review Draft LHMP Document	April 2025
Cal OES/FEMA Review Draft Document	June 2025

Criteria	1	2	3	4
Probability: *Estimated Likelihood that the hazard will occur in the future.*	**Unlikely**	**Occasionally**	**Likely**	**Highly Likely**
Location: *The size of the affected area from a typical future occurrence.*	**Negligible**	**Limited**	**Significant**	**Extensive**
Maximum Probable Extent: *The estimated damage to facilities from a typical failure.*	**Weak –** little to no damage	**Moderate –** some damage, loss of service for days	**Severe –** devastating damage, loss of service for months	**Extreme –** catastrophic damage, uninhabitable conditions
Secondary Impacts: *The effects to the community beyond physical damage*	**Negligible –** no loss of function, downtime, and/or evacuations	**Limited –** minimal loss of function, downtime, and/or evacuations	**Moderate –** some loss of function, downtime, and/or evacuations	**High –** major loss of function, downtime, and/or evacuations

City of Pico Rivera

LOCAL HAZARD MITIGATION PLAN UPDATE
HMPC MEETING #2 AGENDA

I. Introductions

II. Review of Project Goals

1. Protect against threats from natural hazards to life, injury, and property damage within the Upland Community.
2. Increase public awareness of potential hazard events.
3. Preserve critical services and functions by protecting key facilities and infrastructure for the community.
4. Protect natural systems from current and future conditions.
5. Coordinate mitigation activities among City departments, neighboring jurisdictions, and with state and federal agencies.
6. Prepare for long-term changes in hazard conditions.

III. Overview of Mitigation Strategies

Plans and Regulations	• Ordinances, Regulations
Structural Projects	• Utility Undergrounding, Structural Retrofits
Natural Systems Protection	• Stream restoration, erosion control
Education Programs	• Outreach materials, websites, presentations
Preparedness and Response Actions	• Mutual aid agreements, equipment purchases, notification protocols

IV. Discussion of STAPLE/E Criteria

Issue	Criteria
Social	• Is the action socially acceptable to community members? • Would the action treat some individuals unfairly? • Is there a reasonable chance of the action causing a social disruption?
Technical	• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the effects of the hazard? • Will the action create new hazards or make existing hazards worse? • Is the action the most useful approach for the City to take, given the City's goals and community members?
Administrative	• Does the City have the administrative capabilities to implement the action? • Are there existing City staff who can lead and coordinate the measure's implementation, or can the City reasonably hire new staff for this role? • Does the City have enough staff, funding, technical support, and other resources to carry out implementation? • Are there administrative barriers to implementing the action?
Political	• Is the action politically acceptable to City officials and other relevant jurisdictions and political entities? • Do community members support the action?
Legal	• Does the City have the legal authority to implement and enforce the action? • Are there potential legal barriers or consequences that could hinder or prevent the implementation of the action? • Is there a reasonable chance that implementation of the action would expose the City to legal liabilities? • Could the action reasonably face other legal challenges?
Economic	• What are the monetary costs of the action, and do the costs exceed the economic benefits? • What are the start-up and maintenance costs of the action, including administrative costs? • Has the funding for action implementation been secured, or is a potential funding source available? • How will funding the action affect the City's financial capabilities? • Could the implementation of the action reasonably burden the City's economy or tax base? • Could there reasonably be other budgetary and revenue impacts to the City?
Environmental	• What are the potential environmental impacts of the action? • Will the action require environmental regulatory approvals? • Will the action comply with all applicable federal, state, regional, and local environmental regulations? • Will the action reasonably affect any endangered, threatened, or otherwise sensitive species of concern?

V. Discussion of Relative Cost Estimates

Example Cost Categories: **City specific values will be determined with the HMPC in the meeting.**	
$	Less than $75,000
$$	$75,001 to $4,999,999
$$$	Greater than $5,000,000

VI. Review and Discussion of Draft Mitigation Strategies

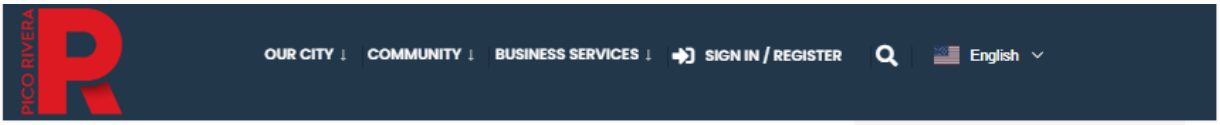
VII. Next Steps

Community Outreach	Ongoing
Administrative Draft LHMP	March 2025
Public Review Draft LHMP Document	April 2025
Cal OES/FEMA Review Draft Document	June 2025

Appendix B – Outreach Engagement Materials

City of Upland 2025 LHMP Update Project Website

https://www.pico-rivera.org/we-want-feedback-from-our-residents/



Hazard Mitigation Plan Update

The City of Pico Rivera is preparing an update to its 2019 Local Hazard Mitigation Plan (LHMP). An LHMP is a way for the City to better prepare in advance of these disasters so when they happen, less damage occurs, and recovery is easier. Having an adopted LHMP can also make Pico Rivera eligible for more financial assistance from the State when disasters occur.

What is in THE LHMP?

- A summary of the natural and human-caused hazards that pose a risk to the community.
- An assessment of the threat to the City and how Pico Rivera is vulnerable to future disasters.
- Policy recommendations for Pico Rivera to carry out over the next five years.

When will the LHMP be COMPLETED?

The project team plans to release a first draft of the Pico Rivera LHMP for public review in Spring 2025 and hope to have the plan ready for adoption in Summer 2025.

How can I get involved?

- Attend upcoming community meetings to be announced on this site.
- Take the **online survey** and encourage your friends and family to do the same to be posted on this website.
- Review the draft LHMP and provide comments.
- Reach out to the project team lead for more ways to stay involved.

Hector Hernandez, Senior Planner, City of Pico Rivera
Email: hhernandez@pico-rivera.org
Phone: (562) 801-4340

To learn more about emergency management, contact the Emergency Management Division at (562) 801-4332.

- Planning
- Building & Safety
- Code Enforcement
- Parking Enforcement
- Housing Services
- Emergency Management

AB 602 Development Impact Fees
AB 2854 Sales & Use Tax Compliance
City Permits
City Plans & Projects
Planning Commission
Pre-Approved ADU Plan
Private Development Projects
Residential Programs
FAQ

Local Hazard Mitigation Plan (LHMP)

Click here **to complete the survey, or scroll down to bottom of the page.**

Local Hazard Mitigation Plan (LHMP)

The City of Upland is preparing an update to its 2016 Local Hazard Mitigation Plan (LHMP). This plan helps to 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 to 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. This plan will also re-open a five-year eligibility window for Federal Emergency Management Agency (FEMA) grants to assist in funding hazard mitigation projects within the City and financial assistance from the State once formerly adopted by the City Council.

Why have an LHMP?

An LHMP will let Upland better plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. An LHMP is a way for the City to better prepare in advance for these disasters so that when they 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 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 protect Upland, our LHMP will make the City eligible for grants from the Federal Emergency Management Agency (FEMA) that can further improve safety and preparedness in the community. Having an adopted LHMP can also make Upland eligible for more financial assistance from the State when disasters occur.

What is in our LHMP?

The City of Upland 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 Upland will describe how our community is vulnerable to future disasters. The plan will examine the threat to important buildings and infrastructure, such as police and fire stations, hospitals, roads, and utility lines. It will also examine the threat to community members, particularly vulnerable populations.
- A hazard mitigation strategy will lay out specific policy recommendations for Upland to carry out over the next five years. These recommendations will help reduce our community's threat from hazard events.
- A section on maintaining the plan will help ensure that our LHMP is kept up-to-date. This will make it easier for us to continue proactively protecting ourselves and keep the City eligible for additional funding.

What hazards will our LHMP help protect against?

The City anticipates addressing the following potential natural hazards within the plan:

- Seismic Hazards (Fault Rupture, Seismic Shaking)
- Flood (Surface Flooding, Dam and Levee Failure)
- Human-caused Hazards (Hazardous Materials Release, Landfill Subsidence, Transportation Incidents (Rail, Plane, Highway), Terrorism)
- Infrastructure Failure (Energy Shortage, Power Outage)
- Severe Weather (Extreme Heat, Drought, Severe Wind)
- Fire (Wildland, Urban Fire)
- Cyberattacks

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.

When will the LHMP be finalized?

The project team plans to release a first draft of the Upland LHMP for public review in Spring 2025. After members of the public provide comments and feedback, the City will revise the plan and send it to the California Office of Emergency Services and FEMA for review and approval. Once approved by these agencies, the Upland City Council will adopt the final LHMP. We hope to have the plan ready for adoption in Summer 2025, but it may be later depending on how long state and federal review takes.

Get involved!

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

- The City will share information about our LHMP and obtain community feedback at upcoming District Community Meetings.
- 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.
- Share about past experiences with natural hazards and how our LHMP can be the most useful. **Complete an anonymous survey at:** https://tinyurl.com/2k9f6saj.

2025 Upland Hazard Mitigation Plan Survey

I. Local Hazard Mitigation Plan Survey

Dear Community Member,

The City of Upland is preparing to update the current Hazard Mitigation Plan or HMP. Like all other communities, Upland could potentially face widespread devastation in the event of a natural disaster. While no community can completely protect itself against all potentially hazardous situations, this plan will help identify those situations, assess our current provisions, and outline strategies to reduce the vulnerability and severity of future disasters.

Your responses will inform the preparation of the plan. Thank you for your time and cooperation.

II. Hazard Awareness

1. Please indicate whether you live or work in the City of Upland.

a. I live in the City of Upland.
b. I work in the City of Upland.
c. I live and work in the City of Upland.
d. Neither applies to me, but I am interested in the City's resilience.

2. **Have you been impacted by a hazard event in your current residence?**
   a. Yes
   b. No

3. **If you answered yes to the previous question, please select the type of hazard event that you have been impacted by (select all that apply).**

Earthquake	Wildfires
Terrorism	High Winds
Flood	Drought
Extreme Heat	Dam Failure
Landslides	Other

If you selected "Other" above, please list any additional hazards that have previously impacted your neighborhood or home.

4. **The following hazards could potentially impact the City. Please mark the THREE (3) hazards that are of the greatest concern to your neighborhood or home.**

Earthquake	Wildfires
Terrorism	High Winds
Flood	Drought
Extreme Heat	Dam Failure

If you selected "Other" above, please list any additional hazards that have previously impacted your neighborhood or home.

5. **The planning team uses 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 that you would like the planning team to consider, such as ponding at a specific intersection during rain?**

   a. I am not aware of local hazards

   b. I am aware of local hazards

If you indicated “I am aware of local hazards” above, please provide as much detail as possible, including the location and type of hazard.

6. **How concerned are you that climate change may create new hazardous situations in Upland or worsen existing natural hazards?**

    a. Very concerned.
    b. Somewhat concerned.
    c. Somewhat unconcerned.
    d. Not at all concerned.
    e. Unsure.

7. **When do you think climate change will pose a threat to your health, property, livelihood, or overall wellbeing?**

    a. It already is.
    b. Within the next five years.
    c. In five to twenty years.
    d. Not for at least another twenty years.
    e. Never, or not in my lifetime.

8. **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 may occur in the future?**

    a. Very confident.
    b. Somewhat confident.
    c. Somewhat unconfident.
    d. Not at all confident.
    e. Unsure.

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

    a. Yes, my insurance coverage should be adequate.
    b. No, I don't believe my insurance coverage would be adequate for a major disaster.
    c. Unsure.
    d. I do not have an insurance policy.
    e. Not applicable; I rent my current residence.

10. **If you rent your residence, do you have renters' insurance?**

    a. Yes
    b. No
    c. Not applicable; I own my residence.

11. **Do you have flood insurance for your home?**

    a. Yes
    b. No
    c. No, but I am interested in reviewing flood insurance options (http://www.floodsmart.gov/floodsmart/).
    d. No, I am not interested in having flood insurance.

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

    a. Yes
    b. No
    c. Not applicable; I rent my residence.

If not, do you plan to?

13. **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?**

a. Potable water (3 gallons per person)
b. Cooking and eating utensils
c. Can opener
d. Canned / nonperishable foods (ready to eat)
e. Gas grill/camping stove
f. Extra medications and contact lenses (if applicable)
g. First aid kit/supplies
h. Portable AM/FM radio (solar-powered, hand crank, or batteries)
i. Handheld "walkie-talkie" radios (with batteries)
j. Important family photos/documentation in a water- and fireproof container
k. Extra clothes and shoes
l. Blanket(s) / sleeping bag(s)
m. Cash
n. Flashlight (with batteries)
o. Gasoline
p. Telephone (with batteries)
q. Pet supplies
r. Secondary source of heat

For more information on emergency kits, visit: https://www.ready.gov/kit

What else do you have in your emergency kit?

14. **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)?**
    a. Yes
    b. No

15. **Are you a trained member of your Community Emergency Response Team (CERT)?**
    a. Yes
    b. No, but I would like to learn more about CERT.
    c. No, I am not interested in being a trained CERT member.

    For more information about CERT, please visit:

    https://www.uplandca.gov/cert-team

16. **How can the City help you become better prepared for a disaster? (choose all that apply)**
    a. Provide effective emergency notifications and communication.
    b. Provide training and education to residents and business owners on how to reduce future damage.
    c. Provide community outreach regarding emergency preparedness.
    d. Create awareness of special needs and vulnerable populations.
    e. Other (please specify)

17. **Does your employer have a plan for disaster recovery in place?**
    a. Yes
    b. No
    c. I don't know

18. **Does your employer have a workforce communications plan to implement following a disaster, so they can contact you?**
    a. Yes
    b. No

III. Recommendations and Future Participation

19. **Would you like to be contacted when the Draft 2026 Upland Hazard Mitigation Plan is available for review?**
    a. Yes; please notify me using my contact information in the next question.
    b. No

20. **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. Please provide your mailing address if you do not have an e-mail address.**

Full Name:	
E-Mail Address:	
Street Address:	
City, State, Zip:	

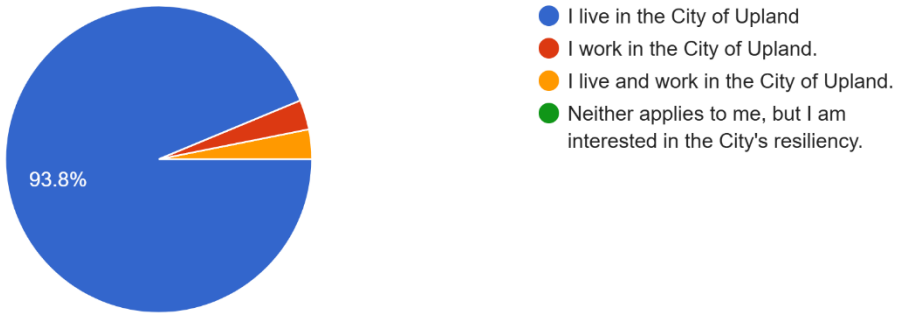
21. **Please provide us with any additional comments/suggestions/questions regarding your risk of future hazard events.**

Thank you for taking the time to complete this survey. If you have any questions or know of other people/organizations that should be involved, please contact the City's Emergency Services Officer at Klasha.Ray@oes.sbcounty.gov . .

The City of Upland Hazard Mitigation Plan Survey Results

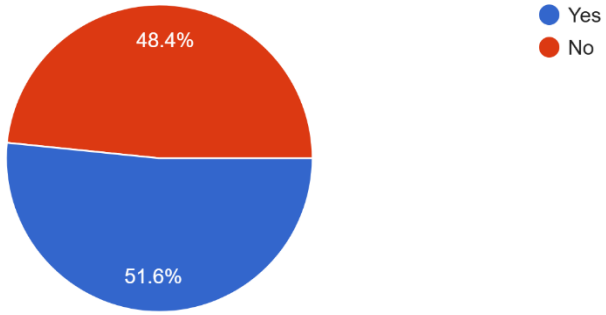
1. Please indicate whether you live or work in the City of Upland.

32 responses

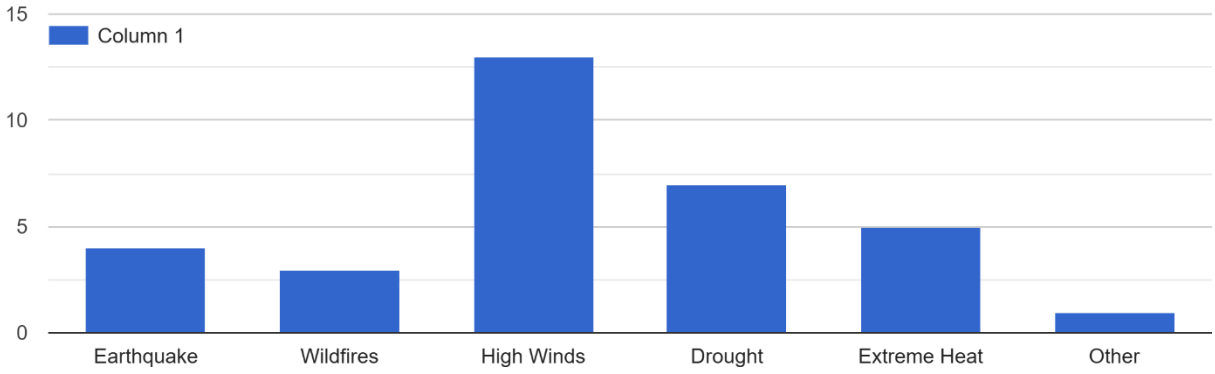


2. Have you been impacted by a natural hazard event in your current residence?

31 responses



3. If you answered yes to the previous question, please select the type of natural hazard event you have been impacted by (select all that apply).

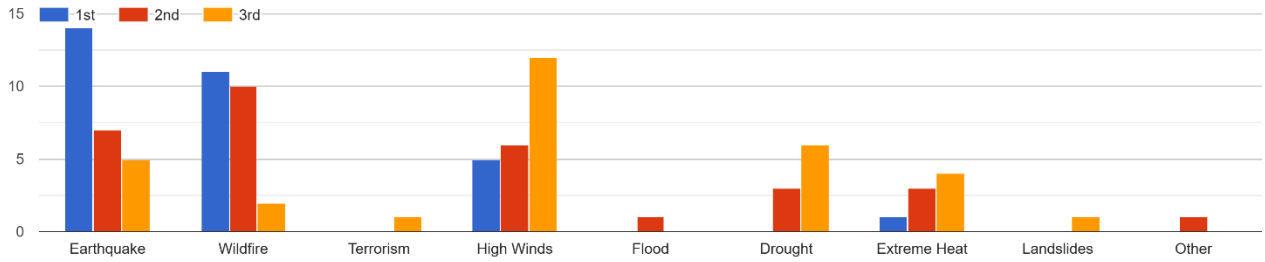


If you selected "Other" above, please list any additional hazards that have previously impacted your neighborhood or home.

1 response

Pesticide and other biodiversity inhibiting behaviors use by neighbors and city

4. The following hazards could potentially impact the city. Please mark the top THREE (3) hazards that are of most concern to your neighborhood or home.



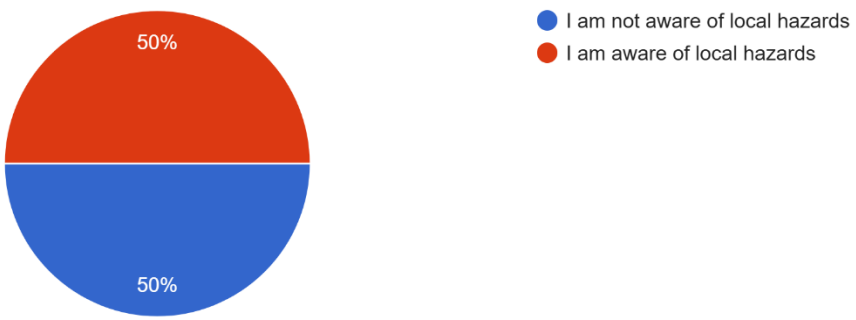
If you selected "Other" above, please list any additional hazards that have previously impacted your neighborhood or home.

2 responses

- Over grown, very old and not maintained Oak trees on 13th Street
- Pesticides, Halloween spider webs on my hedge all year from next door neighbor, light pollution, lawns

5. The planning team uses various data sources to identify hazards in your community; however, some sources do not provide data at a general city...hat you would like the planning team to consider?

32 responses



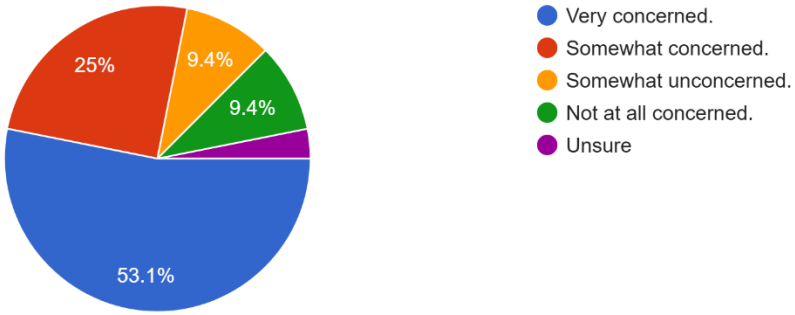
If you indicated "I am aware of local hazards" above, please provide as much detail as possible, including the location and type of hazard.

16 responses

- Overgrown brush in the Colonies area around the reservoirs. Met with Councilman James Breitling and toured last weekend.
- Pot holes
- Flammable trees and landscaping next to and between houses that could cause fires to easily spread house to house
- Euclid and Foothill- draining issues during heavy rain
- Water pools at West 15th and North Palomino
- Ponding on Benson which is adjacent to my home during severe rain
- In the recent past, there has often been a steady stream of water flowing down the gutters, on the north side of 23rd, starting from the small drainage ditch just west of West Orange Dr N. Also, there are many places in my north Upland neighborhood where sidewalks have been lifted by tree roots, creating serious tripping hazards. I have personally tripped several times, as have several of my friends.
- Euclid becomes like a river with heavy rains and water pools at various intersections.
- Heavy rain causes flooding at several intersections, including Mountain and 16th. Cleaning storm drains prior to significant rain events could mitigate some these issues.
- Ponding in the street crossing of Euclid & 7th
- 13th Street between Mountain and San Antonio has very poor drainage system, the street is literally flooded in every direction on a rainy day
- Flooding along Euclid and Mountain Ave during heavy
- Power lines above ground on 20th street and huge pine trees. You cannot have both
- Ponding at intersection of Highland Ct. and Monterey Ave. Ponding at intersection of Sultana and 7th St. Extreme heat at I-10 overpass on Sultana. No native plants used throughout city landscaping. Vehicular air pollution from Euclid traffic for pedestrians on Bridal Trail
- During large rain events, Euclid and Mountain avenues have significant flooding - large enough for vehicles to be swept down the street.
- Flooring on Euclid taking out a traffic lane

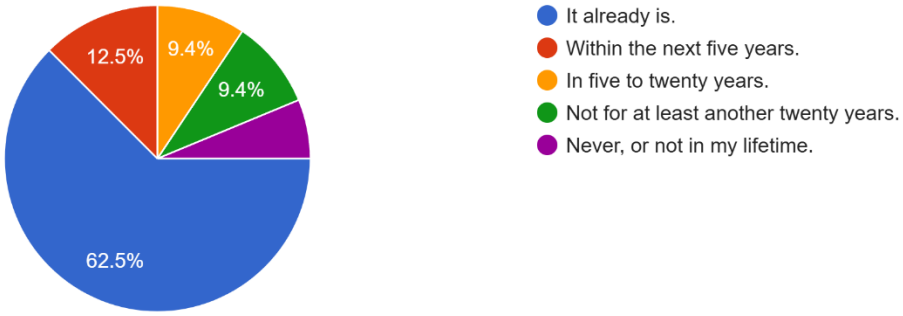
6. How concerned are you that climate change may create new hazardous situations in Upland or worsen existing natural hazards?

32 responses



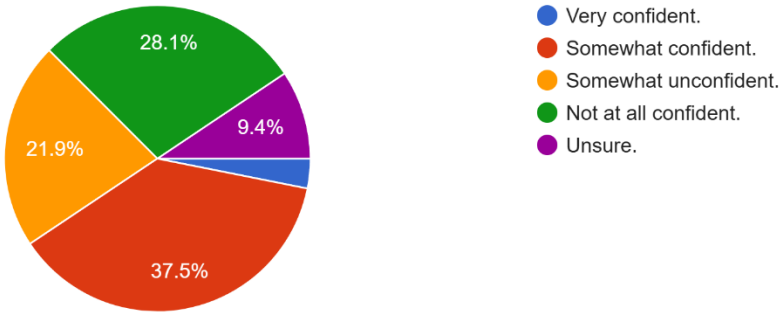
7. When do you think climate change will pose a threat to your health, property, livelihood, or overall well-being?

32 responses



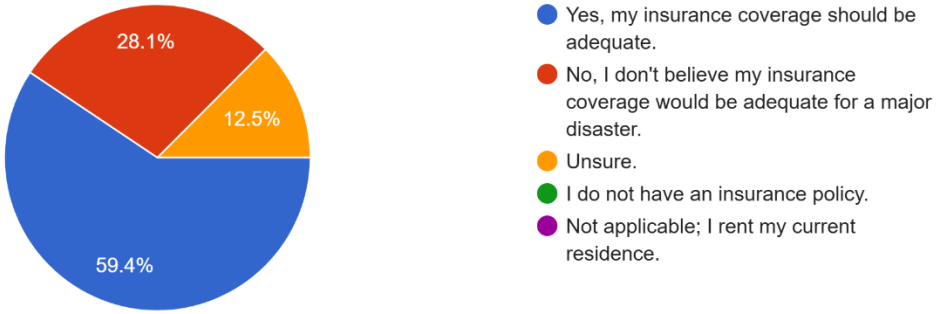
8. If you have taken any action to protect yourself against natural hazards, how confident are you that these actions will be sufficient to protect aga...t more severe hazards that may occur in the future?

32 responses



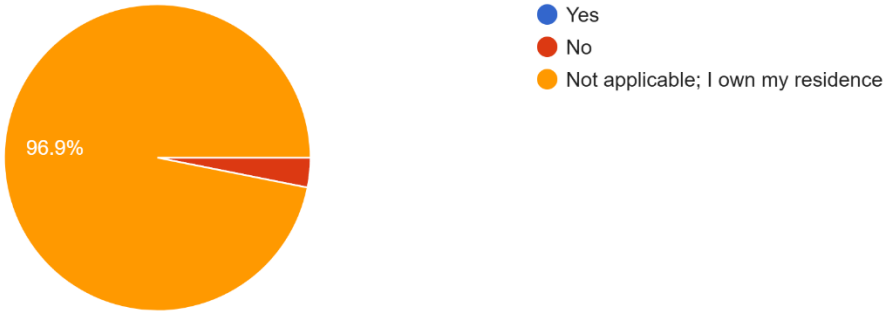
9. If you are a homeowner, do you have adequate homeowners' insurance to cover the hazards that could impact your home?

32 responses



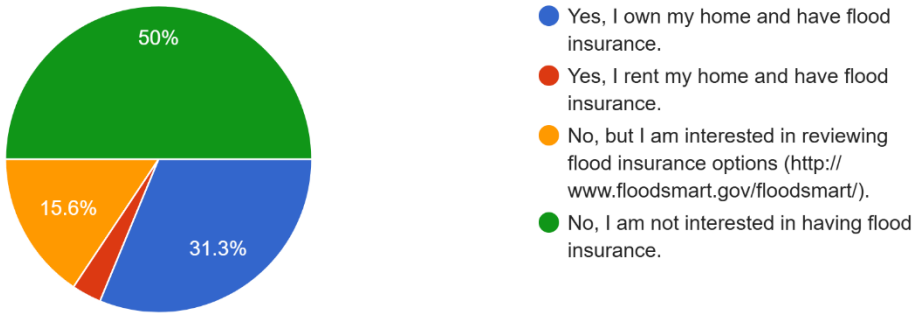
10. If you rent your residence, do you have renters' insurance?

32 responses



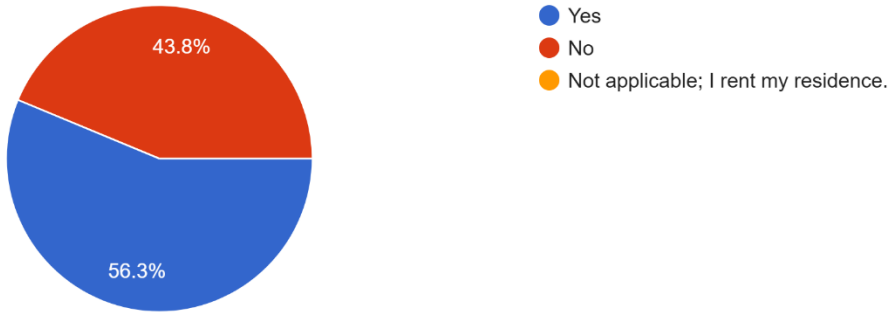
11. Do you have flood insurance for your home?

32 responses



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

32 responses

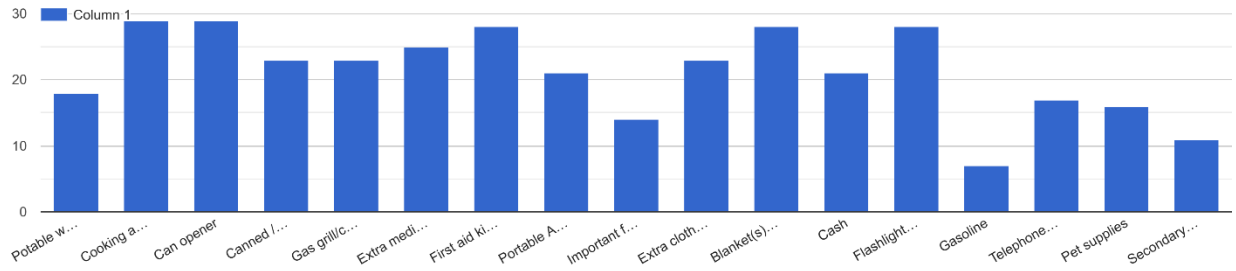


If not, do you plan to?

8 responses

- Not sure what I can do?
- Not at this time, my home is fairly secure
- Not sure what I can do other than keep my landscaping cut and a new roof I had installed
- Not sure
- Not sure what to do but I would
- No
- Maybe
- Yes

13. 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?

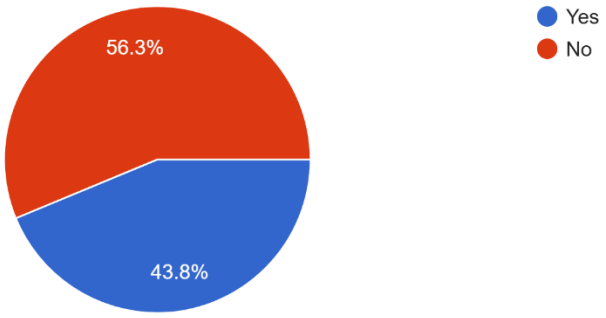


What else do you have in your emergency kit? 7 responses

- My family knows where to meet.
- Port generator. RV
- Solar charger
- Generator
- Non perishable dehydrated foods, camping supplies, vegetable garden, chickens, water filter
- I don't have a kit
- Hand tools, solar charger for phone,

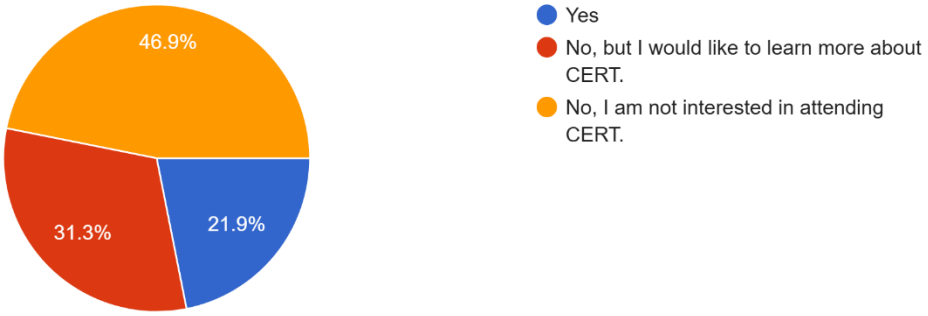
14. Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, and memory impairments)?

32 responses



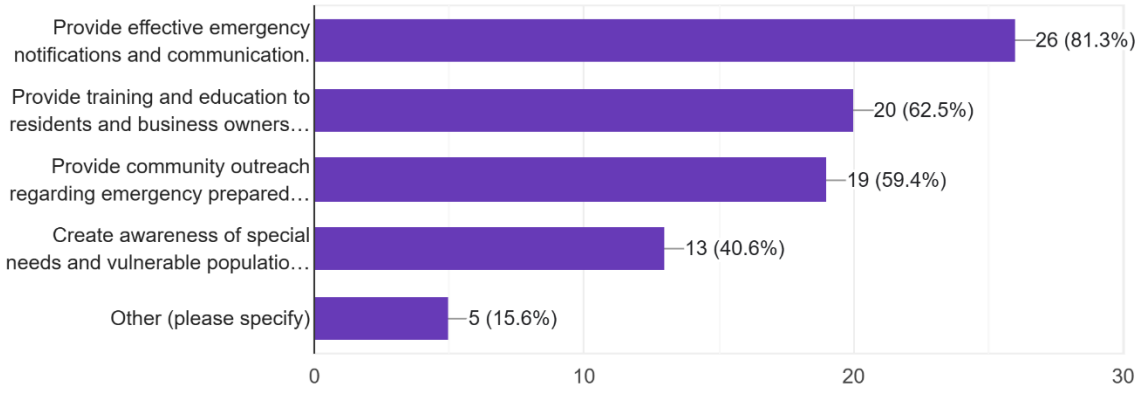
15. Are you a trained member of your Community Emergency Response Team (CERT)?

32 responses



16. How can the City help you become better prepared for a disaster? (Choose all that apply)

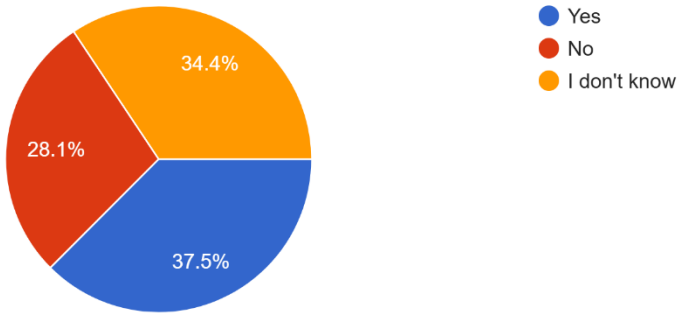
32 responses



- Recently, I heard Rick Caruso say “what’s predictable is preventable” I would ask you as a city. Are you taking care of the things that you need to take care of so that we don’t have problems as citizens? As residents of Upland we don’t know what we don’t know about these things we expect you to know and have them taken care of. Do we have enough water in case of fires are the infrastructure systems in place. Even during the most minor wind event, we are not seeing an effective response from the cities in the utilities underground power is being shut off for days at a time so that Edison can protect their financial liability rather than repairing poor systems or underground and updating and this is just during minor wind events. I see overgrown brush everywhere definitely closer than the 200 foot radius recommended I see power lines going through trees that are not attended to and I don’t know where you would begin to have the water supplies necessary to put out fires the likes of which we have recently seen. The survey seems to be more about what we’re doing is individual citizens rather than what you are doing as our government to protect us. Which is the primary reason for governments existing, to protect it’s citizens!!
- Publish information about and encourage hardening of homes through landscaping changes
- Trim or remove old and over grown trees
- Stop hazardous conditions before they start
- Improve native landscaping for more efficient water use to protect against drought and allow for more shade trees. Recognize our impact on migrating pollinators to keep CA good production healthy Teach and encourage urban homestead practices to help all residents feel more prepared and self-sufficient

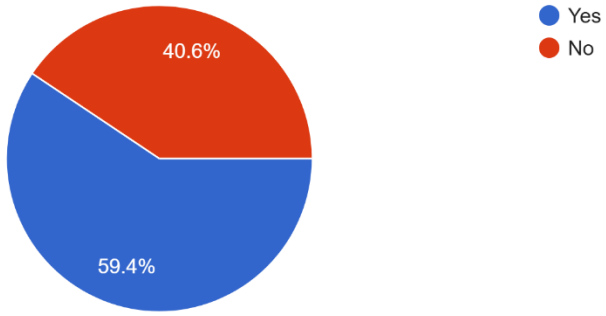
17. Does your employer have a plan for disaster recovery in place?

32 responses



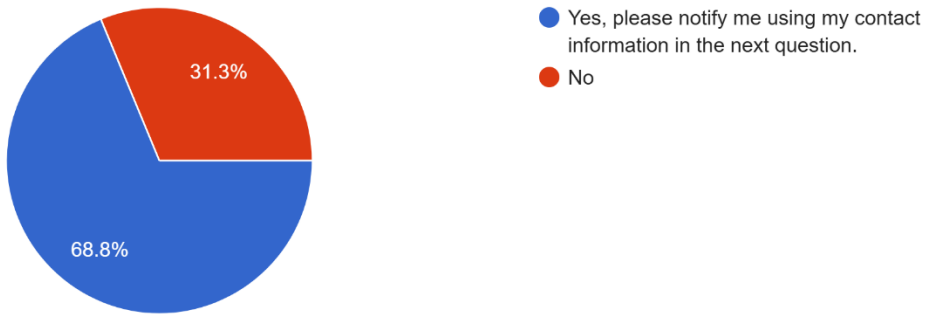
18. Does your employer have a workforce communications plan to implement following a disaster so that they can contact you?

32 responses



19. Would you like to be contacted when the Draft 2025 Upland Hazard Mitigation Plan is available for review?

32 responses



20. 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. Please provide your mailing address if you do not have an e-mail address.

20 responses

21. Please provide us with any additional comments/suggestions/questions regarding your risk of future hazard events.

9 responses

- This survey seems to be pointing to us as individuals when my biggest fear is you not having your house in order as the government agency that's supposed to be protecting at citizens.
- Compliments to the crews working on the trees on Euclid in Upland!
- The city should have emergency notification systems in place
- I am retired, so questions about workplace readiness are N/A
- Does this still apply since trump is leaving fema? How is our water? It seems like it's going down in quality
- Frank Amin
- I have taken TERT with my employer
- Power is critical to infrastructure and Upland pretends being tree heavy is a good thing until your out of power because there are large power poles and huge trees. Either bury powerlines underground or remove tree hazards.

Thank you for taking the time to complete this survey. If you have any questions or know of other people/organizations that should be involved, please contact the City's Emergency Services Officer at Klasha.Ray@oes.sbcounty.gov

Appendix C - Resolution of Adoption
(to be inserted after City Council approval)

Appendix D- List of Key Facilities

Category	Facilities Included	Number in Planning Area
Emergency Response Facilities	Police and fire stations	4
Government Facilities	City hall, city yard, municipal building	4
Medical and Care Facilities	Medical office, assisted living, nursing home, home health services, senior housing	11
Educational Facilities	Schools, libraries	22
Community Gathering Facilities	Recreation, senior center, youth center	13
Utility Infrastructure	Wells, water treatment	17
Transportation Infrastructure	Highway bridges, rail bridges	15
Total		**86**

The current critical facilities list was retained from the list used in the 2011 MJHMP "assets at risk". This excludes the History and Heritage Museum and the Al Natividad Center.

Currently the assets are not listed individually for security purposes, general location in provided in two maps with the plan.

This included the additions of: El Rancho Unified School District schools and Montebello School District schools, assisted living and convalescent facilities, the GRIP water recycling facility, County of Los Angeles libraries in the city, the Los Angeles Sheriff's Department (LASD) station in the city, and the three Los Angeles County Fire Department (LACoFD) stations in the City.

Appendix E – Hazard Mitigation Implementation Handbook

PAGE INTENTIONALLY LEFT BLANK

City of Upland

Local Hazard Mitigation Plan Implementation Handbook

March 2026

What is this Handbook?

The Local Hazard Mitigation Plan (LHMP) for the City of Upland features an evaluation of the City's hazards as well as a variety of corresponding mitigation actions. 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 on hazard mitigation at an individual level. This Implementation Handbook (Handbook) is intended for use by City staff and decision-makers after the LHMP is adopted. It will:

- Give clear instructions following the adoption of the LHMP.
- Simplify future updates to the LHMP.
- Assist the City in preparing grant funding applications related to hazard mitigation.
- Guide annual plan review actions.

How do I use this Handbook?

This Handbook 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 Handbook for advice on how best to proceed:

- A disaster proclamation has been issued by the Upland City Council
- A disaster proclamation has been issued by the State of California
- A disaster declaration has been signed by the Federal Government
- I want to apply for mitigation grant funding
- Upland is undergoing its budgeting process
- Upland is holding its annual meeting of the Hazard Mitigation Planning Committee
- Upland is updating the following policy and regulatory documents:
    - The Local Hazard Mitigation Plan
    - The Safety Element of the General Plan
    - The Housing Element of the General Plan
    - The Zoning Code

Who maintains this Handbook?

The Hazard Mitigation Planning Committee (HMPC) leader is responsible for maintaining this Handbook. At the time of writing, the current HMPC leader is Damien Arrula, Assistant City Manager, Public Works Department. The HMPC may delegate this responsibility to someone else should they choose.

Take action when a disaster has been proclaimed or declared

Disasters may be proclaimed or declared by the Upland 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.

Local emergency proclaimed by the Upland City Council

If the Upland City Council (or the Director of Emergency Services, 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 Upland.
- ☐ 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 in **Attachment 4**.
- ☐ Chapter 6 of the Upland 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 the city. If there is a loss of life in Upland, consider updating the LHMP. Consult the section on updating the LHMP in this Handbook for details.

Disaster proclaimed by the State of California

If the State of California proclaims a disaster for Upland, or an area that includes part or all of Upland, take the following steps:

- ☐ Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of Upland.
- ☐ 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 in **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 Upland 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 Upland, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Handbook for details.

Disaster declared by the Federal Government

If the federal government declares a disaster for Upland, or any area that includes part or all of Upland, take the following steps:

- ☐ Update Attachment 1 with information about the disaster. Include information about cumulative damage, including any damage outside of Upland.
- ☐ Collaborate with Cal OES and FEMA representatives to assess the damage.
- ☐ Determine if Upland 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 in Attachment 4.
- ☐ The Hazard Mitigation Grant Program (HMGP) is a FEMA program that helps fund hazard mitigation activities after a disaster event. Upland may be eligible for funding because of the federal disaster declaration, although not all activities may meet the program's requirements. If Upland is eligible, work with FEMA to apply for this funding.
- ☐ Chapter 6 of the Upland 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 Upland, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Handbook for details.

Apply for hazard mitigation grant funding

There are three potential grant funding programs that FEMA administers for hazard mitigation activities:

1) Building Resilient Infrastructure and Communities (BRIC)[1]
2) Flood Mitigation Assistance (FMA)
3) Hazard Mitigation Grant Program (HMGP)

BRIC and FMA programs are available to communities with an LHMP that complies with FEMA guidelines and has been adopted within the past five years. This section discusses the BRIC and FMA programs and how to apply for them.

The HGMP program is available for communities that are part of a federal disaster declaration. The HMGP was previously discussed above, under the "Disaster declared by the Federal Government" subsection of “What do I do when a disaster has been proclaimed or declared?”

Apply for Building Resilient Infrastructure and Communities (BRIC)

Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a FEMA pre-disaster hazard mitigation program that replaced the Pre-Disaster Mitigation (PDM) program.

The BRIC program's guiding principles are supporting communities through capability- and capacity-building, encouraging, and enabling innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency.

Development projects must be identified in a hazard mitigation plan that meets FEMA guidelines and has been 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 BRIC grant applications are processed through the State. To learn more, consult with Cal OES representatives or visit the FEMA webpage for the program. At the time of writing, this webpage is available at https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities.

To apply:

- ☐ Confirm that the program is currently accepting funding applications. Check with representatives from Cal OES or consult the Cal OES webpage on the BRIC program. At the time of writing, this webpage is available at https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities.
- ☐ 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 BRIC grant.

[1] The BRIC Program still exists; however, it is currently not being funded.

- ☐ Coordinate with Cal OES representatives to compile and submit materials for the grant application.

Apply for Flood Mitigation Assistance (FMA)

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 participating in the National Flood Insurance Program (NFIP), which Upland currently does. Communities must also have a valid hazard mitigation plan that meets FEMA guidelines 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 BRIC 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 the time of writing, this webpage is available at https://www.fema.gov/grants/mitigation/floods.

To apply:

- ☐ 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 the time of writing, this webpage is available at https://www.fema.gov/grants/mitigation/floods.
- ☐ 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.

Incorporate hazard mitigation planning into Upland's budgeting process

Upland'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. Upland currently operates on an annual budget cycle that runs from July 1st to June 30th.

During this process, City staff should take the following steps to incorporate hazard mitigation into Upland's annual budget:

- ☐ Include hazard mitigation activities into Upland'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 in the CIP or can support efforts within the CIP.
- ☐ Review the risk and threat assessments in the LHMP (Chapter 3 and Chapter 4) to ensure that all items in the CIP list are planned, designed, and constructed 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 Team) considered a high priority.
- ☐ Set aside staff to conduct hazard mitigation activities, including time to participate in Planning Team meetings and research, prepare, and submit BRIC and FMA grant opportunities (consult the "I Want to Apply for Mitigation Grant Funding" section above).
- ☐ Ensure hazard mitigation activities are reflected in each department's priorities and earmarked time for specific goals.

Plan the annual meeting of the Upland Hazard Mitigation Planning Committee

The hazard mitigation planning process brings together representatives from multiple City departments as well as other relevant stakeholders. It provides a forum to discuss the hazards in Upland 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 the Planning Committee to meet early in the year, in advance of annual budget activities. **Attachment 3** contains an example of a Planning Committee 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 current LHMP, the following individuals were part of the Planning Committee:

TABLE 1-1: UPLAND HAZARD MITIGATION PLANNING COMMITTEE (HMPC)

Name	Title	Department
Chris Alanis	Interim Public Works Director	Public Works Department
Damien Arrula	Assistant City Manager	City Manager's Office
Marcelo Blanco	Chief of Police	Upland Police Department
Bob Critchfield	Principal Engineer	Public Works Department, Engineering Division
Robert Dalquest	Director	Development Services Department
Ed Diggs	Interim Utilities Manager	Public Works Department, Utilities Division
Jessica Escoto	Parks and Recreation Manager	Community Services Department, Recreation and Community Services Division
Loralee Farris	Planning Manager	Development Services Department, Planning Division
Norberto Ferreira	Chief Water Treatment Operator	Public Works Department, Water Quality Division
Tanya Garcia	Management Analyst	Public Works Department
Richard Jeganathan	IT Manager	Administrative Services Department, Information Technology Division
Jason Lara	Management Analyst	Public Works Department
Tracy Montez	Dispatch Supervisor	Upland Police Department
Christopher Morgan	Building Official	Development Services Department, Building and Safety Division
Stephen Parker	Assistant City Manager	City Management
Klasha Ray	Emergency Services Officer	San Bernardino County of Emergency Services

TABLE 1-1: UPLAND HAZARD MITIGATION PLANNING COMMITTEE (HMPC)		
Name	**Title**	**Department**
Justin Salgado	Emergency Services Officer	San Bernardino County of Emergency Services
Richard Smiderle	Operations Manager	Public Works Department, Operations Division
Staci Sullivan	Finance Manager	Finance
Lon Teague	Patrol Operation Commander	Upland Police Department
Cecilia Todd	Deputy Director of Human Resources and Risk Management	Administrative Services Department, Human Resources/Risk Management Division
Marc Warner	Utilities Supervisor	Public Work Department
Aaron Pfannenstiel	Consultant	Atlas Planning Solutions
Crystal Stueve	Senior Planner	Atlas Planning Solutions

In advance of Planning Team meetings, consider using **Attachment 1** to maintain an accurate list of recent disaster events that have occurred in and around Upland since the LHMP was adopted. At the Planning Team 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 Team members the opportunity to review the actions in the hazard mitigation strategy (**Attachment 4**) and ensure that they are implemented as intended.

Regularly maintain Upland policy and regulatory documentation

If Upland is updating the Local Hazard Mitigation Plan (LHMP), the Safety Element or Housing Element of the General Plan, or the Zoning Code, consult the following applicable section.

Maintenance of the 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 Upland 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 Upland, or if a disaster leads to a loss of life in Upland (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 Team 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 begins.
- ☐ Create and implement a community engagement strategy based on 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 Upland. Consider recent hazard events, new science associated with hazards and climate change, new development and land use patterns, and other recent changes in local conditions.

- ☐ Evaluate the status of all key facilities. Update this list if new facilities 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 by making them more feasible or remove them from the list of mitigation actions if they are no longer appropriate for Upland.
- ☐ Develop mitigation actions to improve the status of hazard mitigation activities in Upland by addressing any issues not covered by the existing LHMP.
- ☐ The ability to expand current mitigation capabilities will generally be reliant upon the budgeting allocated for each department/program for that fiscal year. The level at which these programs may or may not be expanded upon, will be dependent upon the amount of funding received. FEMA has released a series of guides over the past few years which highlight some of the ways in which jurisdictions can expand mitigation. Some strategies for increasing current mitigation capabilities may include:
    - City should actively identify, adopt, and enforce the most current set of development codes and standards available. Strongly encouraging new development to be constructed to higher standards than currently required, increasing resilience within the community.
    - Engaging parts of the community that may not be actively involved in mitigation efforts.
    - Expanding the number and types of organizations involved in mitigation planning and implementation, increasing both efficiency and bandwidth.
    - Fostering new relationships to bring underrepresented populations and partners to the hazard mitigation planning process.
    - During the annual LHMP review, the HMPC should look for opportunities to fund and expand/enhance the effectiveness of current mitigation actions.
    - During annual budgeting processes, the City should identify new funding sources (bonds, grants, assessment districts, etc.) that can be used to support existing capabilities enhancements.
- ☐ Ensure that the feedback from the community engagement activities is 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 the Planning Team members and revise the plan to reflect any comments by Planning Team members.
- ☐ Distribute the updated Plan to any appropriate external agencies not included in the Planning Team 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 the Upland City Council for adoption.
- ☐ Submit the plan to Cal OES and FEMA for approval and make any necessary revisions.

Maintenance of the Safety Element of the General Plan

The Safety Element is a required component of Upland'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 and Safety Element are consistent

- ☐ Review the requirements for Safety Elements in Section 65302(g) of the California Government Code and for LHMPs in Section 65302.6. Ensure that both documents meet all state requirements.
- ☐ Ensure that the information in both plans does not contradict each other and that any inconsistencies are corrected to use the most accurate and appropriate information. This information should include a community description, a risk assessment, and a threat assessment.
- ☐ Ensure that the policies in the Safety Element support the LHMP and provide a planning framework for specific hazard mitigation actions.

Maintenance of the Housing Element of the General Plan

The Housing Element is a required component of Upland'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. Like an LHMP, state regulations require the Housing Elements to be updated regularly to remain current and valid.

The Housing Element is not required to contain any information or policies related 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 several 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 new Housing Element's adoption date, 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 Team 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).

Maintenance of the Upland Floodplain Management Ordinance

Upland's Floodplain Management Ordinance 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. This ordinance includes requirements that structures (particularly new structures or those undergoing substantial renovations) incorporate hazard-resistant features, be located outside 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. Ordinance 1427 "Model Floodplain Management Ordinance for

Special Flood Hazards" contains building regulations and incorporates the BSC. Other sections of the Code adopt additional standards as desired by the City that adapts the BSC to Upland's local context.

As a participant in the National Flood Insurance Program (NFIP), Upland is required to incorporate Floodplain Management Requirements in its Zoning Code, which is contained within this ordinance. These regulations establish standards for developing and operating facilities within mapped flood-prone areas. Other sections of the Upland Municipal Code may include additional standards related to hazard mitigation activities.

With the exception of the Floodplain Management Regulations and the minimum standards in the BSC, Upland is not required to incorporate hazard-related requirements in the Municipal Code. However, the Municipal Code is an effective tool for implementing hazard mitigation measures related to the siting, construction, and operation of new buildings and other structures. 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 applicable sections of the Upland 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, 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 1: DISASTER INFORMATION TABLE

Use this table to fill out the information about any disaster events that have occurred in Upland or nearby and have affected the community. Include the date and location of the disaster event, the damages associated with the event, and any information about disaster proclamations or declarations resulting from the event.

DISASTER INFORMATION			
Date	**Location**	**Damages***	**Declaration Details†**

* Includes number and type of injuries, number of deaths, and cost of physical damage

† If the disaster was proclaimed or declared by the local, state, and/or federal government

ATTACHMENT 2: PLAIN MAINTENANCE TABLE

Use this table when reviewing the LHMP as part of the Planning Team'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 consistent with these notes as part of the next update to the LHMP.

PLAN MAINTENANCE			
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 COMMITTEE

This attachment includes a sample agenda and discussion topics for the annual meeting of the Planning Team. 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 Team will meet more frequently. The meetings of the Planning Team 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 Upland or nearby in a way that affected the community?

- Identify events that caused loss of life or significant injury to Upland community members, significant property damage in Upland, or widespread disruption to Upland.
- 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 using the Disaster Information Table (Attachment 1).

ITEM 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 the 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, San Bernardino County, and special districts? This should include information on district-specific hazard situations, mitigation actions, and other relevant information.

3.2 Is the City communicating with the appropriate state and federal agencies? Is the City receiving information about new regulations, best practices, and data related 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 Upland to support the 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 unavailable, 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 budgeted 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 implementing hazard mitigation activities easier?

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.

5.7 Are there any other opportunities for Planning Team members and the organizations they represent to coordinate efforts?

ITEM 6. NEW BUSINESS

6.1 Are there any other items related to the Planning Team's mission?

ATTACHMENT 4: HAZARD MITIGATION STRATEGY

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Emergency Preparedness Activities						
P01	Conduct regular emergency preparedness drills and training exercises for City staff.	General Fund, EMPG	Emergency Management, Fire		Ongoing	Medium
P02	Expand participation in the Upland Community Emergency Response Team (CERT) program.	General Fund, EMPG	Emergency Management, Fire		Ongoing	Low
P03	Verify that community evacuation plans include provisions for community members who don't have access to private vehicles or are otherwise unable to drive.	General Fund, EMPG	Emergency Management, Fire		Ongoing	Medium
P04	Continue to provide effective emergency notifications through multiple media formats, in languages appropriate for the community, about pending, imminent, or ongoing emergency events. Plan to make information accessible to people with access and functional needs.	General Fund, EMPG	Emergency Management, Fire		Ongoing	Medium
P05	Continuously update response procedures for first responder departments to properly address new hazard events as they emerge.	General Fund, EMPG	Emergency Management, Fire		Ongoing	Low
P06	Increase the number of City staff members who have CalOES Safety Assessment Program (SAP) credentials.	General Fund, EMPG	Emergency Management, Fire, Building and Safety Division, Community Development Department		Ongoing	Medium
P07	Establish or update agreements with local schools so that school facilities can function as evacuation sites during major emergencies.	General Fund, EMPG	Emergency Management, Fire		Ongoing	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
Multiple Hazards						
MH01	Install digital signage in key locations to aid in public outreach and information dissemination during emergency events.	General Fund, EMPG	Emergency Management, Fire, Public Works Department	$	2027	Low
MH02	Amend Municipal Code Title 17, Part 3, §17.15.220.H(3) to allow emergency-related public service messages to constitute up to 50% of messages displayed during a one-hour period on all permitted electronic changeable-copy signs during a proclaimed emergency.	General Fund	Emergency Management	$	2026	Low
MH03	Conduct routine updates to Facility Conditions Assessments for City-owned infrastructure and other utilities and coordinate with other agencies to ensure inspections of other important infrastructure. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Building and Safety Division	$$	Annually	Low
MH04	Collaborate closely with community groups to increase awareness of hazard events and resiliency opportunities among socially vulnerable community members, including those experiencing homelessness. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Community Development Department, Community Services Department	$	Annually	Low
MH05	Closely monitor changes in the boundaries of mapped hazard areas resulting from land use changes or climate change and adopt new mitigation actions or revise existing ones to ensure continued resiliency. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Community Development Department	$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
MH06	Integrate policy direction and other information from this Plan into other City documents, including the General Plan, Emergency Operations Plan, and Capital Improvements Program. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	All Departments	$	Following All Plan Updates	Medium
MH07	Monitor funding sources for hazard mitigation activities. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Fire	$	Annually	Low
MH08	Integrate climate change mitigation and adaptation information and analysis into future LHMP updates and other City plans, where practicable. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	All Departments	$	Following All Plan Updates	Low
MH09	Update the City's Master Plans periodically (in conjunction with the LHMP and CIP) to incorporate new data/ mapping and/or address emerging issues. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department, Community Development Department	$$	Following LHMP/CIP Updates	Medium
MH10	Create an inventory of all senior centers, mobile home parks (especially those located in the VHFHSZ), and other vulnerable populations to ensure that this population group is accounted for in emergency scenarios where evacuation is required. (Hazards addressed: All)	General Fund, BRIC/ HMGP Grants, Other Grants	Fire, Community Services Department	$	Annually	Medium
Seismic Hazards (Fault Rupture, Seismic Shaking)						
EQ01	Develop projects and programs to install automatic gas shut-off valves in residential, commercial, and public buildings.	HMGP, HUD	Development Services (Building and Safety), Public Works	$	Long Term	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
EQ02	Conduct an educational campaign to incentivize and promote medium-scale seismic retrofits, such as window films to minimize shattering, rooftop-mounted equipment anchors, masonry chimney bracing, and other preventative measures to reduce damage to private buildings.	General Fund, EMPG, HMGP Grants, California Earthquake Authority Grants, Other Grants	Fire, Community Development Department	$	Long Term	Low
EQ03	Develop a small project-based retrofit program to assist homeowners with simple earthquake mitigation activities (i.e., water heater straps, furniture anchoring, gas shut-off tools, and other emergency supplies) to reduce strain on City resources during an event.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Fire	$	Long Term	Low
EQ04	Develop and sponsor projects and programs to brace new or relocated mobile homes to resist earthquakes	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants	Building and Safety Division		2027	Medium
EQ05	Conduct a seismic analysis of all City-owned key facilities and retrofit vulnerable facilities.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department	$	2027	Medium
EQ06	Require periodic inspection by the Office of Building and Safety of all critical, essential, and high-occupancy buildings to identify potential hazards in the event of a major earthquake. When hazards are identified, require mitigation by the owner.	General Fund, EMPG, California Earthquake Authority Grants, Other Grants	Building and Safety Division	$	2027	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
EQ07	To the extent feasible, construct all new City-owned facilities to remain operational in the event of a major earthquake.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department	$$$	2028	Low
EQ08	Retrofit key critical facilities with seismically rated window film treatments that prevent glass windows from shattering during a strong seismic event.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department	$$	2028	Low
EQ09	Improve local understanding of the threat of a major earthquake by conducting a citywide assessment modeling potential losses due to destroyed and damaged structures, and interruptions to key services.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Building and Safety Division	$	2028	Low
EQ10	Analyze the City's building and housing stock to create an inventory of seismically vulnerable buildings (unreinforced masonry, soft-story construction, non-ductile concrete buildings) within the city and conduct an educational program providing information on how to begin the process of seismically retrofitting these buildings.	General Fund, BRIC/ HMGP Grants, California Earthquake Authority Grants, Other Grants	Public Works Department, Community Development Department	$$	2027	Medium
Fire (Wildland Fire, Wildland / Urban Interface Fire)						
F01	Develop and sponsor an enhanced public education program based on targeted needs that encourages the public to take responsibility for wildfire protection.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
F02	Develop and sponsor a defensible space management program to support CA Public Resource Code § 4291.	Cal Fire Grants, Other Grants	Fire	$	Long Term	Low
F03	Require development applicants in areas of identified fire risk to prepare a site-specific fire protection plan.	General Fund	Community Development Department	$	Long Term	Low
F04	Require applicants to fund expansion of local fire protection services by payment of appropriate impact fees.	General Fund	Development Services	$	Ongoing	Low
F05	Continue to disseminate an informational brochure on design and construction standards required in the Fire Hazard Overlay through the Division of Building and Safety.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Building and Safety Division	$	Ongoing	Low
F06	Promote the proper maintenance and separation of power lines and efficient response to fallen power lines, particularly in the WUI and VHFHSZs.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire, Public Information Officer	$	Annually	Low
F07	Identify funding for existing non-conforming retrofits in fire-prone areas to use non-combustible building materials such as masonry, brick, stucco, concrete, steel, or others as appropriate. Establish defensible space zones around homes in these areas to reduce fire vulnerability.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$$	Annually	Medium

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
F08	Routinely participate in regional areas focused on wildfire preparedness and investigate the feasibility of developing additional defensible space and home hardening guidance for existing structures.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low
F09	Create a rapid response plan from among Upland's and surrounding counties' first responders to secure hospital, nursing, and assisted-living facilities, especially those located within fire hazard severity zones.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	2027	Low
F10	Clear dead vegetation and invasive plants in flood control facility footprints, trails, parks, and open spaces, especially during and after a drought episode.	General Fund, HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low
F11	Coordinate with surrounding jurisdictions on home hardening and vegetation management assessments to assist residents in understanding and addressing wildfire risk.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire	$	Annually	Low
F12	Conduct regular fuel modification projects and clear vegetation to reduce fire hazard risks, such as removal of dead vegetation and invasive plants in parks, open spaces, and right-of-way embankments and creating larger buffers within the wildland-urban interface.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire, Public Works Department	$$	Annually	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
F13	Create a fire-adapted landscape program to assist existing property owners with retrofits.	General Fund, BRIC/ HMGP Grants, California Climate Resilience Grants, Cal Fire Grants, Other Grants	Fire, Community Development Department	$$	2027	Low
F14	Add emergency alert and warning signage along the hazard-prone areas in the VHFHSZ to provide critical information and evacuation instruction during fire emergencies.	General Fund, EMPG, BRIC/ HMGP Grants, Cal Fire Grants, Other Grants	Public Works Department	$$	2027	Low
Human-Caused Hazards (Hazardous Materials Release, Landfill Subsidence, Transportation Incidents, Cybercrime Incidents, Mass Casualty / Fatality Incidents)						
H01	Conduct active shooter training and exercises for City staff, residents, and businesses. (Hazard addressed: MCI/MFI)	General Fund, SHSGP Grants, UASI, Other Grants	Police Department, Fire	$	Annually	Medium
H02	Retrofit critical facilities, administration buildings, and other city-owned buildings deemed important, along with CPTED design elements and building materials. (Hazard addressed: MCI/MFI)	General Fund, SHSGP Grants, UASI, Other Grants	Police Department, Public Works	$$$	2028	High
H03	Coordinate and enhance datasets for schools, medical facilities, senior assisted-living facilities, and other critical facilities with the school district and other key entities within the City to better respond to mass-casualty incidents. (Hazard addressed: MCI/MFI)	General Fund, SHSGP Grants, UASI, Other Grants	Police Department, Fire	$	2027	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
H04	Discourage new sensitive land uses, including schools, parks, childcare centers, adult and senior assisted-living facilities, and community centers, from locating near identified hazardous material facilities. Discourage or prohibit new hazardous material facilities from locating near sensitive land uses. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	Community Development Department	$	Ongoing/ Annually	Medium
H05	Pursue full alignment of the General Plan with policies and actions outlined in state and regional plans, such as the California Accidental Release Prevention (CalARP) Program. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	Community Development Department, Fire	$$	2028	Low
H06	Continuously inspect businesses and other properties storing hazardous materials and create an inventory of storage locations that require updates, maintenance, or renovation. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	SB Health, Community Development Department, Fire	$	Annually	Medium
H07	Develop a parcel-level, GIS-based database, in coordination with San Bernardino County and the state, which tracks the status of hazardous materials storage and use, prioritized by potential threat to surrounding properties. (Hazard addressed: Hazardous Materials Release)	General Fund, HMGP Grants, Other Grants	Fire, Information Technology	$$	Long Term	High
H08	Obtain and introduce a cybercrime-awareness training program for all City employees, specifically including malware identification and digital hygiene. (Hazard addressed: Cybercrime)	General Fund, SHSGP Grants, UASI	Information Technology, Police	$	2027	High
Severe Weather (Extreme Heat, Drought, Severe Wind)						

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
W01	Develop intradepartmental hazard teams for use in planning and support of public education and response to plan elements involving extreme weather events.	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Emergency Management	$$	Long Term	Low
W02	Develop a public information program to assist the public in early detection of potential wind hazard damage.	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Emergency Management, Information Technology, Public Information Officer	$$	Long Term	Low
W03	Expand current outreach to residents and businesses prior to severe winds on proper tree maintenance and identification of potentially hazardous trees. (Hazards addressed: Severe Wind)	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Public Information Officer	$	Annually	Low
W04	Remove or trim trees determined to be susceptible to blowing over during a severe wind event. Encourage the undergrounding of existing utilities. (Hazards addressed: Severe Wind)	General Fund, HMGP Grants, Other Grants	Public Works Department	$$	Annually	Low
W05	Promote passive cooling design (brise-soleil, long roof overhangs, locating windows away from southern facades, etc.) in new developments during the design review process. (Hazards addressed: Extreme Heat)	General Fund, California Climate Resilience Grants, Other Grants	Development Services (Building and Safety)	$	Medium Term	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
W06	Expand current outreach to residents and businesses regarding extreme heat events. Educate residents on the dangers of extreme heat and identify actions they can take to mitigate the negative effects of extreme heat. (Hazards addressed: Extreme Heat)	General Fund, HMGP Grants, California Climate Resilience Grants, Other Grants	Public Information Officer	$	Ongoing	Low
W07	Launch a pilot program with smart water meters to track water usage in commercial and industrial properties across the City. (Hazards addressed: Drought)	General Fund, California Climate Resilience Grants, Other Grants	Development Services (Building and Safety), Public Works	$$	2028	Low
W08	Identify opportunities (grant funding, design assistance, etc.) to sponsor homeowner retrofits from lawns to low-water-consuming plants. (Hazards addressed: Drought)	General Fund, California Climate Resilience Grants, Other Grants	Development Services (Building and Safety)	$	Long Term	Medium
W09	Use drought-tolerant plants when installing new or redesigned City-owned landscapes. Limit non-drought tolerant turf to recreational fields and lawns, and only in instances where no feasible drought tolerant alternatives exist. (Hazards addressed: Drought)	General Fund, California Climate Resilience Grants, Other Grants	Public Works Department	$	Ongoing	Medium
Infrastructure Failure (Power Failure, Public Safety Power Shutoff)						
IF01	Maintain at least one emergency power-generating station in all critical facilities that the City can use as an emergency public assembly area, such as the Civic Center, Community Centers, and any other locations designated in the future.	General Fund, EMPG	Emergency Management, Fire	$$$	2027	High

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
IF02	Update the Upland Emergency Operations Plan to identify backup power and communications provisions for critical facilities.	General Fund, EMPG	Emergency Management, Fire	$	2027	Medium
IF03	Install energy-efficient equipment upgrades in City facilities to increase the longevity of the fuel supply for backup generators.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$	2028	Low
IF04	Conduct a feasibility assessment of the installation of solar and battery backup systems at key critical facilities within the City.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$	2027	Medium
IF05	Install and harden encased emergency backup power generators at critical facilities and key infrastructure as deemed necessary. Prioritize installations for facilities that serve as key cooling/warming centers and evacuation centers.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$	2027	Medium
IF06	Install battery backup power supplies for traffic signals to ensure functionality in the event of power failure.	General Fund, BRIC/ HMGP Grants, Other Grants	Public Works Department	$$$	2028	High
Flood (Surface Flooding, Dam and Levee Failure)						
FL01	Investigate the use of permeable paving and landscaped swales for new construction and replacement of City-owned hardscaped areas.	General Fund, BRIC/ HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	2028	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
FL02	Identify potential flood improvements that reduce inundation from both storm flows and potential dam inundation effects.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	2028	Low
FL03	Keep all flood control channels clear of debris and plant detritus that could affect channel capacity during heavy rainfall events. Install large grilles over storm drain inlets to screen out large debris.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	Annually	Low
FL04	Conduct frequent cleanings of storm drain intakes, especially before and during the rainy season.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	Annually	Medium
FL05	Track areas where ponding frequently occurs during heavy rainfall and install new drains or upgrade existing ones to reduce ponding.	General Fund, BRIC/ HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department	$	2028	Low
FL06	Identify all structures located in FEMA flood zones and determine the need to plot, analyze, and modify FEMA flood maps. If flood map revisions are possible, work with property owners to determine the desire to perform this activity on their behalf.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department, Administrative Services	$	2027	Low

TABLE 5-3: MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	**Mitigation Action Item**	**Potential Funding Source**	**Responsible Agency**	**Relative Cost**	**Time Frame**	**Priority**
FL07	Coordinate with dam owners/operators and 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, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department, Fire	$	2028	Low
FL08	Identify all structures located in dam or levee inundation zones. Develop evacuation procedures and public information strategies to expedite evacuation of threatened areas should a dam or levee threaten to fail.	General Fund, HMGP Grants, Flood Mitigation Assistance Grants, Other Grants	Public Works Department, Administrative Services	$	2027	Low

*** Relative Cost Categories**
$ - Less than $75,000
$$ - $75,001 to $4,999,999
$$$ - Greater than $5,000,000