



City of El Segundo

2025 Local Hazard Mitigation Plan

September 2025

THIS PAGE DELIBERATELY LEFT BLANK

TABLE OF CONTENTS

- 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 13
 - Demographics 14
 - Disabilities and Access and Functional Needs 17
 - Climate 18
 - Economy 18
 - Development Profile 21
 - Infrastructure 24

- CHAPTER 3 – RISK ASSESSMENT 26
 - Hazard Identification 26
 - Hazard Profiles 36

- CHAPTER 4 – THREAT AND VULNERABILITY 89
 - Threat Assessment Process 89
 - Threat Profiles 94

- CHAPTER 5 – HAZARD MITIGATION STRATEGY 111
 - Strategy Development Process 111
 - Capabilities Assessment 111
 - Hazard Mitigation Strategies 126
 - *2025 Hazard Mitigation Actions 128
 - Existing Mitigation Measures 136
 - *National Flood Insurance Program 136

- CHAPTER 6 – PLAN MAINTENANCE 138
 - Plan Adoption 138
 - Plan Implementation 138
 - *Coordinating Body 138
 - Plan Maintenance Process 139

Incorporation into Existing Planning Mechanisms	142
Continued Public Involvement	142
Point Of Contact.....	143
APPENDIX A – HMPT Meeting Materials	145
APPENDIX B – Outreach Materials	153
APPENDIX C – Adopting Resolution.....	171
APPENDIX D – Implementation Workbook	172

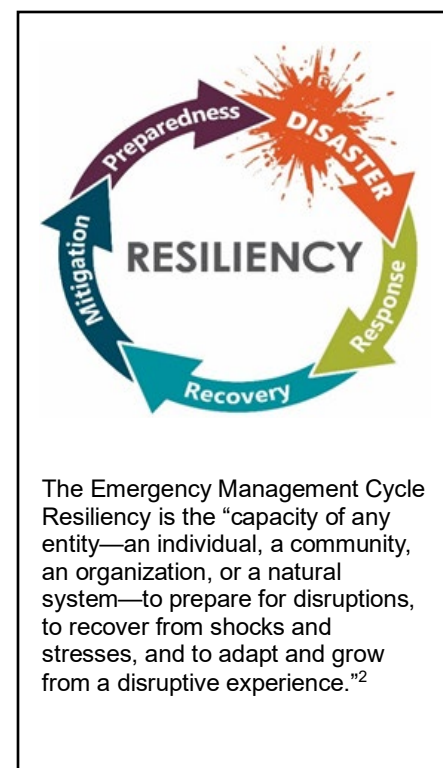
CHAPTER 1 – INTRODUCTION

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 the hazard event often gets 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 El Segundo 2025 Local Hazard Mitigation Plan (LHMP, “the Plan”) 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 less damage and can recover more quickly and effectively. Mitigation differs from preparedness, which involves advance 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 less 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.



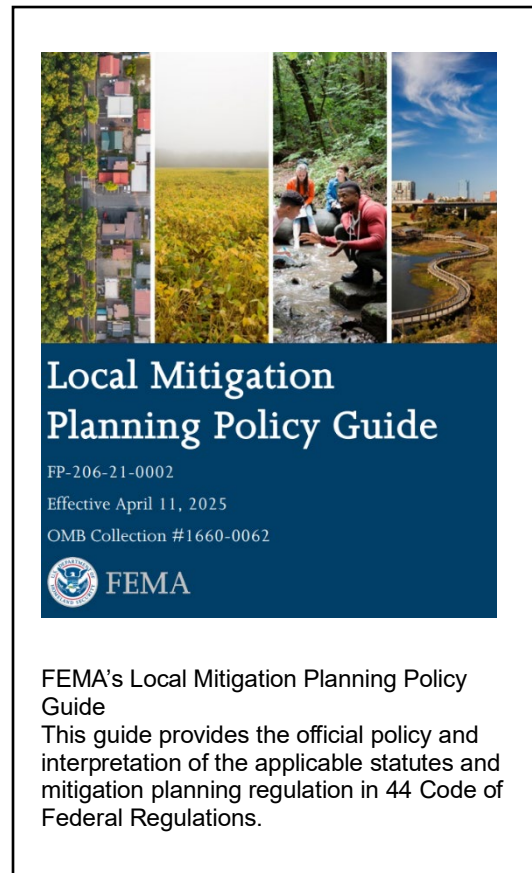
Like other communities, the El Segundo (“the City”) could suffer severe harm from hazard events. Although large disasters may cause widespread devastation, minor disasters can have more substantial effects. The City cannot make itself completely immune to hazard events, but this LHMP can help make the community a safer place to live, work, and play. This Plan 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. 2024. [State of California Emergency Plan](#).

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 that wish to be eligible for federal hazard mitigation grant funding must prepare a hazard mitigation plan that meets a particular set of guidelines and submit this Plan to the Federal Emergency Management Agency (FEMA) for review and approval. These guidelines are outlined in the Code of Federal Regulations, Title 44, Part 201, and discussed in greater detail in FEMA's Local Mitigation Plan Review Tool.



STATE AUTHORITY

California Government Code Sections 8685.9 and 65302.6

The California Disaster Assistance Act (CDAA) Section 8686 limits the State of California's share of disaster relief funds paid out to local governments to 75 percent of the funds not paid for by federal disaster relief efforts. 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 must 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 allows communities to use the LHMP to satisfy state requirements for Safety Elements. As the General Plan is an overarching long-term plan for community growth and development, incorporating the LHMP into it creates a stronger mechanism for implementing the LHMP.

California Government Code Section 65302 (g)(4)

California Government Code Section 65302 (g)(4), also known as Senate Bill (SB) 379, requires the Safety Element of a community's General Plan to 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 El Segundo 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 the City'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 the City and discusses past and future events and the effects of climate change.
- **Chapter 4: Vulnerability Assessment.** This chapter describes each hazard's threat to the City's key facilities and community members, including socially vulnerable individuals.
- **Chapter 5: Mitigation Strategy.** This chapter lists the mitigation actions to reduce the City'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 implementing, monitoring, and updating the LHMP and opportunities for continued public involvement.

PREVIOUS LHMP

This is an update to the El Segundo's 2015 LHMP. This update, adopted by the City Council and approved by FEMA, 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 as appropriate and updated accordingly. Key modifications in this Plan focus on expanding the risk assessment (understanding potential losses and vulnerable populations) within **Chapter 4** and revised and modified mitigation strategies and actions within **Chapter 5**.

Key updated elements from the previous El Segundo LHMP include the following:

- Updated demographic information
- 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 the current priorities of the City

PREVIOUS PLAN INTEGRATION

As this is an update to El Segundo'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 El Segundo. During the planning process, the City reviewed the previous goals from the 2015 plan and determined they did not meet City current needs. In response, the HMPC developed an updated set of goals that meets the City's priorities. This LHMP has six distinct goals to achieve this purpose:

- 1) Save lives and reduce injuries among community members and visitors.
- 2) Avoid damage to public and private property and to environmental systems.
- 3) Preserve key government functions and other critical services.
- 4) Integrate hazard mitigation activities into City policies.
- 5) Maintain the City's eligibility for increased hazard mitigation and disaster recovery funding.
- 6) Support compliance with state laws that require addressing specific hazards and other items, including the effects of climate change.

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 El Segundo is described as follows:



HAZARD MITIGATION PLANNING TEAM

The City established a Hazard Mitigation Planning Team (HMPT). The HMPT comprises representatives from key City departments and stakeholders from local and regional agencies and companies that are key to hazard mitigation activities. **Table 1** (page 5) identifies the members who were invited and/or attended HMPT meetings.

TABLE 1. EL SEGUNDO HAZARD MITIGATION PLANNING TEAM (HMPT)		
Name	Title	Department
Melissa Mendoza-Campos	Emergency Management Coordinator	Fire
George Avery	Fire Chief	Fire
Evan Siefke	Battalion Chief	Fire
Vaness Arias	Senior Management Analyst	Fire
Jennifer Sercu	Senior Administrative Analyst	Fire
Aly Mancini	Director	Recreation, Parks, and Library
Barbara Voss	Deputy City Manager	City Manager's Office
Elias Sassoon	Director	Public Works
Cheryl Ebert	Senior Civil Engineer	Public Works
Jorge Prado	General Services Superintendent	Public Works
Joaquin Vazquez	Deputy City Attorney	City Attorney's Office
Michael Allen	Director	Development Services
Paul Chung	Chief Financial Officer	Finance
Paul Silverstein	Director	Information Technology Services
Sharon Brennan	Risk Manager	Human Resources

Mark Hensley	City Attorney	City Attorney's Office
David King	Asst. City Attorney	City Attorney's Office
Saul Rodriguez	Police Chief	Police

The Planning Team 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.

- **HMPT Meeting #1 (May 24, 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.
- **HMPT Meeting #2 (August 19, 2025):** Members discussed the results of the hazards assessment and mapping that showed the areas facing an elevated risk. The HMPT also reviewed the hazard prioritization results. The team reviewed the risk assessment results to identify the populations and assets that may face greater harm in a hazard event and discussed potential hazard mitigation actions to address vulnerabilities.

Invitations and materials for meetings 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 the public to be involved in Plan development—at a minimum, during the initial drafting stage and Plan approval. The HMPT 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
- El Segundo Fire Department social media: posts via Instagram and Facebook
- LHMP City webpage (see below)
- Promotion at City Meetings/Events (see below)

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 regarding this engagement opportunity can also be located in **Appendix B** of the document. All jurisdictions and stakeholders were invited via email and/or direct communication via telephone from the HMPT project manager, the El Segundo Fire Department's Emergency Management Coordinator. The following is a list of those stakeholders invited to participate in the plan development process and review.

The Aerospace Corporation

Kiwanis Club

American Red Cross

L'Oreal

Boeing	Los Angeles Air Force Base
Chevron Refinery	Mattel Corporation
City of Culver City	Los Angeles Chargers
City of Los Angeles	El Segundo Unified School District
City of Inglewood	County of Los Angeles
City of Hawthorne	Los Angeles International Airport
City of Redondo Beach	Los Angeles County Disaster Management Area Coordinator – Area G
City of Manhattan Beach	Los Angeles Fire Department
Community Alliance to Strengthen and Empower (CASE)	Los Angeles Kings Los Angeles Lakers
El Segundo Chamber of Commerce	Northrup Grumman
El Segundo Education Foundation	Wiseburn Unified School District
El Segundo Rotary Club	

Vulnerable Populations Outreach

Signage was posted at all City facilities with information on both the Public Review LHMP and the Hazard Mitigation Survey. Having the signage and information on the LHMP and feedback survey posted at City Hall was a focus that ensured 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 weekly Farmers Market—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, the City conducted outreach at the weekly farmers market, during which City staff discussed the Plan and process currently underway and provided opportunities for feedback with members of the public. Over 100 people regularly attend these weekly events, however not all attendees interact with Fire Department staff. The following are the types of events used during the plan preparation process for outreach purposes:



Fire Department Staff Table at El Segundo Farmers Market

- Monthly City Council Meetings
- Weekly Farmers Market Events

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 the City’s website dedicated to the Local Hazard Mitigation Plan development 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 can be found at [https://www.elsegundofd.org/administration/emergency-management-disaster-preparedness].



*Online Survey

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

At the time of the Public Review Draft release, the City had received a total of 11 responses from community members and stakeholders during the survey period. Responses were received from all areas within El Segundo, ensuring that geographically, the entire City was represented. Based on these responses, the following information was shared with the City:

- Nearly 80% of respondents live in El Segundo, with an additional 9% that do not live and/or work in El Segundo but are concerned about the community.
- Approximately 55% of respondents have been impacted by a natural hazard in their residence.
- The top three hazards of concern for respondents include: Hazardous Materials Release, Human-Caused Hazards; and Seismic Hazards. These responses confirmed that the concerns identified by City staff during the planning process were similar to those of the respondents.
- Approximately 81% of respondents believe that our climate is changing.
- 55% of respondents are familiar with the special needs of their neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, and memory impairments).
- All respondents indicated that providing effective emergency notifications and communication is way the City can help respondents be better prepared for a disaster.

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

The results from the survey were provided to the HMPT. The data was then analyzed, reviewed, and incorporated by the HMPT within the LHMP content. The data provided by the survey presented unique local insight into hazard concerns and assessed the overall opinion and perception of the public when it comes to the hazards that affect El Segundo. 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.

- City of El Segundo Instagram account with over 4900 followers.
- City of El Segundo Fire Facebook account with over 2100 followers.

PUBLIC REVIEW DRAFT

On September 3, 2025 distributed the Public Review Draft of the Plan to the residents and businesses of El Segundo for a 15-day public review period. The City's LHMP website (<https://www.elsegundofd.org/administration/emergency-management-disaster-preparedness>) hosted public electronic copies of the Plan. Hardcopy versions of the Plan were made available at the following locations:

- **City Hall**
- **Fire Department**
- **Police Department**

The City received **XX** comments during this review period.

PLAN ADOPTION

On September 16, 2025 the El Segundo City Council adopted the plan, ensuring eligibility for FEMA Hazard Mitigation Assistance grant funding for the next five years.

CAL OES AND FEMA REVIEW

Upon adoption and completion of the public review period, the City transmitted the document to the California Office of Emergency Services for their review and approval on *Date Pending*. Upon approval by Cal OES, the plan was transmitted to FEMA for review and approval. Final approval of the plan was received on *Date Pending*.

*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 2 provides some of the HMPT's primary resources to prepare this Plan.

TABLE 2. KEY RESOURCES FOR PLAN DEVELOPMENT		
Section	Key Resources Reviewed	Data Incorporated from Resource
Multiple	<ul style="list-style-type: none"> City of El Segundo 2015 Hazard Mitigation Plan City of El Segundo Climate Action Plan City of El Segundo General Plan City of El Segundo System Evaluation and Capacity Assurance Plan City of El Segundo Hazardous Materials Plan Los Angeles County 2020 All-Hazards Mitigation Plan California Department of Water Resources FEMA Local Hazard Mitigation Plan Guidance National Oceanic and Atmospheric Administration National Weather Service U.S. Census Bureau 	<ul style="list-style-type: none"> Science and background information on various hazard conditions General data about hazard mitigation plans Records of past disaster events in and around El Segundo and Los Angeles County Projected climate conditions in and around El Segundo Information on the City's history and current demographics and characteristics
Community Profile	<ul style="list-style-type: none"> California Energy Commission Western Regional Climate Center 	<ul style="list-style-type: none"> Information about utility services in El Segundo Current climate conditions in and around El Segundo
<i>Hazard Assessment</i>		
Drought	<ul style="list-style-type: none"> Safeguarding California US Drought Monitor 	<ul style="list-style-type: none"> History of drought events Current and projected future drought conditions

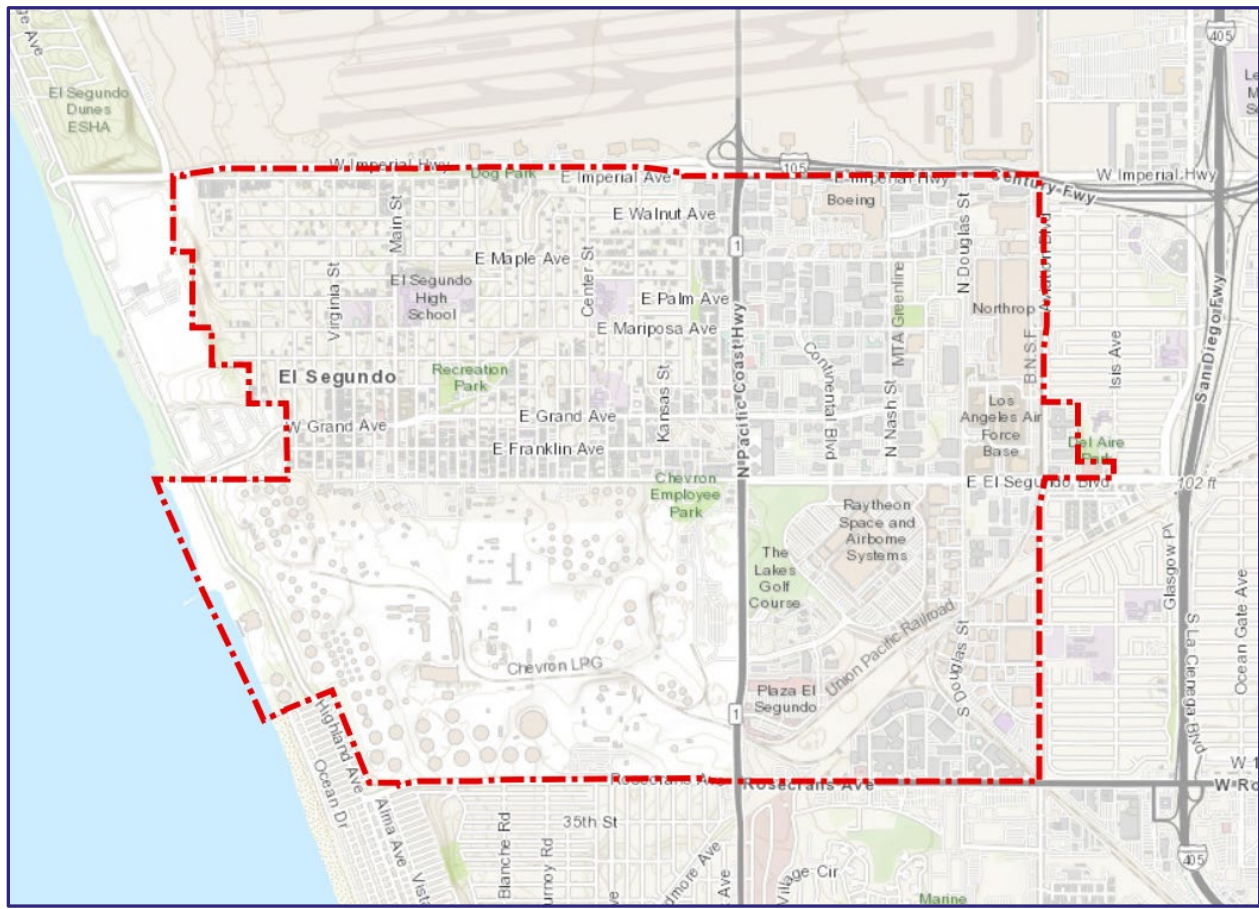
TABLE 2. KEY RESOURCES FOR PLAN DEVELOPMENT		
Section	Key Resources Reviewed	Data Incorporated from Resource
Flood	<ul style="list-style-type: none"> • Los Angeles County Flood Control District • FEMA Map Service Center 	<ul style="list-style-type: none"> • Records of past floods in and around El Segundo • Locations of flood hazard zones in El Segundo
Human-Caused Hazards	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Locations and status of hazardous material facilities • Historic records of terrorism and hazardous material releases
Seismic Hazards	<ul style="list-style-type: none"> • Southern California Earthquake Data Center • U.S. Geological Survey (USGS) Earthquake Archive • USGS ShakeMap scenarios • USGS Third Uniform California Earthquake Rupture Forecast 	<ul style="list-style-type: none"> • Locations of fault zones and seismic hazard areas • Records of past seismic events • Future seismic event scenarios
Urban Fires	<ul style="list-style-type: none"> • California Department of Forestry and Fire Prevention 	<ul style="list-style-type: none"> • Records of past fire events
<p>Note: Sections not individually identified in this table relied primarily on sources identified in multiple sections.</p>		

CHAPTER 2 – COMMUNITY PROFILE

The Community Profile section of the LHMP describes El Segundo, 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 the City, which informs the development of the hazard mitigation strategies and actions in [Chapter 5](#).

Setting and Location

The City of El Segundo is a general law city in Los Angeles County, California, with a Council/Manager form of government, located approximately 14 miles southwest of downtown Los Angeles. Unincorporated Los Angeles County and the cities of Los Angeles, Hawthorne, and Manhattan Beach surround the city. El Segundo's total land area is 5.45 square miles.



Source: El Segundo Map Gallery, 2025.

History

The El Segundo and Los Angeles coastal area was first settled by the Tongva (or Gabrielinos) and Chumash Native American tribes hundreds of years ago. In the late 1800s, El Segundo was mostly uninhabited land used for dry farming. The land was once part of the Sausal Redondo Rancho controlled by Daniel Freeman, the founder of Inglewood. In 1885, most of the rancho was sold in square-mile sections to wealthy investors. While the beach areas of the south attracted some residents, in late 1910 the land now covered by El Segundo and LAX was still vacant.

Standard Oil Company, recognizing the need for a refinery in Southern California, sent a large party of executives from New York City as well as California to scout for a site in November 1910. El Segundo area was an easy choice, being mostly vacant with ocean access providing a water source for cooling and close to oil fields. William Rheem, having constructed and managed Standard Oil's refinery at Point Richmond, was instrumental in building a second refinery at El Segundo. The city earned its name ("the second" in Spanish) as it was the site of the second Standard Oil refinery on the West Coast.

In late May 1911, construction began on the refinery after completion of a two-mile long rail spur serving the site. One of the first major tasks was dealing with the sand dunes. About 400 mules, mule-skinners, and Fresno scrapers were brought in to level sites for the refinery structures and storage tanks. In September 1911, construction manager R.J. Hanna invited Rheem down from San Francisco to "fire" the No. 1 battery of stills, starting the production of end products. Raw crude had been accumulating in storage tanks, having arrived by pipeline from the Whittier-Fullerton oil fields. By the end of the year, Standard Oil had reportedly spent over \$1,000,000 of the \$3,000,000 allotted to complete the refinery.



Standard Oil's El Segundo refinery in the 1920s.
Source: Wikimedia Commons



Los Angeles Municipal Airport, 1931.
Source: Wikimedia Commons

By the end of 1912, El Segundo had grown from a "tent city" to include 180 homes and 20 businesses, a school, a bank, churches, and five hotels. The El Segundo Land and Improvement Company offered Standard Oilers inducements to build a home. This company managed the growth of El Segundo until the city incorporated on January 18, 1917.

The city grew along with the growth of the refinery. There were other short-lived smaller ventures such as a tractor assembly plant that later became a tile manufacturing plant.

Next door to the north, Mines Field, a landing strip used by early aviators, was chosen as the site for the Los Angeles Municipal Airport. Expansion with the official opening of the airport in 1930 ushered in numerous aviation companies. The Douglas Aircraft Company plant in El Segundo was one of the major aircraft manufacturing facilities in California during World War II. The likes of Hughes Aircraft, Northrop, Interstate, and North American Aviation (Northrop) all located in El Segundo. After a high point of activity during WWII, many of these companies eventually transitioned into the aerospace/defense industry. In the 1960s, the addition of the Aerospace Company Corporation and the Los Angeles Air Force Base gave El Segundo claim to the title of "The Aerospace Capital of the World." Today, the City's population has leveled off around 16,500, which has enabled the community to preserve its small-town intimacy and charm.

Demographics

This section paints a portrait of El Segundo through data. The data 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 the California Department of Finance (CDOF).

El Segundo’s population is 0.617% of Los Angeles County’s total population. Its households are 0.496% of the County’s total households.

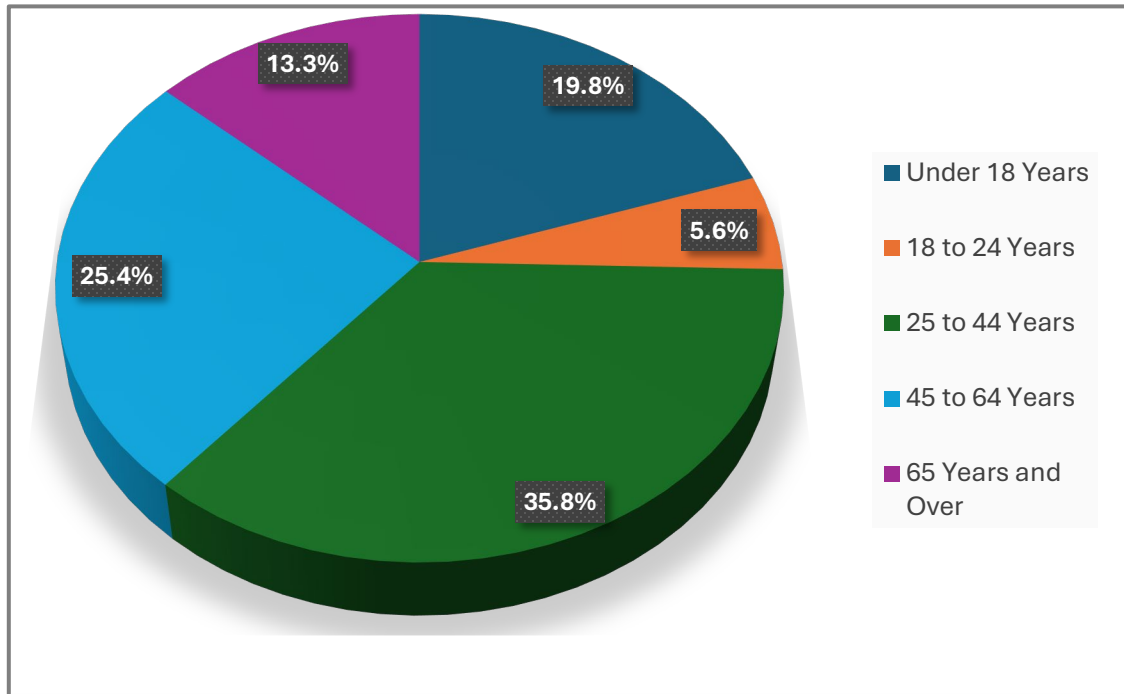
TABLE 3. BASIC DEMOGRAPHICS—EL SEGUNDO & LOS ANGELES COUNTY		
Demographics	El Segundo	Los Angeles County
Total Population	16,863	9,848,406
Percent of residents who are children (less than 10 years old)	9.4%	10.9%
Percent of residents who are senior citizens (65+)	13.3%	14.7%
Median Age	38.2	37.9
Total households	7,125	3,390,254
Median household income	\$149,149	\$87,760
Percent of residents 25+ HS graduate or higher	98.4%	80.7%
Percent of rental households	57.4%	53.9%
Source: American Community Survey, ACS 2023 5-Year Projections		

The City’s residents tend to be on average slightly older than the county’s population as a whole (median age 38.2 years vs. 37.9 years for the county). **Figure 1** (page 15) shows a distribution of the City’s population into five age brackets.

Whites form a far larger percentage of El Segundo’s population (62.8%) than for the county as a whole (35.4%). Conversely, Asians are less represented in the City.

Figure 2 (page 15) breaks down the City’s population into six categories.

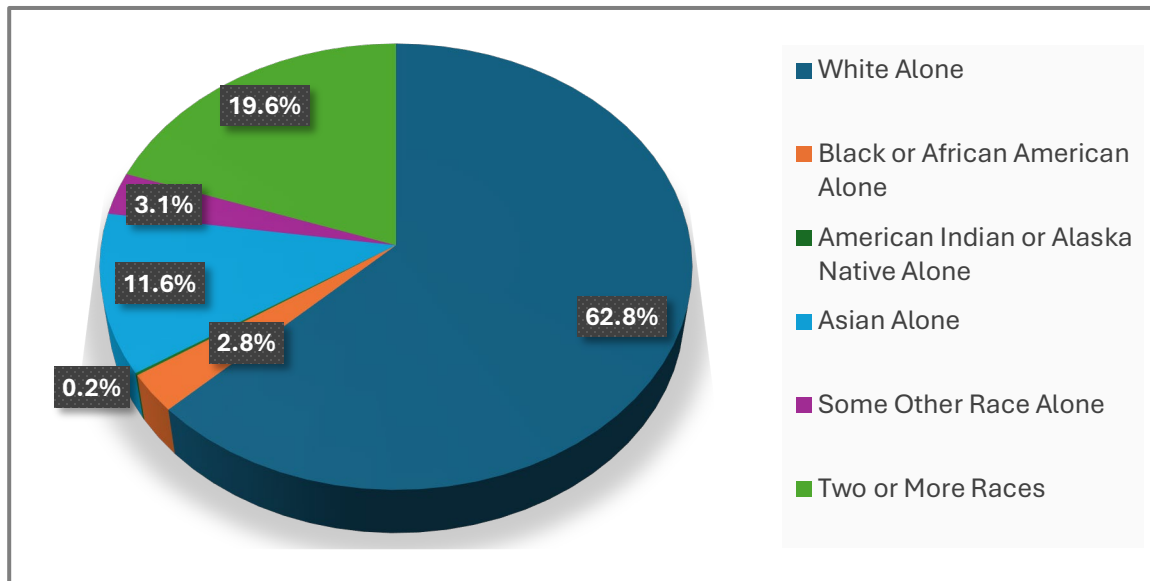
FIGURE 1. AGE DISTRIBUTION OF RESIDENTS



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

Nearly 90% percent of the City’s residents speak either Spanish or English at home; nearly two-thirds of them prefer English. **Figure 3** (page 16) details language usage in the City.

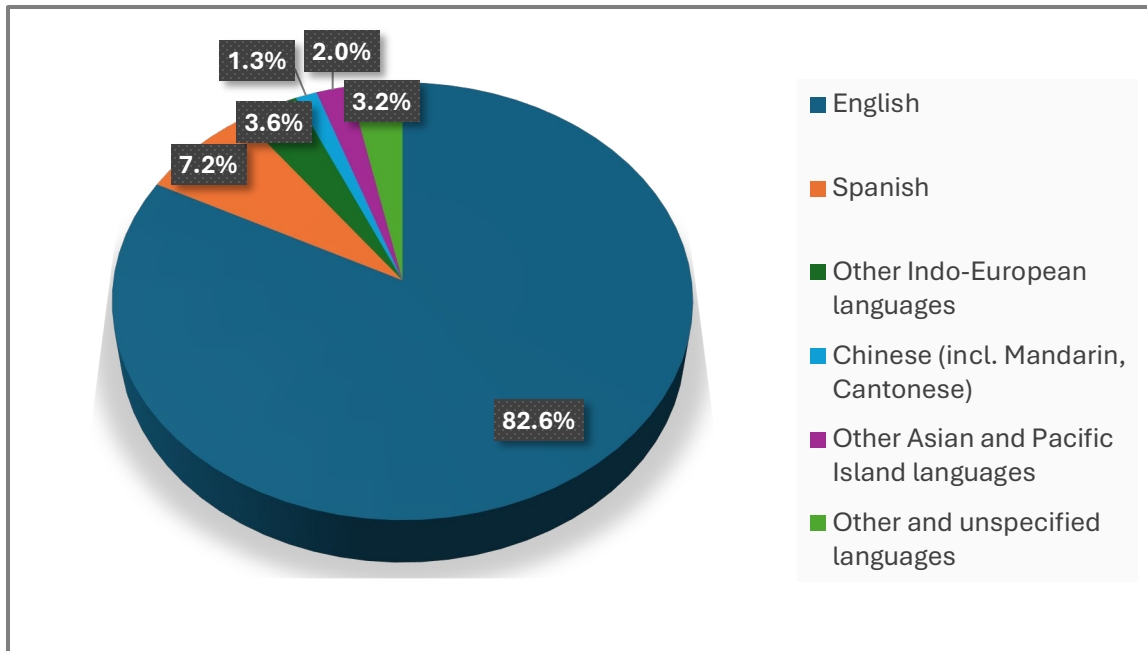
FIGURE 2. RACIAL COMPOSITION OF RESIDENTS



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.”

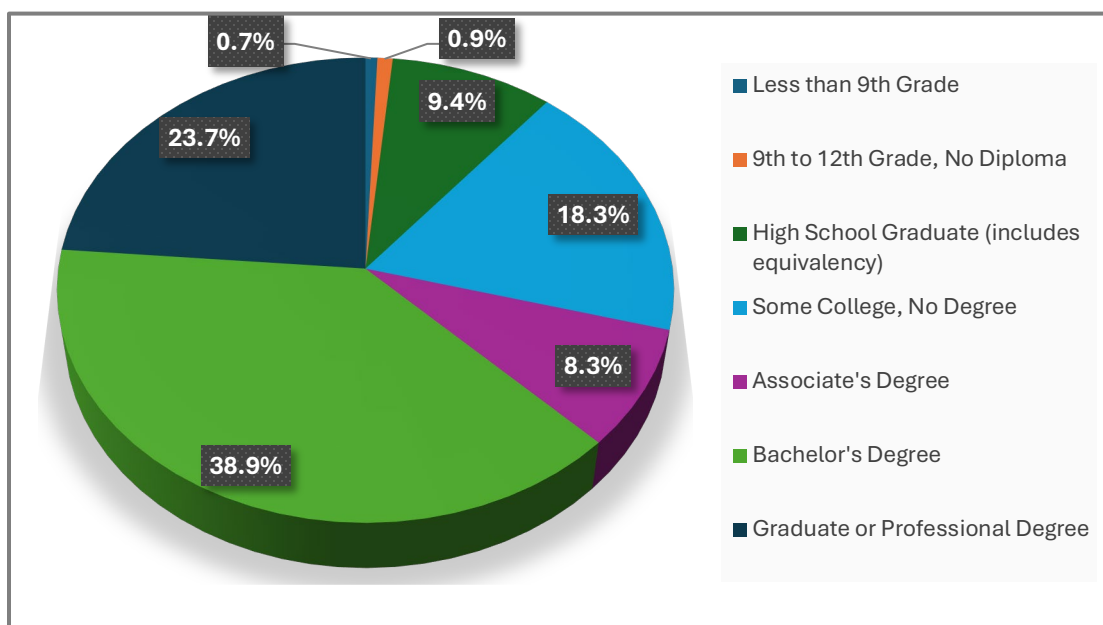
FIGURE 3. LANGUAGES SPOKEN AT HOME



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

Over 98% of City residents have achieved at least a high school diploma, much higher than the county as a whole (80.7%). A remarkable 62.5% hold some level of college degree. **Figure 4** shows educational attainment details for the City’s residents.

FIGURE 4. EDUCATIONAL ATTAINMENT OF RESIDENTS AGED 25+



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 are or have:

- Physical, developmental, or intellectual disabilities
- Chronic conditions or injuries
- Limited English proficiency
- Older adults
- Children
- Pregnant women
- Low income, homeless, and/or transportation-disadvantaged (i.e., 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 4** is meant to provide a general overview of the prevalence of DAFN communities in El Segundo, enabling the city to find ways to engage them during mitigation planning and implementation.

TABLE 4. DAFN COMMUNITIES IN EL SEGUNDO		
	Number	Percentage
Residents below 15 years of age	2,720	16.1%
Residents 65+ years of age	2,251	13.3%
Residents 65+ years living alone	588	26.1%
Residents with incomes below the poverty level in the past 12 months	734	4.4%
Total residents with a disability*	1,434	8.5%
• Under 18 with a disability	187	1.1%
• 65+ with a disability	608	3.6%
Residents 5+ who speak English less than very well	576	3.5%
Residents 16+ who depend on public transportation	51	0.52%
Households that have no access to a vehicle	163	2.3%**
Households with no telephone service	0	
Households with no internet access	101	1.4%**
Source: American Community Survey, ACS 2023 5-Year Projections		
* Defined by 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, El Segundo enjoys a Mediterranean climate moderated by its seaside location, with dry summers and mild winters. The warmest months of the year are August and September, with average maximum temperatures of 76.5-76.7° F; the coldest month of the year is December, with an average minimum temperature of 49.1° F. Temperatures vary up to 12° F between daytime and nighttime in summer, and about 15-17° F in winter. The annual average precipitation is 12.23 inches.

Precipitation occurs from December through March. Precipitation during the summer is infrequent, and rainless periods of several months are common. The wettest month is January, with an average rainfall of 2.86 inches, and the driest is August, with an average of 0.0 inches. Fog is common in El Segundo, particularly in the neighborhoods bordering the Pacific Ocean.

Table 5 (page 18) lists the historical monthly averages for El Segundo for low temperature, high temperature, record low temperature, record high temperature, and average precipitation for the past 80 years.

TABLE 5. EL SEGUNDO HISTORIC WEATHER AVERAGES AND RECORDS					
Month	Avg. Low Temps (°F)	Avg. High Temps (°F)	Record Low Temp (Year)	Record High Temp (Year)	Average Precipitation (in)
January	49.4	66.3	68 (1950)	91 (2003)	2.86
February	50.1	65.6	68 (2019)	92 (1963)	2.99
March	52.2	66.1	65 (1949)	93 (1988)	1.73
April	54.2	68.1	67 (1953)	102 (1989)	0.60
May	57.6	69.5	69 (2025)	97 (2014)	0.28
June	60.9	72.0	71 (2009)	104 (1981)	0.08
July	64.0	75.1	76 (1991)	97 (1985)	0.04
August	64.8	76.7	76 (1953)	98 (1955)	0.00
September	63.7	76.5	77 (1986)	110 (1963)	0.11
October	59.8	74.4	72 (1944)	106 (1961)	0.49
November	53.7	70.9	74 (1965)	101 (1966)	0.82
December	49.1	66.1	68 (2012)	94 (1958)	2.23

Source: National Weather Service, NOAA xmACIS2 (2024)

Economy

El Segundo is home to many businesses and corporations, including Chevron USA, Raytheon, DirecTV, International Rectifier, Boeing, Mattel, Motorola, NCR Corporation, Northrop Grumman, Oracle-America, Inc., The Aerospace Corporation, Xerox, and the Toyota Sports Center serving the Los Angeles Lakers and L.A. Kings professional sports franchises. Many of these businesses are Fortune 500 companies.

The Los Angeles Air Force Base (LAAFB), home of the Field Command, Space Systems Command, is located within the city. LAAFB is the U.S. Space Force's premier space acquisition center and is also the home of Space Base Delta 3. Delta 3 is the host unit at LAAFB, and commands all the Space Force support groups and units assigned to the base. Other tenant units include AFOSI Detachment 810 and the 369th Recruiting Squadron. The center manages research, development, and acquisition of military space systems, and is the only active duty military installation in the greater Los Angeles metropolitan area, with over seven thousand active duty and civilian workers at the base.

The U.S. Census Bureau ACS 5-Year Estimate for 2018-2023 says 70.4% of El Segundo residents 16 years and older are employed in a range of industry sectors, as shown in **Table 6** (page **19**).

TABLE 6. EMPLOYMENT BY INDUSTRY SECTOR, RESIDENTS 16 YEARS AND OLDER		
Industry Sector	Number Employed	Percent
Professional, scientific, and management, and administrative and waste management services	2,124	21.6%
Educational services, and health care and social assistance	1,574	16.0%
Manufacturing	1,403	14.3%
Finance and insurance, and real estate and rental and leasing	818	8.3%
Arts, entertainment, recreation, and accommodation and food services	739	7.5%
Retail trade	735	7.5%
Information	670	6.8%
Other services, except public administration	498	5.1%
Public administration	462	4.7%
Transportation and warehousing, and utilities	389	4.0%
Wholesale trade	225	2.3%
Construction	182	1.9%
Agriculture, forestry, fishing and hunting, and mining	12	0.1%
Total	9,831	100.0%
Source: American Community Survey, ACS 2023 5-Year Projections		

El Segundo's median household income is roughly 70% higher than Los Angeles County's median. The City's per capita income (\$80,399) is 81% higher than the county's (\$44,319), despite El Segundo's average household size (2.36) being lower than Los Angeles County's (2.85). **Table 7** (page **20**) shows the distribution of household income over the past twelve months.

TABLE 7. DISTRIBUTION OF HOUSEHOLD INCOME IN LAST 12 MONTHS (2023 DOLLARS)		
Income Range	Number of Households	Percent
Less than \$10,000	201	2.8%
\$10,000 to \$14,999	107	1.5%
\$15,000 to \$24,999	262	3.7%
\$25,000 to \$34,999	177	2.5%
\$35,000 to \$49,999	158	2.2%
\$50,000 to \$74,999	743	10.4%
\$75,000 to \$99,999	814	11.4%
\$100,000 to \$149,999	1,125	15.8%
\$150,000+	3,538	49.7%
Total	7,125	100.0%
Source: American Community Survey, ACS 2023 5-Year Projections		

The City's top ten private-sector employers are concentrated in the aerospace/defense and technology sectors, as shown in [Table 8](#).

TABLE 8. TOP 10 PRIVATE-SECTOR EMPLOYERS (2022-3)			
Employer	Type of Business	# Employees	% of Total City Employment
Boeing Satellite Systems*	Aerospace/Defense	14,403	144.03%
Raytheon Space & Airborne Syst	Aerospace/Defense	4,321	43.21%
Northrop Grumman Corporation	Aerospace/Defense	2,649	26.49%
Aerospace Corporation	Aerospace/Defense	2,522	25.22%
Mattel Inc.	Entertainment	1,785	17.85%
Chevron Products Company/USA Inc.	Energy	1,216	12.16%
Internet Brands Inc.	Digital Marketing	460	4.60%
Infineon Technologies Americas Corp.	Semiconductors	418	4.18%
Karl Storz Endoscopy America Inc.	Medical Technology	378	3.78%
Big 5 Sporting Goods Corp.	Retail	275	2.75%
	Total	**	**
Source: El Segundo FY 2023-24 Annual Comprehensive Financial Report.			
* Employee count is statewide; employment levels are not available by site.			
** No totals included due to data anomalies. Total City labor force is 9,861.			

Similar to many communities in Southern California, the majority of local residents commute outside the City to work. El Segundo experiences a net inflow of 65,367 workers during the daily going-to-work commute (7,442 outbound vs. 72,809 inbound).

Development Profile

The City is located on the western edge of the Los Angeles basin on the Pacific coast. The topography is relatively flat, ranging from approximately zero feet above sea level at the beach to 115 feet above sea level inland.

HOUSING

Unusually for Southern California communities, El Segundo’s housing stock is dominated by multi-unit homes, which make up 57.4% of the total. Most of the multi-unit housing is in complexes with five or more units, predominantly in two- or three-story buildings erected in the late 20th century. While this type of housing is more space-efficient than the single-family detached homes that dominate Southern California urban landscapes, the age of much of this housing in El Segundo raises questions about its resilience during an earthquake. **Table 9** shows the details.

TABLE 9. HOUSEHOLD TENURE BY NUMBER OF UNITS IN STRUCTURE		
	Number of Households	Percent
Owner-occupied units	3,033	
• 1 unit, attached/detached	2,444	31.2%
• 2-4 units	155	2.0%
• 5 or more units	434	5.5%
• Mobile homes, RVs, boats, etc.	0	0.0%
Renter-occupied units	4,092	
• 1 unit, attached/detached	955	13.4%
• 2-4 units	837	11.7%
• 5 or more units	2,300	32.3%
• Mobile homes, RVs, boats, etc.	0	0.0%
Total households	7,125	100.0%
Source: American Community Survey, ACS 2023 5-Year Projections		

Virtually all residential development is in the City’s northwest quadrant, west of Sepulveda Boulevard and north of El Segundo Boulevard.

Housing growth in the City has been largely static for several years. Over 88% of the City’s housing units were built before 1990. The Community Development Department maintains that there are relatively few substandard housing units in the City, and none need to be replaced.

Table 10 (page 22) shows the growth of various types of housing units between 2020 and 2024.

TABLE 10. HOUSING UNIT GROWTH IN EL SEGUNDO, 2020-24							
	Total	Single Detached	Single Attached	Two to Four	Five Plus	Mobile Homes	% Growth
2020	7,500	3,217	380	778	3,111	14	
2024	7,593	3,265	405	797	3,112	14	1.24%

Source: California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2020-2025

COMMERCIAL

Commercial uses occur throughout El Segundo. The Downtown area around the intersection of Main Street and Grand Avenue is designated for commercial use of a community service-oriented nature and provides a shopping base for the residents. These commercial uses tend to be types that serve the resident population and sometimes include office and housing over retail uses. This area also includes the Civic Center, which serves as an important focal point for the City.

There are neighborhood commercial areas scattered throughout the residential areas to serve the local residents. In addition, there are some commercial uses east of Sepulveda Boulevard, mostly designed for the daytime employee population.

In addition to retail commercial, the City has a growing number of hotel uses. There are over 1,446 hotel rooms currently available in the City. Most of these are in the City’s northeast quadrant, with easy access to Sepulveda and Aviation Boulevards and quick access to LAX.

Another growing use is office projects, including research and development and industrial parks. There was a 290% increase in office acreage from 145 acres in 1980 to 420 acres in 1986. New office projects have already been approved, and it is anticipated that this market will continue to grow. Most of this activity takes place in the City’s northeast quadrant.

Industrial uses have historically comprised a large portion of the City. The City’s southern half accounts for most of this activity. The Chevron refinery covers the City’s entire southwest quadrant, while smaller light and legacy heavy industrial uses make up most of the southeast quadrant.

Existing conditions research shows that there have been applications for new buildings that will contain warehouse-type uses; however, there have been no discretionary applications for heavy manufacturing uses. The trend is toward light manufacturing, research and development, wholesaling, distributing, and laboratories.

*DEVELOPMENT TRENDS

The City’s General Plan governs land use decision and policymaking. This Hazard Mitigation Plan will work together with the General Plan to support wise land use in the future by providing vital information on the risk associated with hazards within the city. The City of El Segundo will incorporate by reference the Hazard Mitigation Plan in its General Plan Safety Element. This will allow future trends in development to be established with the benefits of the information on risk and vulnerability to hazards identified in this Plan.

The City currently has 14 adopted specific plans. These provide guidance for the development of underutilized sites in the City with residential and commercial uses that will contribute to City revitalization and economic development.

Recently Approved Development Projects

Since the last LHMP update, the City has adopted several new developments that have increased opportunities to live and work within the City. The following is a summary of the amount and types of development approved:

- Residential Units: 263
- Office/Commercial: 489,338 square feet
- Additional Parking Spaces: 4,168

All of this development will comply with the latest building code requirements, making this development safer than much of the older housing and commercial buildings located within the City.

Pending Development Projects

The City is currently processing applications for two development projects totaling over 400 residential units, over 11,000 square feet of commercial space, and nearly 700 parking spaces. This development will also adhere to the latest building code requirements ensuring greater safety than existing development within the City.

OPEN SPACE

The City has excellent open space and recreation facilities that exceed the state-suggested standards. These areas include publicly owned parks, private parks, a publicly owned beach area open for public use, utility rights-of-way that have been used for park and open space areas, a publicly owned golf course and driving range, and the Chevron-owned preserve for the El Segundo Blue Butterfly.

HISTORICAL RESOURCES

While El Segundo enacted a historic preservation ordinance in 1993, it's made little use of the law. According to the L.A. Conservancy, the City hasn't designated any historical sites. The Conservancy features the Old Town Music Hall, which opened as the State Theater in 1921. There are no state-designated historical monuments.

The Downtown Specific Plan identifies four properties in the project area that may be historical resources:

- 105 W. Grand Avenue (built 1928)
- 140 W. Richmond Street (built 1921)
- 203 Richmond Street (built 1925)
- 218-220 Richmond Street (built 1915)

The Downtown Specific Plan also states, "There are twenty-seven properties on the 100 and 200 blocks of Richmond Street that appear to be collectively eligible as a potential historic district."

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 create complications for rescue workers trying 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 (SCE) is the electrical service provider for El Segundo. SCE also owns the community's electrical distribution grid.

NATURAL GAS

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

WATER

The Public Works Water Division supplies water to the City's customers and performs the operation, maintenance, and repair of the City's water distribution system.

The Metropolitan Water District of Southern California (MWD) is a public agency that supplies water to various water providers throughout the Southern California region, many of whom in turn distribute the water to more localized water suppliers. MWD supplies water used in El Segundo that comes from outside Los Angeles County.

WASTEWATER / STORMWATER

El Segundo's Public Works Sewer Division is responsible for maintaining 56 miles of sewer main and 9 sewage lift stations within the City limits.

The City's Sewer Division is responsible for the collection of wastewater within the city limits and delivery to the trunk sewer mains of Los Angeles County Sanitation District (LACSD). LACSD is responsible for all regional trunk sewer lines and sewage treatment, while the City is responsible for the operation and maintenance of sewer mains and lift stations within the city limits and all capital improvements.

Los Angeles County Flood Control District—part of the county's Department of Public Works—provides flood protection, water conservation, recreation, and aesthetic enhancement within its boundaries. The LAC FCD encompasses more than 2,700 square miles and approximately 2.1 million land parcels within 6 major watersheds. It includes drainage infrastructure within 86 incorporated cities as well as the unincorporated county areas. This includes 14 major dams and reservoirs, 483 miles of open channel, 27 spreading grounds, 3,330 miles of underground storm drains, 47 pump plants, 172 debris basins, 27 sediment placement sites, 3 seawater intrusion barriers, and an estimated 82,000 catch basins.

TRANSPORTATION

Two major freeways flank El Segundo: I-105 and I-405. The north-south Sepulveda Boulevard, which bisects the City, is also a state highway (CA-1). El Segundo Boulevard, which runs west-east, divides the City into northern and southern halves. The regional surface street grid continues largely without interruption through the city.

Los Angeles Metro and Beach Cities Transit both run short- and medium-haul bus service through the City. The Metro K Line light rail passes north/south through eastern El Segundo, serving four stations in the City.

A Union Pacific Railroad right-of-way cuts across southern El Segundo from the Chevron refinery past Douglas Street and Aviation Boulevard. Its primary purpose appears to be rail transport of petroleum products east through South L.A. An Aviation Boulevard spur appears to be derelict.

TELECOMMUNICATIONS

AT&T and Spectrum Charter provide landline phone and data service to a steadily dwindling number of El Segundo customers. 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 to 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 on which to develop and prioritize mitigation actions to reduce damage from natural hazards through improved preparedness and response times and better allocation of 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:

- **Hazard Identification:** Identification and screening of hazards.
- **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 El Segundo. **Table 11** (page 27) 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 Los Angeles County All-Hazards Mitigation Plan (LAC AHMP). This table doesn’t include all potential impacts; the table is based upon FEMA and state guidance and the most probable impacts within El Segundo. As a result, some hazards—like war or foreign invasion—are better addressed at the federal level.

TABLE 11. HAZARD EVALUATION FOR EL SEGUNDO LHMP

Hazard	Source of Recommendation	Included in 2015 LHMP?	Included in This LHMP?	Reason for Inclusion or Exclusion
Agricultural Pests	SHMP	No	No	There is no agricultural activity in or near El Segundo.
Air Pollution	SHMP	Yes	Yes	Los Angeles County suffers from some of the worst air pollution in the country.
Aircraft Incident	SHMP	Yes	Yes	The skies in the area of El Segundo are heavily traveled by aircraft originating and departing from a number of Southern California airports.
Aquatic Invasive Species	SHMP	No	No	El Segundo has no marina, harbor, or inland waterway that could host a permanent population of invasive aquatic species.
Avalanche	FEMA guidance SHMP	No	No	There is no avalanche hazard in El Segundo.
Civil Disturbance or Riot	SHMP	No	Yes	Civil disturbances are not a hazard of concern as much as are mass casualty incidents, some of which may be outgrowths of extreme civil unrest. MCIs are included in the "Human-Caused Hazards" hazard type.
Climate Change	SHMP LAC AHMP	Yes	Yes	Climate change affects the entire state and nation.
Coastal Flooding and Storm	FEMA guidance SHMP	No	No	Included in Flooding hazard.
Cyber Threats	SHMP	No	Yes	Cybercrime and cyberterrorism are hazards of concern for all levels of government in the state and nation.
Dam Failure	FEMA guidance SHMP LAC AHMP	No	No	El Segundo is not in the pathway of any dams or waterways and is not subject to dam failure or inundation.
Drought	SHMP	Yes	Yes	Four droughts have affected Los Angeles County and the cities within its borders in the past 97 years. This equates to a drought occurring every 24 years on average or a 4.1% chance of occurrence in any given year.
Earthquake	FEMA guidance SHMP LAC AHMP	Yes	Yes	All of El Segundo is situated within Seismic Zone 4 with the highest risk for seismic activity.

TABLE 11. HAZARD EVALUATION FOR EL SEGUNDO LHMP				
Hazard	Source of Recommendation	Included in 2015 LHMP?	Included in This LHMP?	Reason for Inclusion or Exclusion
Energy Shortage	SHMP	No	No	Covered in Power Failure.
Epidemic, Pandemic, Vector-Borne Disease	SHMP	Yes	Yes	El Segundo in its entirety is vulnerable to a public health incident, epidemic, or pandemic.
Erosion	FEMA guidance SHMP	No	Yes	There are no known erosion hazards in the City.
Expansive Soil	FEMA guidance	No	No	There is no known expansive soil in El Segundo.
Extreme Cold	FEMA guidance SHMP	No	No	Extreme cold events are not a hazard to the community.
Extreme Heat	FEMA guidance SHMP	Yes	Yes	El Segundo has moderate weather due to being a coastal city, but there have been incidents of high heat in the city.
Fault Rupture	FEMA guidance SHMP	No	No	No fault traces run through the city, although several are present outside the city limits.
Flooding	FEMA guidance SHMP LAC AHMP	Yes	Yes	A small portion of the city located along the coastline has been determined by FEMA to be in a Special Flood Hazard Area Zone A, which is subject to inundation with a 1% chance of annual flooding.
Fracking	SHMP	No	No	There is no fracking activity in the City.
Hail	FEMA guidance	No	No	Damaging hail is extremely rare along the Los Angeles County coast.
Hazardous Materials Release	SHMP	Yes	Yes	El Segundo has numerous industrial businesses that use, store, or produce hazardous materials. Hazardous materials are also transported through the city via pipelines, railroad, and on highways.
Hurricane	FEMA guidance SHMP	No	No	Hurricanes do not yet make landfall in El Segundo.
Infrastructure Failure	SHMP	Yes	Yes	Includes power failure and natural gas pipeline failure.

TABLE 11. HAZARD EVALUATION FOR EL SEGUNDO LHMP

Hazard	Source of Recommendation	Included in 2015 LHMP?	Included in This LHMP?	Reason for Inclusion or Exclusion
Landslide	FEMA guidance SHMP LAC AHMP	No	Yes	The bluffs along the coast of El Segundo have slopes greater than 30%. Ground failure including landslides and mudslides can occur in the slope areas within the city.
Levee Failure	SHMP	No	No	There are no significant levees in El Segundo.
Lightning	FEMA guidance	No	No	Damaging lightning strikes are rare along the Los Angeles County coast.
Liquefaction	FEMA guidance SHMP	No	No	According to the State of California Seismic Hazard Zones Map - Venice Quadrangle, the only area of the city with high liquefaction potential occurs along the coast.
Natural Gas Pipeline Hazards	SHMP	Yes	Yes	Southern California Gas operates several miles of gas transmission pipelines that cross through the City.
Oil Spills	SHMP	Yes	Yes	The Chevron Marine Terminal poses the potential for fires, explosions, releases of flammable or toxic materials, or other accidents that could cause injuries, fatalities, or spills.
Power Failure	SHMP	No	Yes	Southern California in general is vulnerable to power failures due to unmet demand, powerplant upsets, and transmission failures.
Radiological Accidents	SHMP	No	No	There are no known businesses or educational facilities that have a nuclear reactor on their premises within the city.
Sea-level Rise	FEMA guidance SHMP	No	No	While a portion of the City is located along the coastline, this part of the City is a State Beach. The City does not maintain any assets within this part of the coast and potential inundation from sea level rise does not appear to impact critical city assets. Therefore the HMPT did not identify sea level rise as a key hazard of concern.
Seiche	FEMA guidance SHMP	No	No	The coastline of El Segundo faces open ocean and is unlikely to experience a seiche.

TABLE 11. HAZARD EVALUATION FOR EL SEGUNDO LHMP				
Hazard	Source of Recommendation	Included in 2015 LHMP?	Included in This LHMP?	Reason for Inclusion or Exclusion
Seismic Shaking	FEMA guidance SHMP LAC AHMP	Yes	Yes	Ground shaking caused by a strong earthquake is probably the most important seismic hazard that can be expected anywhere in the El Segundo and greater Los Angeles region.
Severe Wind	FEMA guidance	Yes	Yes	High winds can and do occasionally cause tornado-like damage to homes and businesses in El Segundo and across Los Angeles County.
Severe Storms	FEMA guidance SHMP	Yes	Yes	Severe weather in El Segundo usually occurs as windstorms or excessive heat.
Storm Surge	FEMA guidance	No	No	While a portion of the City is located along the coastline, this part of the City is a State Beach. The City does not maintain any assets within this part of the coast and potential inundation from storm surge does not appear to impact critical city assets. Therefore the HMPT did not identify storm surge as a key hazard of concern.
Subsidence	FEMA guidance	No	No	El Segundo has no modern experience of ground subsidence.
Mass-Casualty Incident (Terrorism)	SHMP	Yes	Yes	The entire Los Angeles basin is considered at risk for a nuclear attack. El Segundo is home to numerous Fortune 500 and international companies, a military facility, and the largest refinery on the West Coast, all of which could be a target for terrorism. Mass shootings can happen in nearly any venue that attracts crowds.
Thunderstorm	SHMP	No	No	Damaging thunderstorms are extremely infrequent along the Los Angeles County coast.
Tornadoes	FEMA guidance SHMP	Yes	No	Tornadoes have touched down close to El Segundo. Waterspouts have also appeared in Santa Monica Bay off the coast of El Segundo, and west of Los Angeles International Airport on the northern border of El Segundo.

TABLE 11. HAZARD EVALUATION FOR EL SEGUNDO LHMP				
Hazard	Source of Recommendation	Included in 2015 LHMP?	Included in This LHMP?	Reason for Inclusion or Exclusion
Transportation Incidents	SHMP	Yes	Yes	Local rail traffic passes through the city on a daily basis to and from the Chevron Refinery. The skies in the area of El Segundo are heavily traveled by aircraft originating and departing from a number of airports located in Southern California.
Tree Mortality	SHMP	No	No	The City's current inventory of trees is very limited and is not experiencing disease and pest impacts at this time. While it is a condition that is regularly monitored, at this time the HMPT did not identify tree mortality as a key hazard of concern.
Tsunami	FEMA guidance SHMP LAC AHMP	Yes	Yes	The western border of the city is the only area vulnerable to a seismic or underwater landslide induced tsunami. According to the State of California Geological Survey, the predicted runup for a tsunami along the coast of El Segundo is 50 feet.
Urban Fire	SHMP	Yes	Yes	The main fire hazards of concern are those associated with industrial facilities using large amounts of flammable or toxic materials, high-rise buildings, public gathering places, older buildings with substandard electrical and heating systems, and residential neighborhoods interspersed with untreated wood shingle roofs.
Volcano	SHMP	No	No	There are no volcanoes near enough to have an effect on El Segundo.
Wildfire	FEMA guidance SHMP LAC AHMP	Yes	No	There is no flammable wildland in or around El Segundo.

The HMPT evaluated the hazards and their organization to determine what best served the City. This Plan discusses seven broad hazard types with their respective sub-categories, including climate change, which is discussed in each hazard profile.

TABLE 12. HAZARD CATEGORIES AND SUB-CATEGORIES	
Hazard Category	Sub-Categories
Seismic/Geologic Hazards	Seismic Shaking; Landslide/Erosion; Tsunami
Severe Weather	Severe Storms; Extreme Heat; Severe Wind
Flooding	
Epidemic, Pandemic, Vector-Borne Disease	
Human-Caused Hazards	Transportation Incidents (Air, Rail); Power Failure (HAZMAT Release Concern); Mass-Casualty/Mass-Fatality Incidents (Mass Shootings, Terrorism, Nuclear); Cyber Threats; Civil Unrest or Riot; Hazardous Materials Release (Air Pollution, Pipeline Hazards, Methane-Containing Soils)
Urban Fire	
Climate Change	Discussed in each relevant Hazard Profile

HAZARD SCORING AND PRIORITIZATION

Once the hazards for El Segundo are identified, they're given a priority ranking. As shown in the Hazard Prioritization Table ([Table 14](#), page 35), the two hazard types considered the greatest threat to the City are cyber threats and seismic shaking. The following hazard profiles and risk assessments describe these hazards and the danger they pose to El Segundo. They also review the exposure of assets to these hazards and estimate losses or assess the risk of significant events associated with these hazards.

In addition to the simple prioritization exercise, the HMPT followed FEMA guidance for hazard mitigation plans and prioritized each hazard identified. 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 El Segundo in the future.
- **Location:** The size of the area that the hazard would affect.
- **Maximum probable extent:** The severity of the direct damage of the hazard to El Segundo.
- **Secondary impacts:** The severity of indirect damage to El Segundo caused by the hazard.

The HMPT 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 recommended 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 probability, 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 13** (page **34**) 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 14** (page **35**) shows each hazard's criterion scores, final score, and threat level based on the above prioritization process.

TABLE 13. CRITERION SCORING				
CPRI Category		Description	Score	Weight 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 damage (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 damage (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 damage (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 damage (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 14. HAZARD PRIORITIZATION SCORES AND THREAT LEVEL						
Hazard Type	Probability (1-4)	Impact			Total Score	Hazard Planning Consideration
		Location (1-4)	Primary Impacts (1-4)	Secondary Impacts (1-4)		
SEISMIC/GEOLOGIC HAZARDS	2.5	2.5	2.0	2.3	27.7	Medium
Seismic Shaking	4	4	3	4	58.40	High
Landslide/Erosion	2	2	2	2	16.00	Medium
Tsunami	2	1	1	1	8.00	Low
SEVERE WEATHER	3.3	3.3	2.7	2.0	36.89	Medium
Severe Storms	3.0	2.0	3.0	2.0	28.20	Medium
Extreme Heat	3	4	2	2	33.60	Medium
Severe Wind	4	4	3	2	50.40	High
FLOODING	2	3	2	2	19.20	Medium
EPIDEMIC, PANDEMIC, VECTOR-BORNE DISEASE	2	1	1	2	10.00	Low
HUMAN-CAUSED HAZARDS	2.3	2.8	2.8	3.3	26.14	Medium
Transportation Incidents (Air, Rail)	1	3	3	4	13.00	Medium
Power Failure	3.0	2.0	2.0	3	27.00	Medium
Mass-Casualty/Mass-Fatality Incidents (Mass Shootings, Terrorism, Nuclear, Riots)	2	3	2	2	19.20	Medium
Cyber Threats	3	2	2.5	2	26.10	Medium
Hazardous Materials Release	2.5	2.5	2.0	2.5	23.25	Medium
• Air Pollution	3	3	2	3	31.80	Medium
• Pipeline Hazards	2	2	2	2	16.00	Medium
• Methane-Containing Soils	2	3	2	2	19.20	Medium
URBAN FIRE	2	3	3	3	24.00	Medium

Hazard Profiles

SEISMIC HAZARDS (SEISMIC SHAKING, LANDSLIDE/EROSION, TSUNAMI)

Description

An earthquake is a sudden motion or trembling caused by a 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—*fault rupture*—that sits on top of fault lines, liquefaction in areas with wet soil, or landslides in hilly or mountainous areas. There have not been any recorded instances of fault rupture within El Segundo despite the occurrence of earthquakes. No fault traces run through the City.

El Segundo is in the vicinity of several known active and potentially active earthquake faults. The San Fernando Fault, approximately 6.5 miles from the City, experienced its most recent surface rupture in February 1971 (Mw 6.6). The Compton, Palos Verdes, and Newport-Inglewood faults all lay within six miles of El Segundo, and all are capable of producing major earthquakes.

Figure 5 (page 41) shows the locations of the faults nearest to the City.

Seismic Shaking

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

Landslide/Erosion

Some soil materials, such as clay minerals, have the capacity to absorb water, resulting in a reduction of shear strength. The force of gravity can cause landslides and mudslides when the shear strength of saturated clay is reduced below its minimum stability threshold. Earthquake induced ground failure can cause landslides on steep slopes in either bedrock or soils. Firm bedrock can usually stand in steeper, more stable slopes than soils. Rock type, grain size, degree of consolidation and angle of the beds all contribute to the strength or weakness of a bedrock hillside. Shale and deeply weathered rocks are very susceptible to slope instability and failures. The presence of excessive amounts of water, or the lack of shear strength in the soil or at the soil-rock interface, can also contribute to unstable soil conditions.

Tsunami

A tsunami is a type of wave generated by the sudden displacement of a large volume of water. They differ from conventional waves caused by winds and tides. Earthquakes, landslides, volcanic eruptions, or other similar events that occur underwater or along the shore can cause this displacement, triggering a tsunami. Tsunamis travel extremely fast—sometimes more than 500 miles per hour in the open ocean. However, they're usually no more than a few feet tall and frequently go unnoticed by ships. As a tsunami approaches the shore, the shallow water forces the wave to compress, causing it to grow in height. The wave—which more closely resembles a wall of water or a very rapidly rising tide than a conventional wave—can cause widespread damage to coastal areas when it washes ashore. While tsunamis can be more than 100 feet tall, substantially smaller waves can still be very damaging. Many tsunami events involve multiple waves of varying height.²

Since tsunami waves travel so quickly, they can affect places far away from the location of the displacement event that caused them. Tsunamis do lose energy as they travel, so the tsunami is typically more severe closer to the site of the displacement event. However, particularly large tsunamis can retain enough energy to still do substantial damage thousands of miles away. For example, the 2011 Tōhoku earthquake in Japan resulted in tsunamis that reached California—5,000 miles away—nine to eleven hours after the earthquake occurred. Despite the distance, the tsunami was strong enough to create a 9-foot-tall wave that killed one person and caused over \$48 million in damage.³

Regarding an offshore landslide causing a near-shore tsunami, Lee et al. (2000) conducted a study to isolate regions of shallow-seated submarine slope failures in Santa Monica Bay. Through GIS technology, the study evaluated parameters related to submarine slope failure, including sediment type, slope, and potential seismic acceleration for susceptibility to seismically induced slope failures. They found that the south-facing flank of the Santa Monica Mountains and the walls of the Santa Monica and Redondo Canyons are particularly vulnerable to submarine sliding. Although the study had limitations to shallow-seated submarine landslides that may not be tsunamigenic, the findings highlight the potential for larger underwater slides.⁴

Another study, conducted by researchers Costas E. Synolakis, University of Southern California (USC) professor of civil and environmental engineering, Jose C. Borrero, assistant research professor in the USC engineering school, and Mark Legg, a geophysicist working with the USC researchers at the Viterbi School of Engineering, described the tsunami hazard associated with offshore faults, including one that lies under Santa Catalina Island. Restraining bends in the fault trace, like the bend under Catalina Island, produce regions where earthquake stresses cause the sea floor to pop up and generate a tsunami. "A magnitude 7.6 earthquake could cause

² National Oceanic and Atmospheric Administration (NOAA). 2016 "[National Tsunami Warning Center: Tsunami Frequently Asked Questions.](#)"

³ California Coastal Commission. 2011. "[The Tohoku Tsunami of March 11, 2011: A Preliminary Report on Effects to the California Coast and Planning Implications.](#)" http://www.coastal.ca.gov/energy/tsunami/CCC_Tohoku_Tsunami_Report.pdf

⁴ Lee, Homa & Locat, Jacques & Dartnell, P. & Minasian, D. & Wong, Florence. (2000). "[A GIS-based regional analysis of the potential for shallow-seated submarine slope failure.](#)" Proceedings of the 8th International Symposium on Landslides. 917-922.

seafloor uplift of six feet or more," Borrero wrote. That, in turn, would disturb the sea surface by the same amount, resulting in a tsunami.⁵

Location and Extent

Seismic Shaking

Southern California, including El Segundo, is a highly seismic area due to the major faults that run through the region and are subject to seismic shaking. The intensity of seismic shaking is usually measured against the Modified Mercalli Intensity (MMI) scale, which is based on the amount of 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 each degree of shaking intensity. **Table 15** (page 42) explains the MMI scale, while **Table 16** (page 42) lists the earthquake faults that can impact the City.

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

Seismic shaking can also be measured in relationship to the force of Earth's gravity (g) or percent g. This method is useful for geographically displaying areas of seismic shaking potential. 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. 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 6** (page 43) shows the seismic shaking potential in El Segundo.

Landslide/Erosion

Depending on the magnitude and duration of an earthquake along one of the region's faults, El Segundo can expect to see varying degrees of damage citywide. The City's natural topography means there are areas of the community constructed on slopes, meaning these areas may be subject to earthquake-induced landslides.

Areas at risk from landslides typically have steep slopes (15% or greater), unstable rock or soil characteristics, or other geologic evidence of instability. The bluffs along the coast of El Segundo have slopes greater than 30%. Ground failure—including landslides and mudslides—can occur in the City's slope areas.

⁵ Mark R. Legg, M.EERI; Jose C. Borrero; Costas E. Synolakis. 2004. "[Tsunami Hazards Associated with the Catalina Fault in Southern California](#)." GeoScienceWorld, Aug. 1.

Tsunami

The western border of the City is the only area vulnerable to a seismic- or underwater landslide-induced tsunami. According to the California Geological Survey, the predicted runup for a tsunami along El Segundo's coast is 50 feet. This would inundate the beach sand and Vista Del Mar, the only street running north-south along the coast. City-owned restrooms are on the beach within the inundation zone.

The Chevron Marine Terminal Control Room and Forebay are also present along the beach. They lie south of Grand Avenue and the restrooms, and north of NRG, Inc. The Chevron Marine Terminal Control Room Marine Terminal Facility may have from 1 to 11 operators in the control room at any given time. NRG, Inc. has an energy plant directly on the coast. The plant has a seawall between the plant and the beach and ocean waves. Depending on the height and runup of a tsunami, the wall may or may not provide sufficient protection against a tsunami.

The primary emergency response for the beach area would be to evacuate any people present there and to notify Chevron and NRG, Inc. of the impending tsunami. With enough warning, tankers at the Marine Loading System berths may be able to go farther out to sea to avoid the incoming tsunami.

Areas within the risk zone aren't necessarily subject to inundation during a tsunami event, but the risk zone does mark an area where there's a reasonable tsunami threat to individual health and private property and an area where evacuations could be called if a tsunami occurs.⁶ **Figure 9** (page 46) shows the tsunami inundation zones in the City.

Past Events

Since seismologists started recording and measuring earthquakes, there have been tens of thousands of recorded earthquakes in Southern California, most with a magnitude below three. No community in Southern California is beyond the reach of a damaging earthquake.

Seismic Shaking

El Segundo has experienced two earthquakes of a magnitude greater than Mw 5.0 in the last 40 years.

The February 9, 1971, Sylmar earthquake (Mw 6.6) caused shaking in El Segundo in the MMI 5.5 – 6.0 range. While the only officially reported damage in the City involved the reopening of old plaster cracks, neighboring cities all reported slab and wall cracks, tilting fences, and water sloshing in swimming pools.⁷

Twenty-three years later, the January 17, 1994, Northridge earthquake (Mw 6.7), produced severe ground motion, caused 57 deaths, 9,253 injuries, and displaced over 20,000 people. It caused MMI 6.0 – 6.5 shaking in El Segundo.⁸ Despite it being the most damaging earthquake to affect Los Angeles County in the past fifty years, the City reported no significant damage.⁹ However, the South Bay in general and the City in particular experienced shaking effects.

⁶ California Geological Survey. 2025. "[Tsunami Hazard Area Map](#)."

⁷ U.S. Geological Survey (USGS). 1984. "[United States Earthquakes, 1971: Open-File Report 84-971](#)," pg. 54.

⁸ U.S. Geological Survey. "[Earthquake Hazards Program](#)."

⁹ *Los Angeles Times*. "[L.A. County Quake Damage: City-by-City Look](#)." Feb. 6, 1994.

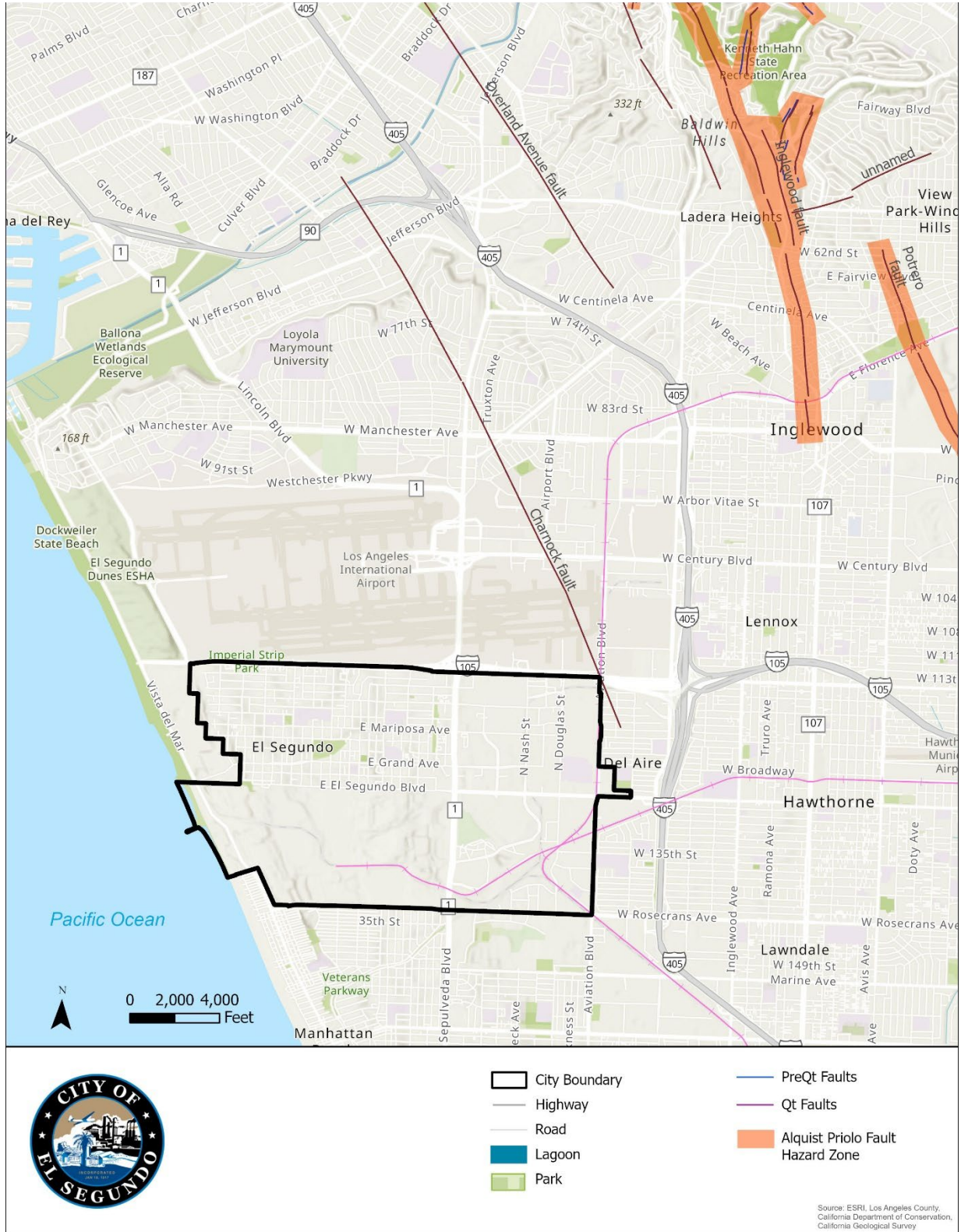
- A power outage affected 31,000 customers including Los Angeles International Airport, which closed for over two hours.
- The Redondo Beach King Harbor marina suffered liquefaction failure, severely damaging its facilities.
- A bridge at Hawthorne Plaza collapsed without injuries.
- A neighborhood in Torrance experienced a gas leak.
- Many windows shattered and items toppled and spilled throughout the South Bay.

In El Segundo, aside from damage similar to those listed above, the earthquake caused the north wall of Fire Station #1 to move slightly. Although the building was in no danger of collapse, it required retrofitting.

The City Council proclaimed a local emergency in concert with the countywide proclamation.

Table 17 (page 47) shows significant earthquakes—magnitude 6.0 or greater—that have occurred within 100 miles of El Segundo since 1925. El Segundo had no reported incidents of significant damage. Authorities made disaster declarations in Los Angeles County for the 1994 Northridge Earthquake and the 1987 Whittier Narrows Earthquake.

FIGURE 5. EARTHQUAKE FAULTS NEAREST TO EL SEGUNDO



Source: ESRI, Los Angeles County, California Department of Conservation, California Geological Survey

TABLE 15. MODIFIED MERCALLI INTENSITY SCALE		
Intensity	Description	Description
I	Instrumental	Felt only by a very few people under especially favorable conditions.
II	Feeble	Felt only by a few people at rest, especially on the upper floors of buildings.
III	Slight	Noticeable by people indoors, especially on upper floors, but not always recognized as an earthquake.
IV	Moderate	Felt by many indoors and by some outdoors. Sleeping people may be awakened. Dishes, windows, and doors are disturbed.
V	Slightly strong	Felt by nearly everyone. Many sleeping people are awakened. Some dishes and windows broken, and unstable objects overturned.
VI	Strong	Felt by everyone. Some heavy furniture is moved, and there is slight damage.
VII	Very strong	Negligible damage in well-built buildings, slight-to-moderate damage in ordinary buildings, and considerable damage in poorly built buildings.
VIII	Destructive	Slight damage in well-built buildings, considerable damage and partial collapse in ordinary buildings, and great damage in poorly built buildings.
IX	Ruinous	Considerable damage in specially designed structures. Great damage and partial collapse in substantial buildings, and buildings are shifted off foundations.
X	Disastrous	Most foundations and buildings with masonry or frames are destroyed, along with some well-built wood structures. Rail lines are bent.
XI	Very disastrous	Most or all masonry structures, including 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: United States Geological Survey. 2019. The Modified Mercalli Intensity Scale. <https://www.usgs.gov/media/images/modified-mercalli-intensity-mmi-scale-assigns-intensities>

TABLE 16. SELECTED SHAKING SCENARIOS FOR EL SEGUNDO			
Fault	Magnitude	Distance to Epicenter (Miles)*	MMI Range in El Segundo
Compton	7.5	10.03	8.0-8.5
Newport-Englewood Alt 1	7.2	15.25	7.5-8.5
Palos Verdes	7.4	24.60	8.0
Anacapa-Dume Alt 2	7.2	28.75	7.0-7.5
S. San Andreas: BB+NM+SM+NSB+SSB	7.8	47.22	6.0-6.5

* Measured from the El Segundo City Hall.

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.

FIGURE 6. SEISMIC SHAKING POTENTIAL IN EL SEGUNDO

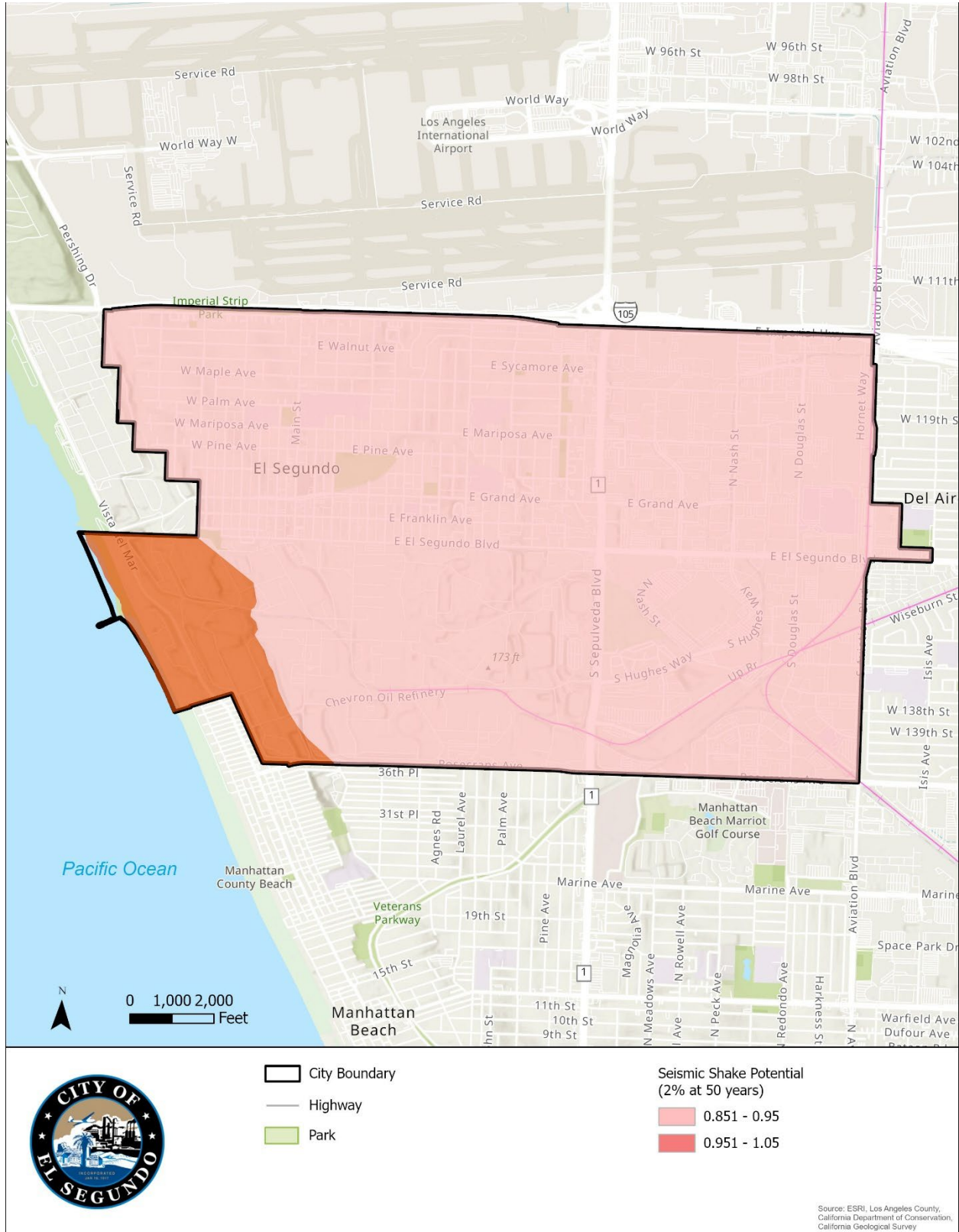


FIGURE 7. DEEP-SEATED LANDSLIDE SUSCEPTIBILITY IN EL SEGUNDO

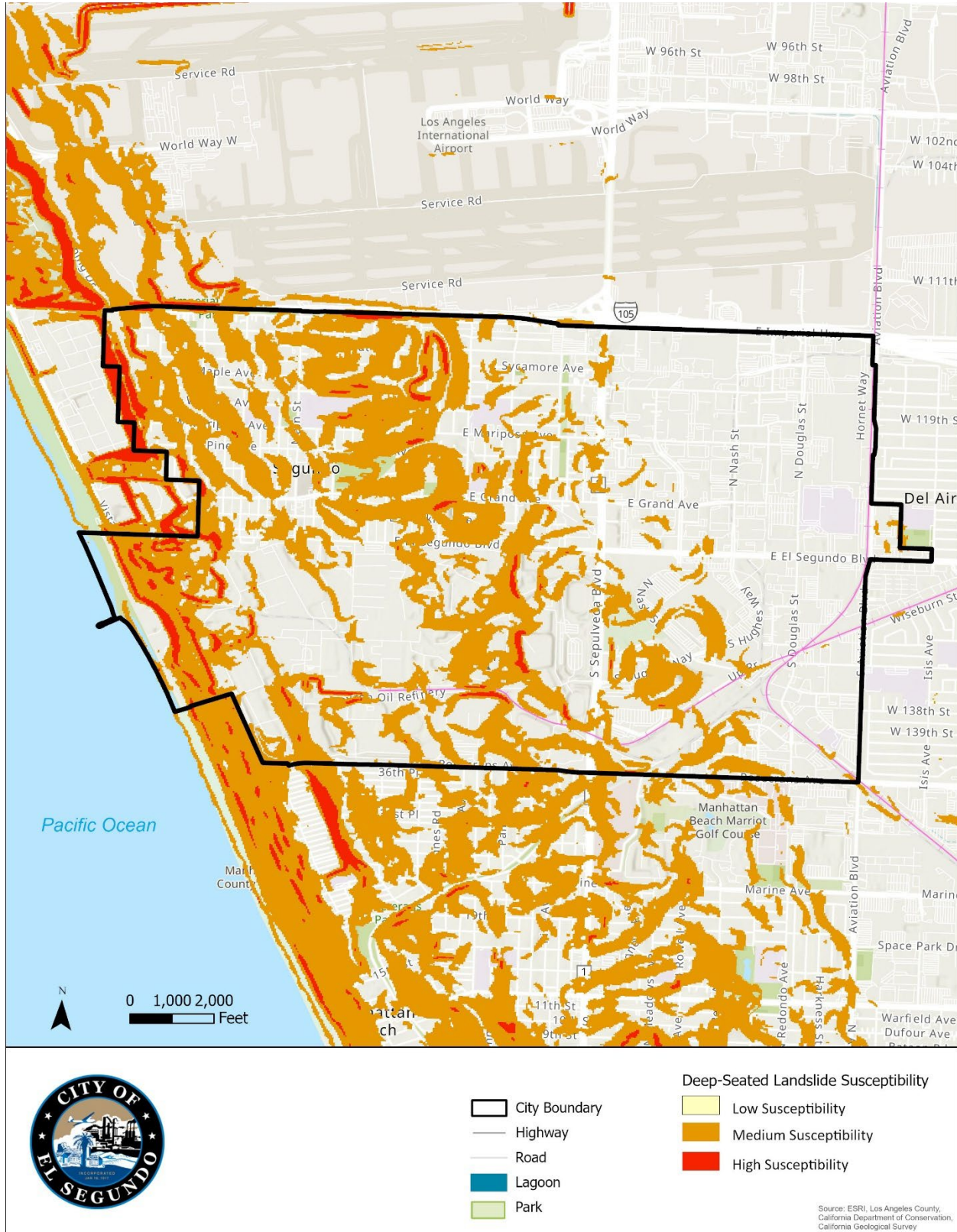


FIGURE 8. POTENTIAL EARTHQUAKE-INDUCED LANDSLIDE ZONES IN EL SEGUNDO

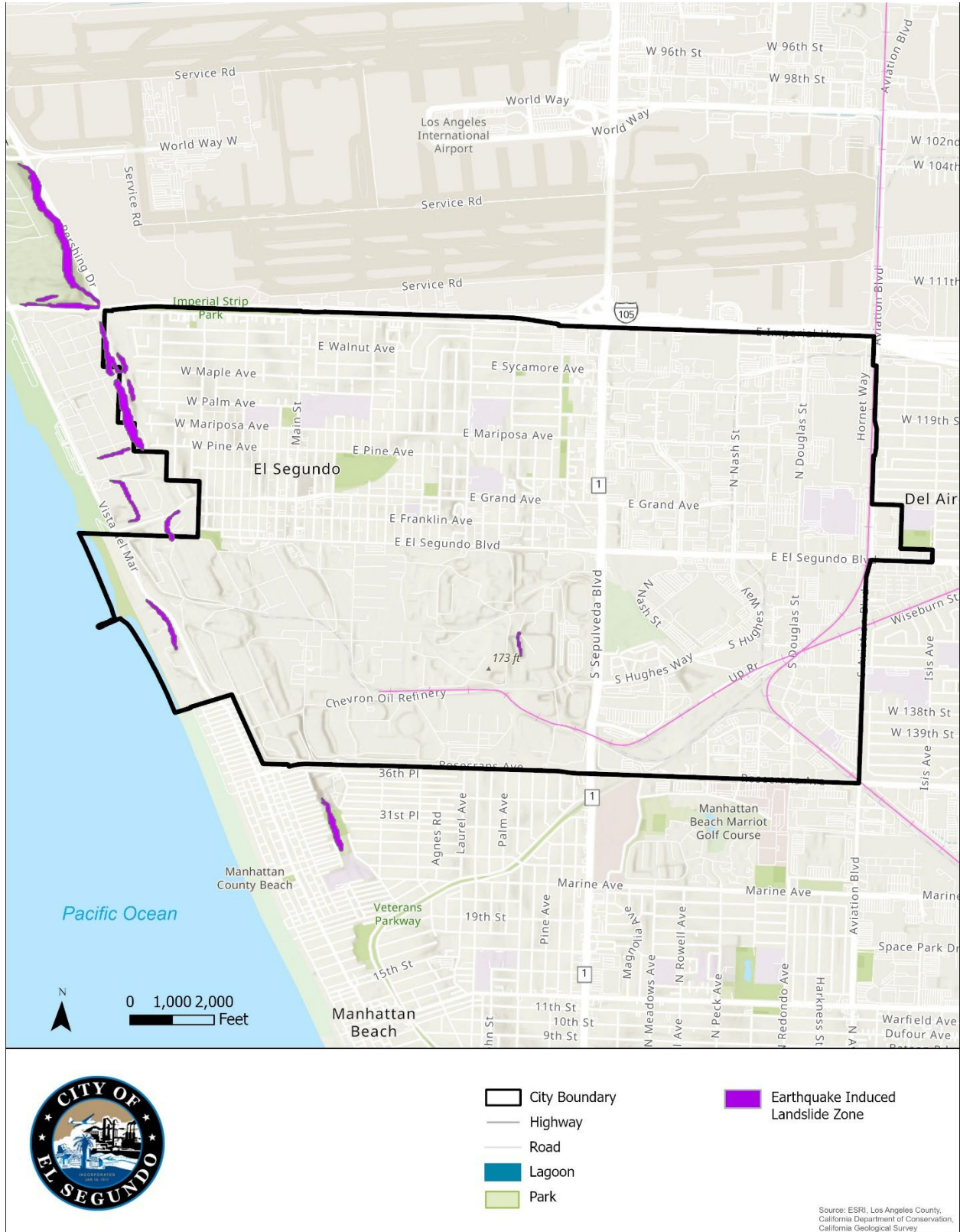


FIGURE 9. TSUNAMI INUNDATION ZONES IN EL SEGUNDO

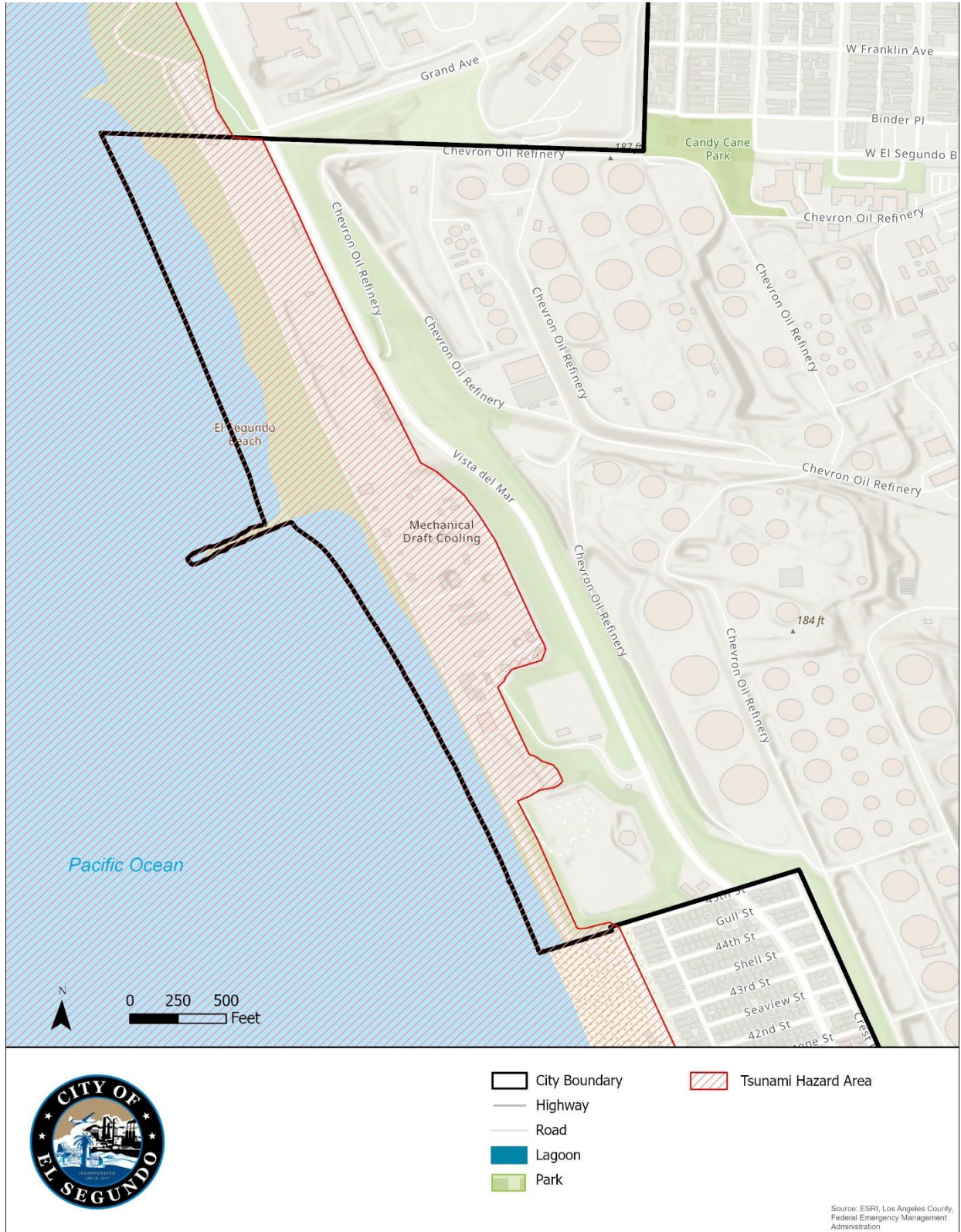


TABLE 17. SIGNIFICANT EARTHQUAKES (Mw 6.0+) WITHIN 100 MILES OF EL SEGUNDO			
Date	Name	Magnitude	Fault
06/29/1925	Santa Barbara	6.82	Mesa fault / Santa Ynez system
03/11/1933	Long Beach	6.40	Newport-Inglewood
07/21/1952	Kern County	7.50	White Wolf fault zone
02/09/1971	Sylmar	6.60	San Fernando
06/28/1992	Big Bear	6.30	Johnson Valley, Landers, Homestead Valley, Emerson, and Camp Rock
01/17/1994	Northridge	6.70	Northridge Thrust

Source: Southern California Earthquake Data Center. 2025. Earthquake Catalogs SCSN Catalog Search (1925-Present). <http://service.scedc.caltech.edu/eq-catalogs/radius.php>

Landslide/Erosion

While the vast majority of the community is relatively flat, there are some portions of the community located along elevated slopes that can erode during storms and inclement weather events. Most of these events are isolated and easily repairable. No major landslide events have occurred in El Segundo according to City records/accounts.

Tsunami

While tsunamis created by distant earthquakes tend to hit northern and central California, some do affect the Southern California coastline. Examples include:

- **Valdivia earthquake (May 22, 1960).** This Mw 9.5 earthquake generated a tsunami that resulted in four-foot waves at Santa Monica and Port Hueneme and caused damage to the Los Angeles and Long Beach harbors.¹⁰
- **Great Alaska earthquake (Mar. 28, 1964).** The second-largest earthquake recorded in the 20th century (Mw 9.2) spawned tsunamis that devastated many towns along the Gulf of Alaska and inflicted serious damage along the west coasts of Canada, the continental United States, and Hawaii.¹¹ While Northern California (especially Crescent City) took the brunt of the wave, Huntington Beach reported very sudden, extreme changes in the sea level that caused damage to several boats in the harbor.¹²
- **Chilean (Quirihue) earthquake (Feb. 27, 2010).** Another monster Chilean earthquake (Mw 8.8) spawned a Pacific-wide tsunami that swept the entire California coast, causing several million dollars in damage. Tidal gauges off La Jolla recorded a 60 cm (23.6") wave height, and a wave entering Dana Point Harbor damaged the "bait barge."¹³ Tsunami-related flooding hit Sunset Beach in Huntington Beach.¹⁴
- **Tonga tsunami (Jan. 15, 2022).** The eruption of a megavolcano in Tonga sent a tsunami throughout the Pacific. Santa Cruz and Ventura harbors reported the most damage, but

¹⁰ USGS Earthquake Hazards Program. "[M 9.5 - 1960 Great Chilean Earthquake \(Valdivia Earthquake\)](#)."

¹¹ USGS Earthquake Hazards Program. "[M 9.2 - The 1964 Prince William Sound, Alaska Earthquake](#)."

¹² City of Huntington Beach. 2022. *Local Hazard Mitigation Plan*, p. 52.

¹³ USGS. "[The 2010 Chilean Tsunami on the California Coastline](#)."

¹⁴ City of Huntington Beach, op. cit.

wave action occurred all along the California coast. Santa Monica Bay experienced a one-meter (39”) wave, and the Port of Los Angeles recorded a 0.76 m (30”) wave.¹⁵

Risk of Future Events

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), released in 2015, is the most recent assessment of the probability of a major earthquake on various faults between 2015 and 2044. **Table 18** shows the results for El Segundo's nearby and regional fault lines.

TABLE 18. EARTHQUAKE PROBABILITIES FOR KEY FAULTS NEAR EL SEGUNDO (2015–2044)					
Fault	Distance (Miles)*	Estimated Probabilities			
		Mw 6.7+	Mw 7.0+	Mw 7.5+	Mw 8.0+
Palos Verdes	3.88	2.64	2.41	0.04	Negligible
Newport-Inglewood Alt 1, Subsection 6	4.59	0.99	0.77	0.38	Negligible
Compton	5.24	0.65	0.50	0.23	Negligible
Redondo Canyon Alt 2, Subsection 3	8.65	0.29	0.26	0.23	Negligible
Puente Hills, Subsection 1	8.94	1.01	0.51	0.15	Negligible
Elysian Park	10.65	0.05	0.04	0.02	Negligible
Anacapa-Dume alt 2, Subsection 0	11.73	0.55	0.46	0.19	<0.01
Puente Hills, Subsection 4	11.85	0.7	0.51	0.08	Negligible
Malibu Coast alt 2, Subsection 2	11.89	0.7	0.63	0.27	Negligible
San Pedro Basin, Subsection 8	15.97	1.82	0.66	0.13	Negligible
San Andreas (Mojave S), Subsection 9	47.29	18.96	18.72	17.22	6.82

* Distance between El Segundo City Hall and the nearest point of the fault. All distances are approximate.
 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 mean probability for a section of the fault.
 Source: Working Group on California Earthquake Probabilities. 2015. The Third California Earthquake Rupture Forecast (UCERF3). <https://wgcep.org/UCERF3>

¹⁵ California Geological Survey. "Tonga Tsunami, January 15, 2022."

Landslide/Erosion

As it is an ongoing process, coastal erosion is expected to continue. The rate of future coastal erosion is difficult to anticipate, but it is likely that any increases in sea levels or the frequency and/or severity of storms may increase the erosion rate.

Tsunami

Since tsunamis are primarily caused by earthquakes or similar events that cannot be easily forecasted, it is impossible to accurately assess how often future tsunami events will occur or how large or destructive the waves would be. However, given that tsunamis have occurred in the past along the Los Angeles and Orange County coasts, it is likely that they will continue to occur at a rate comparable to past events, and at some point, in the future, that a serious tsunami event will affect the community. The California Geological Survey identifies 4 fault lines in Southern California and 11 locations in distant areas (e.g., Japan, Alaska, and Chile) that could trigger a tsunami event that may affect Los Angeles County's western shores.¹⁶ As previously noted, while large tsunamis are very rare in California, it is nonetheless possible that such an event could occur.¹⁷

SEVERE WEATHER

Severe weather poses a risk to life and property in El Segundo 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 El Segundo, it usually occurs as severe storms, extreme heat, and severe wind.

Severe Storms

Description

Severe storms, for the purposes of this Plan, refers to the intense storm systems that sometimes occur, usually during the rainy winter or early spring seasons. There is no specific factor that separates a severe storm from other storms, but in general, these systems include strong winds, heavy rainfall, and occasionally lightning and hail.

Most precipitation in California arrives either via two climatic conditions:

- *Atmospheric rivers (ARs)* are channels of moist air located high in the atmosphere. They tend to happen most often in the winter and early spring.
- The *El Niño Southern Oscillation (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 globe-spanning phenomena can deliver multiple severe storms in a season. These storms tend to feature higher-than-normal levels of rainfall that can quickly overwhelm the capacity of certain sections of land to drain before the rainwater begins to pool effectively.

¹⁶ State of California, 2021. [Tsunami Hazard Area Map](#), Los Angeles County; produced by the California Geological Survey and the California Governor's Office of Emergency Services; dated 2021, displayed at multiple scales.

¹⁷ Oskin, B. 2014a. ["No Evidence of Megatsunamis Slamming California Coast."](#) Live Science, May 19.

Accompanying high winds can cause rough seas and exaggerate tides, leading to coastal flooding.

Location and Extent

All areas of El Segundo face a generally equal risk of severe storm events, although variations in the storm may make the specific effects stronger or weaker in different parts of the community. There is no standard scale for classifying such events; they may be measured based on factors such as wind speed, precipitation amounts or rates, or the amount of damage done.

Past Events

Severe storms typically occur most years with varying degrees of severity. Some particularly notable events from recent years include:

- Starting November 10, 1997, a strong winter storm caused rainfall totals of up to 1.5 inches in coastal regions and up to 3 inches in the mountains. Street flooding was reported throughout Southern California.
- On January 12, 2001, a powerful winter storm brought heavy rain and snow and strong winds (30-40 mph with gusts to 60 mph) to Central and Southern California. Total rainfall amounts ranged from 2 to 5 inches across coastal areas. Widespread urban flooding was reported. A sequel storm hit the county on February 24-26, bringing between 1 to 4 inches of additional rain, producing numerous reports of urban flooding.
- Between December 27 and 29, 2004, a powerful Pacific storm brought heavy rain, snow, and tornados to Central and Southern California. Total rainfall ranged from 2 to 8 inches on the coastal plain to between 6 and 13 inches in the mountains. Urban flooding was widespread across all of San Luis Obispo, Santa Barbara, Ventura, and Los Angeles counties. Weak tornadoes were reported in Long Beach, Inglewood, and Whittier, producing minor damage, including downed trees and damaged roofs.
- On December 21, 2005, a very large, long-period westerly swell combined with high astronomical tides produced coastal flooding along the beaches of Southern California. Venice Pier reported damage to its lifeguard facility and a flooded public restroom. At Manhattan Beach, a boulder moved by the waves injured a bicyclist.
- On August 20, 2023, Tropical Storm Hillary hit Southern California, leaving record rainfall throughout the state. The storm left behind flooded roads, mudslides, and downed trees. Some areas received up to 600% of their annual rainfall averages for the month of August. The floods killed one person in San Bernardino County, California. It caused over \$900 million in damages in the U.S.

Risk of Future Events

Severe storm systems are a periodic feature of El Segundo's climate, and all expectations are that they will continue to occur. Factors such as ARs and ENSO will very likely continue to play a role in the frequency and intensity of severe winter weather events.

Climate Change Considerations

The specific impact of climate change on severe storm systems remains a subject of debate. It is likely that storms associated with ARs in Southern California will become stronger. As discussed in the "Floods" section, the typical Southern California AR storm is projected to

become 10 to 20 percent more intense due to climate change, although the average number of AR storms affecting the region is not expected to change to a substantive degree.¹⁸

Scientists are not yet clear if climate change will affect the ENSO cycle, and if so, what such effects would be. A 2014 study found that extreme warm periods of the ENSO cycle (which are strongly associated with frequent and intense storms in Southern California) may occur twice as often due to climate change, although other studies found that ENSO will weaken (decreasing the frequency and intensity of the warm cycles), and still other studies found no risk of substantive change.¹⁹

Extreme Heat

Description

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:

- **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.
- **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.
- **Extreme Heat Waves:** A successive series of extreme heat days and warm nights when 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.

In El Segundo, extreme heat is generated when a high-pressure ridge inhibits the normal onshore breezes, resulting in temperatures that reach between 85–99°F and occasionally above 100°F. Extreme temperature can have severe impacts on human health and mortality, natural ecosystems, agriculture, and other economic sectors. The National Oceanic and Atmospheric Administration (NOAA) reported the planet's ten warmest years since 1850 have all occurred in the past decade.²⁰ The neighboring Pacific Ocean has helped save the City from some of the worst effects of steadily rising temperatures.

Location and Extent

Humid conditions 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 10** (page 52) illustrates the NOAA National Weather Service (NWS) Heat Index.

Though excessive heat in El Segundo would impact all areas of the City, it will not affect all citizens equally. The elderly, the very young, those with chronic health problems, and people who work outside are most at risk when extreme heat occurs. People suffer heat-related illness

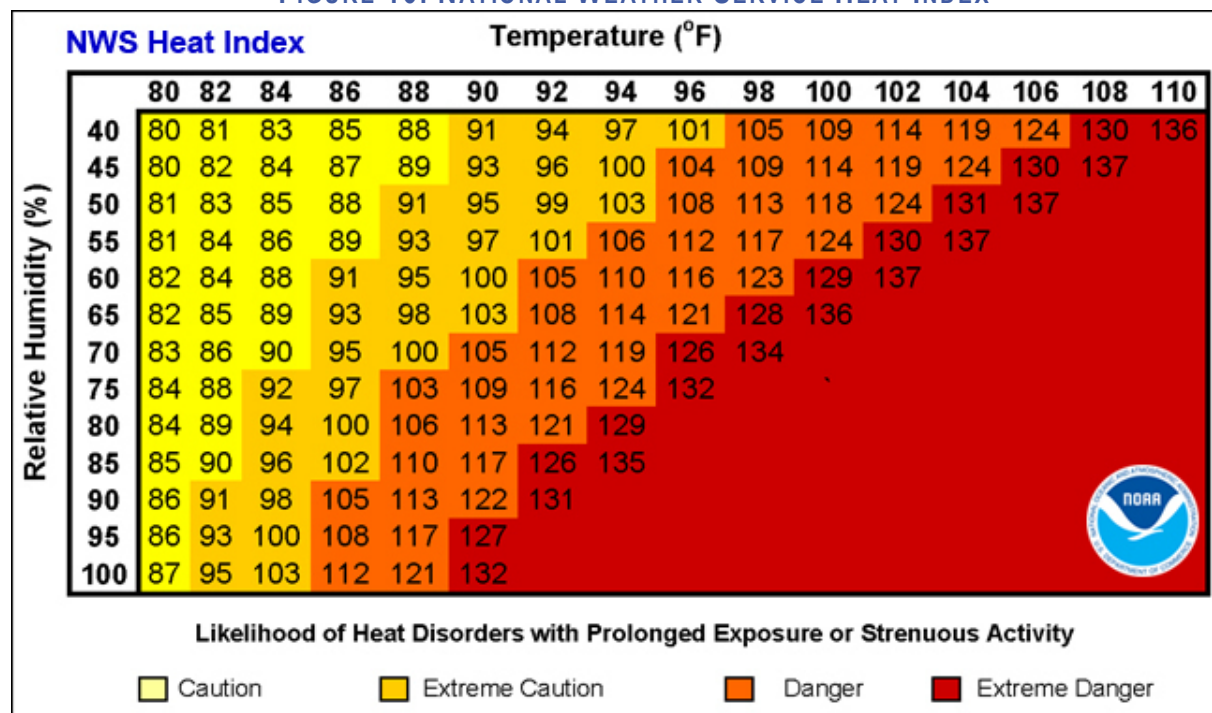
¹⁸ Oskin, B. 2014. "['Atmospheric Rivers' to Soak California as Climate Warms.](#)" Livescience.com.

¹⁹ Cho, R. 2016. "['El Niño and Global Warming: What's the Connection?'](#)" State of the Planet..

²⁰ NOAA. Jan. 10, 2025. "[2024 was the world's warmest year on record.](#)"

when their bodies are unable to compensate and properly cool themselves. The body normally cools itself by sweating. But under some conditions, sweating is not enough and a person's body temperature rises rapidly. Very high body temperatures may damage the brain or other vital organs. The cumulative effects of multiple consecutive extreme-heat days can also wear down the resistance of healthy people to heat-related illnesses.

FIGURE 10. NATIONAL WEATHER SERVICE HEAT INDEX



Past Events

In the past 25 years, the highest temperature of the year in El Segundo has exceeded 99° six times, four of them since 2016.²¹ The highest recorded temperature in El Segundo was 110° F in 1963.

Risk of Future Events

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 four extreme heat days annually. That number increases to five days annually through 2016-2045. Cal-Adapt projects that the City may experience an annual average of eight extreme heat days by 2070-2099, with a 30-year range of 0 to 25 days a year.

El Segundo recorded nine heat waves between 1965 and 2004. Cal-Adapt projects that the average will rise to 0-2 a year between 2016 and 2045 and 0-3 between 2070 and 2099.

²¹ NOAA. [NOWData – NOAA Online Weather Data](#). Accessed Jun. 9, 2025.

Climate Change Considerations

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.²² As climate change accelerates in the 21st century, extreme heat events are anticipated to become more frequent and intense in the City. El Segundo's extreme heat days may increase to as many as 25 days annually by 2100. The City can expect a shift in residential and business needs for cooling and addressing heat-related issues.

Severe Wind

Description

The NWS Severe Weather Definitions for high winds are as follows:

- 25 to 38 mph (22 to 33 knots): Wind or small craft Advisory
- 39 to 54 mph (34 to 47 knots): High wind warning or Gale
- 55 to 73 mph (48 to 63 knots): High wind warning or Storm
- 74 to 110 mph (64 to 99 knots): High wind warning or Hurricane

Most incidents of high wind in El Segundo are the result of the Santa Ana wind conditions. While high-impact wind incidents can occur, they are not frequent in the City.

The California Nevada Climate Applications Program (CNAP) Climate information for California and Nevada decision-makers (funded by the NOAA Office of Global Programs) defines Santa Ana winds as dry, sometimes hot and dusty, winds in southwestern California that blow westward through the canyons toward the coastal areas. El Segundo sits in the pathway of those winds from the mountains east of Los Angeles County. Santa Anas are seasonal phenomena occurring mostly during fall, winter, and spring, tending to peak in December. The wind usually has its origin when cold air spills southward into the Great Basin, trapped between the Rockies to the east and the Sierras and Southern California coastal range to the west. This cold air mass is characterized by unusually high pressure near the land surface. Winds are driven into Southern California and the Los Angeles basin when the pressure of this interior air mass exceeds the pressure along the California coast.

Location and Extent

High winds can occur across the entire planning area and can have a destructive impact, especially to trees, power lines, and utility services. Unexpected high winds can also sweep away unsecured signs, street and beach furniture (such as trash cans and barricades), flags and banners, and other potential missile hazards.

High winds can and do occasionally cause tornado-like damage to local homes and businesses in El Segundo and across Los Angeles County. Tornadoes could occur anywhere within the City.

Past Events

A severe windstorm with winds over 41 knots has occurred only twice in El Segundo in 64 years. While high-impact wind incidents can occur, they're not frequent in the City.

²² NOAA. "[Topic: Temperature Rankings.](#)"

Starting January 7, 2025, and lasting three days, heavy Santa Ana winds and catabatic winds caused by an extreme high-pressure area over the Great Basin triggered a windstorm generating gusts of 80-100 miles per hour through and over the Santa Monica and San Gabriel Mountains. The ensuing catastrophic Palisades and Eaton wildfires killed 31 people and destroyed over 6,800 structures. Sustained windspeeds at LAX (and, thus, in El Segundo) reached 29 mph on the evening of the 7th, with gusts up to 43 mph. Maximum sustained winds on January 8 reached 21 mph with gusts to 33 mph.²³

During the period November 30, 2011, through December 1, 2011, high winds from a Santa Ana event gusted at speeds approaching 100 miles per hour in the Los Angeles area, causing approximately \$40 million in damage. The prolonged winds toppled hundreds of trees, closed roads and schools, and left more than 400,000 Edison customers without electricity. Some utility customers were without power for up to a week. In El Segundo (where gusts topped out at 47 mph), numerous trees toppled over, some onto houses causing property damage, but no one was injured. The citywide power outage was resolved within 24 hours in the Planning Area.

The National Climatic Data Center Storm Events Database has tracked 37 tornadoes since 1950 that touched down in Los Angeles County, causing injuries to 45 people, no deaths, and a total of \$56,193,000 in damages. The largest tornado in the Los Angeles area was an F2 (maximum wind speeds 111-135 mph) that touched ground in South Central Los Angeles, 4.6 miles away from El Segundo, injuring 30 people and causing up to \$50,000 in damages. Although a tornado has never touched down in El Segundo, four tornadoes causing significant damage and injuries have occurred within five miles of the city.

Waterspouts (tornadoes over water) have been spotted in Santa Monica Bay off the coast of El Segundo and west of Los Angeles International Airport.

Risk of Future Events

Santa Ana winds have been deeply embedded in Southern California's climate for millennia. While climate change may alter the frequency and severity of these winds (see below), there's no reason to think they will stop or that occasional very strong winds will never appear again. The hazard scoring in **Table 14** (page 35) sets the annual expected probability of severe wind at over 10%.

Climate Change Considerations

It's 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.²⁴ This increase in storm intensity may also bring more intense winds to the Southern California region, including El Segundo.

Studies indicate that climate change may affect Santa Ana wind events in varying ways, but it's 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

²³ Weather Underground. "[Los Angeles, CA Weather History](#)."

²⁴ Oskin, B. (2014). "[Atmospheric Rivers to Soak California as Climate Warms](#)." Live Science.

decrease by about 20% in the future.²⁵ Given the anticipated increases in temperatures throughout the region, future events are anticipated to become more severe in some cases, even if the number of events decreases.

FLOODING

El Segundo hasn't had a major flood event since the area was first settled in the 19th century. Localized urban flooding caused by severe rain is the main flooding hazard in the City. Surface water flow through the City isn't concentrated within any naturally occurring streams or channels. Urbanization has led to the collection of natural surface waters in a complex stormwater drainage system. El Segundo isn't in the pathways of any dams or waterways and isn't subject to dam failure or inundation.

The City has a complex stormwater collection system consisting of catch basins, drainage basins, pumping stations, and force mains. There are four pump stations, three fore bays, plus numerous catch basins connected to about 12 miles of City-owned storm drain mains. There are also 11 miles of storm drains, one large pump station on Center Street, and a pump station at Standard Street and El Segundo Boulevard that the Los Angeles County Public Works Department owns, operates, and maintains.

The City has three separate drainage systems:

- The general area west of Sepulveda Boulevard and north of El Segundo Boulevard
- The Chevron Refinery south of El Segundo Boulevard and west of Sepulveda Boulevard
- The general area east of Sepulveda Boulevard

Several isolated areas located west of Sepulveda Boulevard drain by discharging to the City's sanitary sewer system, which terminates in the City of Los Angeles Hyperion Treatment Plant for treatment and discharge into Santa Monica Bay.

Many stormwater and drainage projects have been completed within the City to mitigate local flooding.

- 1989-1990: The Acacia/Cedar/Imperial Storm Drain project was constructed to divert water into holding tank that drains into a large storm drain down Imperial Highway.
- 1998-2002: The Arena Drain Project was constructed. It included a gravity storm drain system at Franklin Avenue and Standard Street and the reconstruction of the existing storm drain pump station at the intersection of El Segundo Boulevard and Standard Street.
- 2000: A new storm drain system was installed in the 600 block of Lomita.
- 2002: A large gravity storm drain system (Southport Drain System) was constructed at Mariposa Avenue and Hillcrest Street to achieve full-flow capture and diversion to the County storm drain.
- 2005: Pump 16 was remodeled to include two pumps.
- 2012: A new storm drain was installed at Mariposa and Maryland
- 2013: New storm drains were installed on Maple near Nash.

²⁵ Hall, Alex, Neil Berg, Katharine Reich. (University of California, Los Angeles). 2018. "[Los Angeles Summary Report, California's Fourth Climate Change Assessment.](#)"

- Numerous other projects include the Douglas Street Gap Closure project; the Virginia Street Drainage Improvement project; the Maple Sump project; and building a storm station to take water from the underpass.

Location and Extent

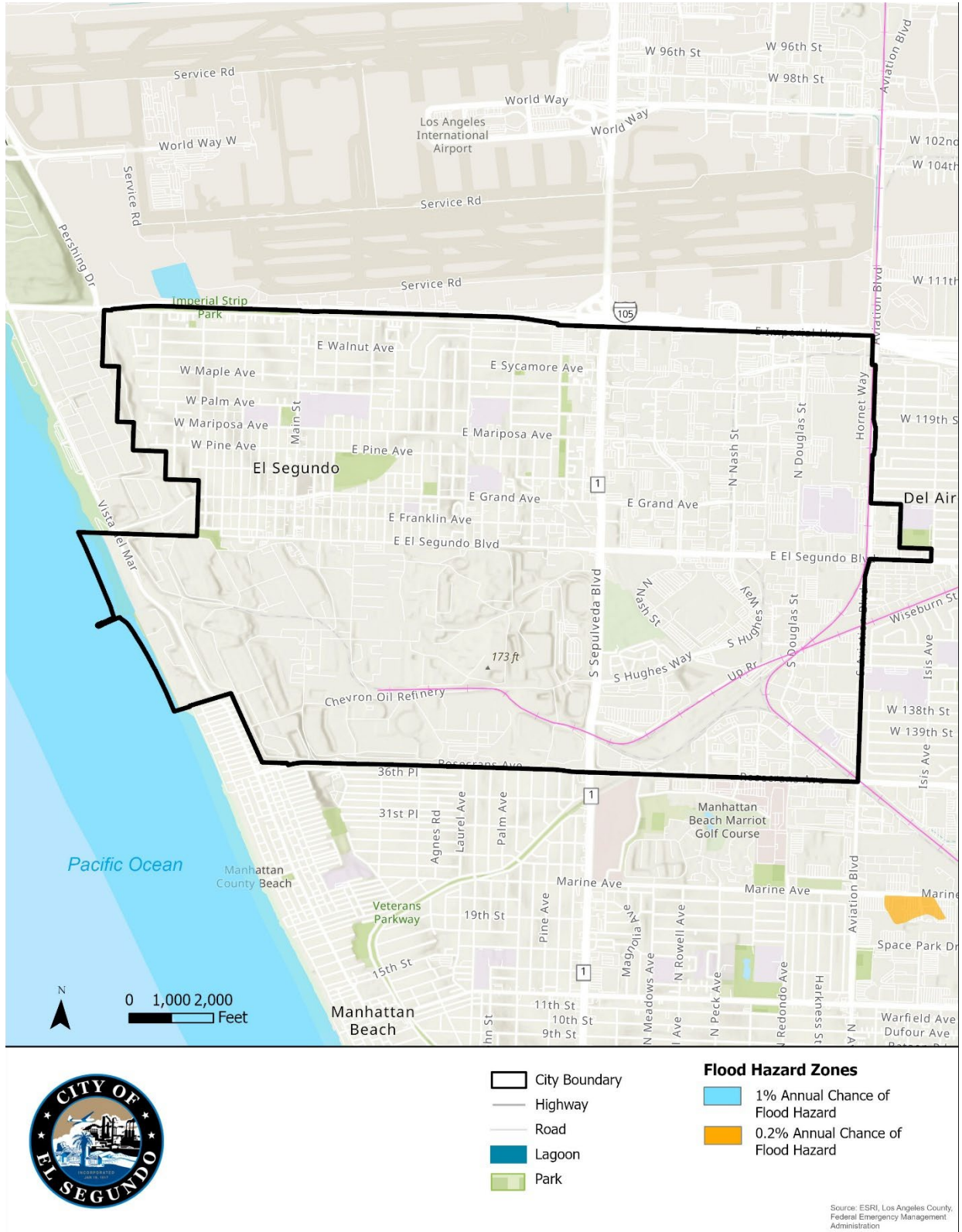
The National Flood Insurance Program ranks the vast majority of El Segundo in Zone X, an area outside the 500-year flood zone with a less than 0.2% chance of annual flooding. The City doesn't flood *per se*, but there may be ponding of water at flat or low spots. **Figure 11** (page 57) shows the FEMA NFIP flood hazard areas near the City.

The El Segundo Public Works Department has identified locations that need to be checked for drainage during major storms to ensure water is draining efficiently. These locations have grates that allow water into the drainage system and, if clogged with leaves or papers, will cause water to pond and potentially flood the streets. These locations are listed below:

- The alley east of 108 Sheldon Street 4
- 118 Whiting Street at the alley
- 130 Loma Vista Street @the east alley
- The alley east of 326 & 428 Loma Vista
- 431 & 438 Whiting Street
- 344 & 333 Virginia
- The alley east of 346 Virginia Street
- Alley west of 411 Richmond Street City
- The alley west of 323 & 415 Eucalyptus Street
- 804 & 811 California Street
- 817 Hillcrest Street
- 515 Irene Court
- Storm plant 14 (Douglas gap)
- Storm plant 16 (Stevenson Field)
- Street Storm plant 17 (Imperial @ Center)
- Storm plant 18 (Hughes Way)
- Car wash at City Yard (discharges on Illinois to storm drain)

FEMA has determined that a small portion of the City's coastline is a Special Flood Hazard Area Zone A, which is subject to inundation with a 1% chance of annual flooding. This flooding is prevalent primarily in natural depressions within the sand dune topography along the beach. Coastal flooding could also potentially impact a small portion of the coastline located generally between Grand Avenue and 45th Street.

FIGURE 11. FEMA NFIP FLOOD HAZARD AREAS IN AND NEAR EL SEGUNDO



Past Events

Historical flooding from winter storms caused emergency proclamations by El Segundo in 1995 and 1998. In 1995, a series of storms over a few weeks hit the South Bay area and caused \$695,000 in response- and rain-related problems and damage. Approximately 12 businesses in the Smoky Hollow area and 6 homes flooded due to the excessive rain. The sewer system backed up due to so much water in the drainage system, causing additional problems. In the 1998 El Niño, significant rain caused \$72,000 in damages. El Segundo received disaster assistance funds for both of these events.

After 1995, the Los Angeles County Flood Control District performed a major upgrade of the storm drain system within the City that resulted in significantly less damage due to localized flooding in subsequent years. In 2004/2005, severe storms resulted in damages of \$45,000. No City emergency was proclaimed.

Risk of Future Events

Localized instances of ponding occur at least annually or multiple times a year in cities across Southern California. During periods of drought, precipitation levels may decrease and lower the likelihood of ponding. In most years, though, it's almost certain that El Segundo will experience some type of urban flooding event. Larger-scale flood events have been rare in El Segundo. However, the City could experience some degree of large-scale flooding with inundation levels greater than one foot in depth during a particularly severe rainstorm. All expectations are that the probability of floods/storms occurring again in the future is likely. As shown in **Table 14** (page **35**), there's a probability of less than a one-percent annual chance of a flood.

Climate Change Considerations

Climate change is expected to exacerbate the conditions leading to El Segundo's urban flooding. Climate change will cause more intense local, regional, and global weather patterns, intensifying atmospheric rivers. At this time, it's 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 El Segundo 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 El Segundo.

EPIDEMIC, PANDEMIC, VECTOR-BORNE DISEASE

Description

Public health emergencies can be a local health emergency or classified as an epidemic or pandemic. Epidemics and pandemics occur when a disease—often a strain of influenza—emerges amid a population that has little immunity.

- An epidemic occurs when an infectious disease spreads rapidly across a defined area or population. The early 2025 measles outbreak originating in Texas is an example of an epidemic.
- In general usage, a non-infectious condition that presents widely across a population or area may be called an “epidemic,” even though it doesn’t fit the formal definition. Thus we currently have “epidemics” of childhood obesity, fentanyl use, retail smash-and-grab robberies, and gun violence in the U.S.
- A pandemic is a global disease outbreak. HIV/AIDS and COVID-19 are two of the most destructive global pandemics in recent history.

The latest list of acute communicable diseases present in Los Angeles County, reported by the California Department of Public Health (CDPH) Infectious Diseases Branch (IDB), mentions 53 diseases that run the gamut from anthrax to Zika, not including tuberculosis, seasonal influenza, and COVID-19.²⁶

Bacterial and viral diseases most often spread through a small number of pathways:

- Through the air by respiratory droplets from a person coughing or sneezing (COVID-19, influenza)
- From contact with an infected person's bodily fluids (AIDS, Ebola)
- By touching objects and surfaces that have the pathogen on them (measles)
- By eating tainted food or drinking tainted liquids (E. coli, cholera)
- Through contact with disease vectors (such as mosquitos or fleas) (Lyme disease, West Nile fever)

Location and Extent

El Segundo in its entirety is vulnerable to a public health incident, epidemic, or pandemic. People that spend time in locations that draw crowds, such as schools, airports, churches, restaurants, entertainment facilities, etc., are vulnerable to being infected. Some diseases prey on certain parts of the population; for instance, COVID-19 was particularly deadly for seniors and infants.

El Segundo has no hospitals, major medical facilities, or public health resources. The City relies on the Los Angeles County Department of Public Health as the lead agency for all issues pertaining to public health. All patients are transported to medical facilities outside of the City for care.

Outbreaks of communicable diseases in other countries can quickly extend to the U.S. Airliners and cruise ships can both infect large numbers of people and take them to places that haven’t yet been exposed. The measles epidemic that started on January 20, 2025, rapidly spread to 1,168 cases in 23 states as far away as Alaska and Rhode Island by early June²⁷ via travel by airplane and car.

²⁶ CDPH IDB. “[Yearly Summaries of Selected Communicable Diseases in California, 2015–2023.](#)” Oct. 2024.

²⁷ Associated Press. “[Arizona officials confirm measles outbreak in Navajo County.](#)” Jun. 10, 2025.

Past Events

Epidemics have plagued the U.S. since the first European settlers landed in North America. Selected epidemics and pandemics present in the U.S. in the 20th and 21st centuries include the following.

- **1981-Present:** Acquired Immunodeficiency Deficit Syndrome (AIDS) was first diagnosed in 1981. Human Immunodeficiency Virus (HIV), discovered in 1983, was a zoonotic (originating in animals) disease that weakened the body's immune to the point that, in its AIDS end-stage, left the patient vulnerable to opportunistic infections that could eventually kill the patient. AIDS infected 85.6 million people worldwide and killed 40.4 million people by 2023. Once an almost certain death sentence, advances in antiretroviral therapy have made HIV/AIDS a survivable chronic disease. Still, it newly infected at least 1.3 million people in 2022.²⁸
- **1999-Present:** Cases of West Nile fever first appeared in the U.S. in 1999. The virus, long endemic in Africa, is spread through bites by the *Culex* mosquito, which probably entered the U.S. through shipments of fruit or flowers from Africa. Now endemic in the coterminous United States, it has infected an estimated 60,992 people, leading to 29,059 hospitalizations and 3,134 deaths through 2024.²⁹
- **Spring 2009:** The H1N1 "swine flu" spread rapidly throughout the world, causing 60.8 million cases, 274,304 hospitalizations, and 12,469 deaths in the United States alone. The CDC estimated that 151,700 to 575,400 people worldwide died from the (H1N1)pdm09 virus infection during the first year the virus circulated.³⁰
- **2019-Present:** COVID-19, a flu-like respiratory disease caused by the SARS-CoV-2 virus, first appeared in Wuhan, China in December 2019. It may have been a zoonotic disease that jumped to humans through consumption of fruit bats as bush meat. By March 11, 2020, the World Health Organization declared it a pandemic; by then, it was present in all continents except Antarctica. The stringent public health responses in Europe and North America may have saved millions of lives at the cost of sparking the worst global recession since the 1929 Great Depression. COVID-19 is still actively killing people around the world, though it's now considered an endemic disease that can be prevented through vaccination. As of April 1, 2025, 775,866,783 people have been infected, 7,057,132 of whom died, including 1,193,165 in the U.S.³¹

Other illnesses, such as seasonal influenza, are episodic and can meet the technical definition of epidemics. They're mostly preventable through vaccination or treatable with antivirals or antibiotics. Epidemiologists worldwide keep on the lookout for flu variants or coronaviruses that may become the next epidemic or pandemic after sufficient mutation (H5N1 "bird flu" is the leading candidate as of this writing).

Risk of Future Events

Major epidemics and pandemics occur more frequently, aided by the introduction of new vectors (through trade and travel) and easy spread (through cars and aircraft). That they're mostly easily

²⁸ UN AIDS. "[Global HIV & AIDS statistics — Fact sheet 2023](#)." Jul. 13, 2023.

²⁹ U.S. CDC. "[Historic Data \(1999-2024\)](#)."

³⁰ U.S. Centers for Disease Control and Prevention (CDC). "[2009 H1N1 Pandemic \(H1N1pdm09 virus\)](#)."

³¹ Wikipedia. "[COVID-19 pandemic](#)."

controllable is little consolation to the people infected. The ongoing politicization and circumscription of public health functions at all levels of government will enable even well-known pathogens (such as measles) to spread widely among poorly protected populations. The hazard scoring of a 0.1% to 1% probability per year is likely very conservative.

Climate Change Considerations

Climate change has already increased the probability of novel epidemics and pandemics by extending the ranges of various disease vectors into non-resistant populations. Tropical diseases will move into formerly temperate zones as temperatures rise and weather patterns change. Continued encroachment of humans into wilderness habitats will increase human contact with zoonotic diseases that can spread between people, much as COVID-19 did.

HUMAN-CAUSED HAZARDS

Transportation Incidents (Air and Rail)

Description

This threat summary applies primarily to large-scale, single-point, mass-casualty disaster events that cause sufficient casualties or fatalities to overwhelm local medical, health, and mortuary services capabilities. Transportation incidents are typically air or rail passenger or cargo accidents that result in mass casualties.

This description omits all but the most serious highway accidents; such incidents are generally handled by emergency services without disaster management involvement. That said, a sufficiently serious accident could result in a mass casualty incident. For example, trucks transport hazardous materials through the City every day. Many of these trucks carry quantities of hazardous substances or extremely hazardous substances, as classified by the Environmental Protection Agency. Trucks from industrial businesses within the community often transport chemicals to ports or other receiving facilities. If a major vehicle accident involved a truck transporting large quantities of hazardous materials, it could be life-threatening to those involved and people in the immediate surrounding area. However, in this case, it would be approached as a hazardous materials release (see below) rather than a traffic accident.

Location and Extent

Local cargo rail traffic passes through the City to and from the Chevron Refinery every day, crossing Sepulveda Boulevard, Douglas Street, and Aviation Boulevard. Passenger rail traffic includes the Los Angeles Metro C and K Lines, which use an elevated track through El Segundo. This makes vehicle-versus-train collisions improbable, though derailments and train-versus-train collisions are still possible.

The skies over and around El Segundo are heavily occupied by aircraft originating and departing from a number of airports located in Southern California. The airports nearest to El Segundo that handle the greatest amount of air traffic are:

- **Los Angeles International Airport (LAX).** LAX is the seventh busiest airport in the world measured by aircraft movements. Airliners, air cargo aircraft, and business jets arrive and depart at a rate of one per minute.³²
- **Long Beach Airport (LGB).** Aircraft of all sizes arrive and depart LGB at a rate of 1,027 a day in 2023. It serves domestic passenger traffic through three major airlines, business jets, commuter flights, air cargo service, helicopters, and general aviation.³³
- **Hawthorne Municipal Airport (HHR).** This general-aviation airport averages 220 flights per day with 24-hour operations and is home to an FAA-operated Air Traffic Control center. It can accommodate aircraft up to 60,000 pounds, including business jets and military helicopters.³⁴

Military aircraft also travel through the City's airspace. Although major aircraft accidents are rare, such an incident can result in extensive casualties both in the aircraft and on the ground.

Both air and rail hazards encompass many threats: hazardous materials releases; fire or explosion; severe damage to rail lines, roadways, buildings, and vehicles; road and right-of-way closures; evacuations; and deaths of passengers, crew, and bystanders on the ground.

Any air accident will involve coordination among federal, state, and local agencies. The City of El Segundo Fire Department (ESFD) will coordinate with agencies from Los Angeles County and the state, federal agencies such as the Federal Aviation Administration and National Transportation Safety Board, and the carrier. The resources necessary to manage such an event will come from any number of places. Investigation into the accident's cause and recovery from the physical and psychological damage often takes months or years.

Since neither Amtrak nor Metrolink operate passenger heavy-rail service through El Segundo, the most likely rail accidents would involve single-train derailments, train-versus-car collisions at on-grade crossings, or train-versus-train collisions caused by switching or signaling failures. The most likely significant consequence would be a large hazardous materials release from one or more breached tank cars. When a rail car is involved in an accident or derailment, a combination of extremely hazardous and/or flammable products and materials may be released and possibly explode or burst into flame.

Past Events

The Federal Rail Administration (FRA) collects data on all reportable commercial rail incidents in the U.S. FRA data shows three reportable rail accidents (all derailments due to track faults) in El Segundo since 2010. These accidents caused no injuries or deaths.³⁵

On August 31, 1991, three Southern Pacific railroad tanker cars carrying a total of 60,000 gallons of propane gas derailed as the train was switching tracks but did not spill their contents. No one was injured in the derailment.³⁶

³² Airports Council International. "[The busiest airports in the world defy global uncertainty and hold top rankings.](#)" Apr. 14, 2025.

³³ Wikipedia. "[Long Beach Airport.](#)"

³⁴ City of Hawthorne website. "[Hawthorne Municipal Airport.](#)"

³⁵ U.S. Department of Transportation. 2025. Accident Type (including Highway-Rail Crossings) (3.08). <https://data.transportation.gov/stories/s/v2un-y5se>

³⁶ L.A. Times Archives. "[3 Propane Tank Cars Derail but Do Not Leak.](#)" Aug. 31, 1991.

The National Transportation Safety Board maintains records of all reportable aircraft-involved accidents and investigates accidents that result in fatalities or substantial damage. According to its data, 23 reportable incidents involved aircraft originating or terminating at LAX, Santa Monica, Hawthorne, or Torrance airports between 2000 and 2024. This number excludes single-engine light aircraft, light helicopters, and incidents involving injuries to ground personnel during normal ground operations. The aircraft involved—airliners, business jets, and multi-engine cargo turboprops—are the ones most likely to cause a mass-casualty incident should they collide with other aircraft or crash on or off airport property.³⁷

Risk of Future Events

Most of the rail trackage in El Segundo is located on Chevron property; the rest is used by Metro light rail. The rail operations tend to be low speed in relatively uncomplicated traffic conditions.

LAX is one of the busiest airports in America. The skies over the Los Angeles basin are among the most crowded in the world. The three closest general-aviation airports generate thousands of flight operations each year. That said, El Segundo is a small target.

The hazard rating sets the annual probability of a transportation accident affecting El Segundo at 0.1%.

Climate Change Considerations

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, roads, and rail rights-of-way, leading to vehicle crashes and derailments.
- 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.

Power Failure

Description

A *power failure* is an event that occurs within an electric power system when the total real or reactive power of the powerplants 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 City’s control. These events often occur during a time of extreme demand for power, such as an extreme heat wave that creates an enormous strain on the power grid as residents try to stay cool. Most of

³⁷ National Transportation Safety Board. 2025. Monthly Aviation Dashboard. <https://www.nts.gov/safety/data/Pages/monthly-dashboard.aspx>

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.

- **Permanent:** A massive loss of power typically caused by a fault on a powerline. Power is restored automatically once the fault has been cleared.
- **Brownout:** A sag (or drop) in voltage in an electrical power supply. They can cause equipment or various operational systems to perform poorly.
- **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 what caused the loss and the configuration of the electric network.

A consequence of power failure that particularly concerns the City is its effect on HAZMAT control/containment systems. Some types of hazardous materials must be cooled, frozen, kept under pressure, or pumped through pipelines. Storage facilities may need constant ventilation or air scrubbing. Many facilities require access control systems, video monitoring, and remote industrial controls. All these systems rely on an uninterrupted supply of electricity.

Location and Extent

The entire City of El Segundo 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.

Power failure can occur in 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 doesn't discriminate with 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 Energy 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 do not own the 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 (refer to **Figure 13**, page 65). 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.³⁸

Past Events

Due to maintenance actions or infrastructure faults, small-scale power failures frequently occur throughout Southern California. On several occasions, El Segundo 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 City 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:

The most damaging power failures tend to occur on a regional scale, affecting City 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 impacted (equipment failure).³⁹
- October 1989 (Loma Prieta Earthquake): Loss of substations; 1.4 million people impacted (seismic event)⁴⁰
- August 1996 (region): Cascading impacts from loss of power from 1996 North American blackouts.⁴¹
- December 1998 (San Francisco): Loss of substations, impacting 350,000 buildings and 940,000 people. (Infrastructure failure, human error).⁴²
- 2000 (statewide): Power outages due to electricity crisis.⁴³

FIGURE 12. INDEPENDENT SYSTEM OPERATORS IN NORTH AMERICA



³⁸ California ISO website: "[ISO History](#)."

³⁹ "[The 3 Worst Power Outages in the History of the U.S.](#)" A1 Electric, Feb. 20, 2020.

⁴⁰ Eguchi, R. T.; Seligson, H. A. (1994), "Lifeline perspectives: Practical lessons from the Loma Prieta earthquake." National Academies Press.

⁴¹ Venkatasubramanian, Mani V. "[Analyzing Blackout Events: Experience from the Major Western Blackouts in 1996](#)." University of Wisconsin, Power Systems Engineering Research Center, Aug. 20, 2003.

⁴² Stannard, Matthew. "[Technician's Error Caused 1998 Outage](#)." *SFGate*, Aug. 15, 2003.

⁴³ Sweeney, James L. "[The California Electricity Crisis: Lessons for the Future](#)." *The Bridge*, National Academy of Engineering, Jun. 1, 2002.

- 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.⁴⁴
- July 2017 (Los Angeles): An explosion at a power plant caused widespread outages in San Fernando Valley.⁴⁵

Risk of Future Events

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 energy allocation within California.

El Segundo 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.

Climate Change Considerations

Projections of changing climatic conditions through the end of the century suggest that the City should address future power failure concerns. Energy demands aren't anticipated to increase significantly throughout the City due to compliance with updated codes and requirements; however, electricity production occurs outside the City, reducing opportunities for El Segundo to be energy-independent. To better address power failure, El Segundo'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 and redundancy using the latest energy storage and backup systems technologies.

Mass-Casualty/Mass-Fatality Incidents (Mass Shootings, Terrorism, Nuclear, Civil Unrest)

Description

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.

⁴⁴ Medina, Jennifer. "[Human Error Investigated in California Blackout's Spread to Six Million](#)". *The New York Times*, Sep. 10, 2011.

⁴⁵ Lloyd, Annie. "[DWP Plant Explosion Causes Massive Power Outage in San Fernando Valley](#)." LAist, Jul. 8, 2017.

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

- **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.”⁴⁶ The Investigative Assistance for Violent Crimes Act of 2012⁴⁷ defines mass killings as “3 or more killings in a single incident.” Put together, they describe a phenomenon that has become all too 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 2018⁴⁸ cites 289 cases from all across America, with a notable increase in numbers in the more recent years. Unfortunately, this is likely a severe undercount.
- **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.”⁴⁹ This term is broken down into two categories, defined by the FBI⁵⁰:
 - Domestic terrorism is “[v]iolent, 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.”
 - International terrorism is “[v]iolent, criminal acts committed by individuals and/or groups who are inspired by, or associated with, designated foreign terrorist organizations or nations (state-sponsored).”
- **Civil disturbances** cover a gamut of activities ranging from posting a protest sign on a telephone pole to staging a violent riot or 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 in this Plan, *civil unrest* is an event that threatens or temporarily interrupts normal City operations through violent protests, riots, shootings, or armed standoffs. Civil unrest 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 containing armed standoffs are the provinces of law enforcement and best handled 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 below.

⁴⁶ Federal Bureau of Investigation (FBI) Active Shooter Safety Resources. <https://www.fbi.gov/how-we-can-help-you/active-shooter-safety-resources>

⁴⁷ S.1793 - Investigative Assistance for Violent Crimes Act of 2012. <https://www.congress.gov/bill/112th-congress/senate-bill/1793/text>

⁴⁸ FBI. “[Active Shooter Incidents in the United States from 2000-2018.](#)”

⁴⁹ U.S. Department of State. [Executive Order 13224.](https://www.state.gov/executive-order-13224/)<https://www.state.gov/executive-order-13224/>

⁵⁰ FBI. “[What We Investigate: Terrorism.](#)”

Location and Extent

MCI and MFI 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 is 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.

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

Past Events

The following MCI/MFI have occurred within Southern California, the state, or the nation and may be relevant to the community.

- **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 it destroyed the Federal Building and damaged or destroyed more than 300 nearby buildings. 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.⁵¹
- **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 carried out the attack on their own and were not connected to any specific terrorist group.⁵²
- **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.⁵³
- **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, the event affected many California residents, as more than half of the 61 people killed were from California.⁵⁴

⁵¹ FBI. "[Famous Cases and Criminals](#)."

⁵² History.com Editors. "[Boston Marathon Bombing](#)." June 2019.

⁵³ Global Terrorism Database. 2020. "[2015-12-02](#)."

⁵⁴ Los Angeles Times Staff. "[Las Vegas Shooting Victims: Portraits of the Fallen](#)." Oct. 2017.

- **January 21, 2023:** A 72-year-old gunman, 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.⁵⁵
- **October 25, 2023:** Forty-year-old Robert Card carried out 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, followed shortly by a second shooting at the Schemengees Bar & Grille Restaurant. Following a manhunt, police found Card dead from a self-inflicted wound.⁵⁶
- **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 his attack on the crowd, neither 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.⁵⁷

Risk of Future Events

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 is impossible to predict when an incident will occur. El Segundo does not host any significant national or state facilities and is unlikely to attract the attention of international terrorist groups. However, the vast majority of MCIs and MFIs in the U.S. are caused by disasters or by “the guy next door”⁵⁸. Unfortunately, these events are increasingly common and can happen anywhere. As identified in **Table 13** and **Table 14** (page **34**), the future probability of an MCI or MFI is less than 1.0%.

Climate Change Considerations

The link between MCIs/MFIs and climate change is not 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 El Segundo is negligible since these changes are more likely to impact developments on the national or international level.

⁵⁵ Wikipedia. “[2023 Monterey Park Shooting](#).”

⁵⁶ Wikipedia. “[2023 Lewiston Shootings](#).”

⁵⁷ FBI. “[Bourbon Street Attack Investigation Updates](#).”

⁵⁸ “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](#),” Feb. 3, 2022.

Cyber Threats

Description

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.”⁵⁹

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).”⁶⁰ 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 the collection, processing, maintenance, use, sharing, dissemination, or disposition of information—have over the past forty years become central to nearly every aspect of advanced society. Computers 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 has also introduced an unprecedented vulnerability into 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 actors have grown wildly as the know-how 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 actors 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.

⁵⁹ United Nations Office on Drugs and Crime. “[E4J University Module Series: Cybercrime Module 1: Cybercrime in Brief.](#)”

⁶⁰ United Nations Office on Drugs and Crime. “[E4J University Module Series: Cybercrime Module 14: Cyberterrorism.](#)”

Location and Extent

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 is 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. That 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 is not that there are so many vulnerable information systems, but that there are any secure systems at all.

Some major hardware and software manufacturers aggressively test 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 Internet-of-Things [IoT] device firmware) may never be fixed because the systems themselves are not 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.

Past Events

Cybercrime is geography independent. Threat actors can carry out their attacks from anywhere in the world that has 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.”⁶¹ 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.

Distributed denial of service (DDoS) and telephony denial of service (TDoS) attacks are motivated by “an interest in obtaining financial reward, making an ideological statement,

⁶¹ Washington Post. [“Ransomware poses threat to vulnerable local governments.”](#) Aug. 22, 2021.

creating a geopolitical advantage, or exacting revenge for a particular government action, corporate campaign, or policy stance.”⁶² They are 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.).

In short: El Segundo 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 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 El Segundo 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 \$500,000⁶³.
- In 2020, at least 1,794 U.S. governmental and educational organizations reported experiencing a ransomware attack⁶⁴. 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 compromised⁶⁵.
- 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

⁶² Government Computer News. “[The risks of DDoS attacks for the public sector.](#)” Jan. 15, 2021.

⁶³ TechTarget. “[May ransomware attacks strike municipal governments, IT firms.](#)” Jun. 2, 2022.

⁶⁴ Emsisoft Malware Lab. “[The State of Ransomware in the US: Report and Statistics 2020.](#)” Jan. 18, 2021.

⁶⁵ ZDNetLive. “[Top 10 cybersecurity incidents in 2020.](#)” Sep. 4, 2020.

monitoring, and \$30,590 for force-account overtime⁶⁶. (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 DoppelPaymer attackers demanded 100 bitcoin (\$689,147 at the time) in ransom from the city, claiming they had encrypted 150 servers and 500 workstations to steal more than 200 gigabytes of files.⁶⁷ While the city claims it never paid the ransom, it spent \$50,000 on an insurance deductible, and DoppelPaymer put over 200GB of stolen data on the dark web, including personal information about city employees⁶⁸. 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.⁶⁹ 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 loss⁷⁰. 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 \$600,000⁷¹.

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 states⁷². 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)⁷³.

While this discussion focuses on direct attacks against U.S. city and county governments, there is 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; Colonial Pipeline, 2021),

⁶⁶ Gainesville Times. "[Hall County's 'crippling' cyberattack last year cost \\$1.7M. Here's what else we've learned since then.](#)" Dec. 18, 2021.

⁶⁷ Daily Breeze. "[Cyberattacks continue amid COVID-19 pandemic.](#)" Apr. 23, 2020.

⁶⁸ Statescoop. "[Hackers post Calif. city's data online after it denied leak.](#)" Apr. 22, 2020.

⁶⁹ Bleeping Computer. "[Maze Ransomware Behind Pensacola Cyberattack. \\$1M Ransom Demand.](#)" Dec. 11, 2019.

⁷⁰ Insurance Business America. "[Cyberattack postmortem reveals Florida city lost 6GB of data.](#)" Feb. 12, 2020.

⁷¹ MSSPAlert. "[Pensacola Ransomware Attack Update: Cybercriminals Release Data.](#)" Dec. 26, 2019.

⁷² Cyberscoop. "[DHS: Teenager's malware disrupted 911 call centers in 12 states.](#)" Nov. 14, 2016.

⁷³ Security Affairs. "[Young hacker arrested for disrupting 911 Service with a TDoS attack.](#)" Oct. 31, 2016.

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.

Risk of Future Events

Cybercrime is a growth industry. The worldwide costs of cybercrime have grown from \$3 trillion in 2016 to an estimated \$10 trillion in 2025.⁷⁴ This estimate counts direct costs from ransoms, stolen assets, reputational loss, lost productivity, data recovery, and indirect costs such as cybersecurity equipment, software, consulting, insurance, legal judgments and penalties, and payroll for cybersecurity employees. Cyberwarfare and cyberterrorism continue to be highly effective tools in the hands of state and non-state actors. The world is unlikely to de-digitize, and hackers of all stripes are unlikely to unilaterally disarm. For most public and private organizations, cyberattacks are a matter of “when,” not “if.” For these reasons, the HMPT rated cyber threats as the highest-priority hazard, with the probability of an attack over 10% per year.

Climate Change Considerations

There’s no direct link between climate change and cybercrime. However, as the costs and consequences of climate change mount, more state and ideological actors are likely to turn to cybercrime to air grievances, hobble competitors for resources, or steal resources for their own uses.

Hazardous Materials Release

Description

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 (causes cancer)
- Have bioaccumulative properties (accumulates in the body’s tissues)
- Are persistent in the environment
- Are water-reactive

Hazardous materials release refers to a hazard event during which 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 a hazardous materials release is the effect on the public from exposure to the material.

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

⁷⁴ Secureworks. “[Boardroom Cybersecurity Report 2024](https://www.secureworks.com/centers/boardroom-cybersecurity-report-2024).” Nov. 5, 2024. <https://www.secureworks.com/centers/boardroom-cybersecurity-report-2024>

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.

The State of California designates the ESFD as a Certified Unified Program Agency (CUPA), authorizing it to apply statewide standards to each facility within the planning area that treats onsite or generates hazardous waste, operates underground storage tanks, or stores hazardous materials. State and CUPA responsibilities include chemical disclosure programs, Risk Management Plan audits and inspections, hazardous waste control, underground tank and aboveground petroleum tank regulation, and industrial wastewater pretreatment and storm water inspection requirements to meet National Pollution Discharge Elimination System water pollution control requirements. The ESFD's Environmental Safety Division inspects the facilities that use, store, or produce hazardous materials to determine whether the facilities comply with city, state, and federal regulations.

Households and businesses throughout El Segundo use hazardous materials and chemicals. In addition to large commercial and industrial users, 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.

Location and Extent

El Segundo has numerous industrial businesses that use, store, or produce hazardous materials. The City of El Segundo Hazardous Materials Plan, maintained by the ESFD's Environmental Safety Division, identifies specific locations of hazardous materials. Most of the businesses are located in the City's eastern portion and southwest quarter, but hazardous materials are also transported through the City via pipelines, railroads, and on highways.

The Chevron El Segundo Refinery (Chevron) encompasses slightly over 1.56 square miles of the entire planning area (5.54 square miles). Chevron also has a Marine Terminal off the coast of El Segundo with two berths for docking tankers. The Chevron El Segundo Refinery is the largest producing oil refinery on the West Coast, with the capacity to process 290,000 barrels of transportation fuels per day. Gasoline, jet, and diesel fuels are the primary products refined from crude oil. There are approximately 150 major storage tanks greater than 30 feet in diameter, with a total storage capacity of 12.5 million barrels. The largest tank—tank #1015 with a diameter of 260 feet and a height of 64 feet—holds about 54,000 barrels. The refinery receives 53,000 barrels per day (BPD) of crude via pipeline from California sources, and 141,000 BPD via tanker.

The refinery produces up to 110,000 BPD of gasoline (45% of product), 100,000 BPD of jet and diesel fuel (41%), 25,000 BPD of fuel oils and coke (a solid coal-like material called petroleum coke) (10%), and 9,000 BPD of LPG (4%). Ten miles of railway and rail cars at Chevron transport petroleum products from other locations to the refinery and from the refinery to other locations, such as the Port of Los Angeles. The El Segundo Refinery supplies 40% of the jet fuel to Los Angeles International Airport and has 20% of the gasoline market share in Southern California. Chevron is classified in a heavy industrial area on the City of El Segundo Zoning Map.

El Segundo's level of exposure to hazardous materials can be understood by examining the City's types of businesses, commercial traffic routes, highways, and sea exposure. To date, there are 342 businesses that use, store, or manufacture hazardous materials in El Segundo and report hazardous materials incidents to the CUPA and State CES. There are many industrial businesses in a light-industrial area on the El Segundo Land Use Element of the General Plan. There is a greater risk of exposure and incidents in the areas classified as a heavy- or a light-industrial area. Approximately 50,000 commuters work daily within these designated areas. Due to their proximity to businesses that use, store, or manufacture hazardous materials, their risk of exposure is higher than that of the general population. An accidental hazardous material release can occur wherever hazardous materials are manufactured, stored, transported, or used.

Figure 14 (page 78) identifies stationary hazardous materials locations within El Segundo 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 extant scale for hazardous materials release, the probability of an incident is anticipated to be occasional (less than 10% chance of occurrence) each year.

In severe situations, the City 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 El Segundo.

Fire and life safety inspection records and hazardous material business plan reports are located at El Segundo Fire Station #1 and maintained by the Environmental Safety Division. All businesses and facilities are inspected at least three times a year for compliance. A mapping database identifies all commercial hazardous materials locations and the types of chemicals stored within each facility. The ESFD has also established plans, conducts regular inspections of commercial/industrial sites, and ensures placards and other measures to identify risks to the community.

***Past Events**

The California Governor's Office of Emergency Services tracks reportable hazardous materials releases per year within the state. **Table 19** (page 77) lists the number of reported hazardous materials releases that occurred in El Segundo per year since 2010.

These incidents account for the release of hazardous materials into the atmosphere and actual spills of materials on the ground. All releases of material into the atmosphere must be reported to the Cal OES Hazardous Materials Section. ESFD responds to any spill of a hazardous material, which is also reported to Cal OES. ESFD records show that from Jan 1, 2020 to December 1, 2024, there were 122 hazardous material incidents in El Segundo for which the Department provided on-scene response.

On March 13, 1988, a hydrogen gas leak ignited a fire at the low-sulfur fuel section of the Chevron oil refinery. Workers at the plant extinguished the fire. The ESFD also responded to the fire and remained at the scene for 20 minutes to ensure the flames were out. There were no reported fire-related injuries.

A notable incident occurred on January 26, 1990, when the Hughes Aircraft El Segundo facility released a cloud of nitric acid. The release sent seven people to the hospital and caused 400

employees to evacuate from six different buildings. The amount of nitric acid released was not reported, nor was the cause of the incident. Nitric acid is a strong corrosive and is considered highly toxic. Hughes uses it to etch electronic circuit boards for airborne radar systems.⁷⁵

On October 18, 1990, a pump malfunction at the Chevron refinery triggered the release of 450-degree crude oil. The resulting fire sent flames 150 feet into the air. Firefighters fought the blaze for two hours before extinguishing it. No injuries were reported, and company officials described the damage as minimal.

Risk of Future Events

Cal OES data ([Table 19](#), page [77](#)) indicates the City has experienced 191 hazardous materials incidents in the past 15 years, an average of 12.73 per year. Short of a significant reduction in the production or use of hazardous materials in the City, it is unlikely the number of incidents will shrink significantly.

Climate Change Considerations

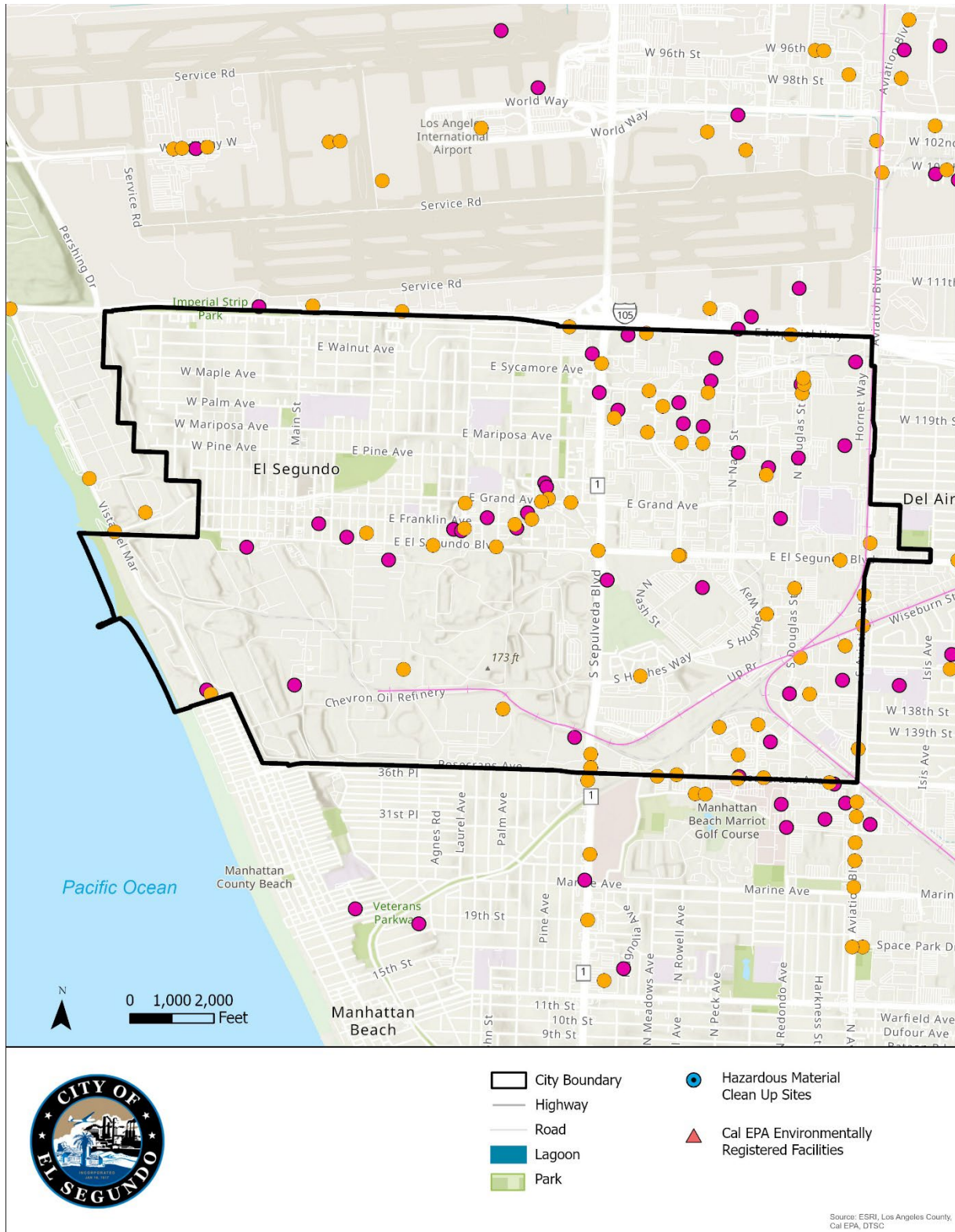
Climate-related natural hazard events, such as increased precipitation and subsequent flooding, could cause an increase in hazardous materials releases. Some of these incidents could result from transportation crashes (due to poorer road conditions) or damage to storage containers or vessels containing 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.

Year	# of Incidents		Year	# of Incidents
2010	29		2018	15
2011	12		2019	16
2012	18		2020	8
2013	19		2021	11
2014	10		2022	6
2015	9		2023	8
2016	12		2024	6
2017	12			

Source: Cal OES. "[Spill Release Reporting](#)."

⁷⁵ Stein, George. "[Toxic Acid Cloud Forces Evacuation of Hughes Plant](#)." Los Angeles Times, Jan 26, 1990.

FIGURE 13. STATIONARY HAZARDOUS MATERIALS LOCATIONS IN AND AROUND EL SEGUNDO



Air Pollution

Description

The City of El Segundo is located at the western edge of the South Coast Air Basin (SCAB), which comprises all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties.

Air pollution can be formed directly or indirectly from natural sources, such as oil seeps, vegetation, or windblown dust, or it can result from automobile engine combustion, evaporation of organic liquids used in cleaning and coating processes, or through abrasion that occurs from tires on roadways. Air-pollution control strategies are directed almost exclusively at human-caused sources because they are the easiest to control. Trends within the Basin over the last ten years show that a large segment of heavy manufacturing has left the area and is being replaced with smaller service industries and businesses related to Pacific Rim trading activities. Despite the exodus of heavy manufacturing and the substantial new controls that have reduced per-capita emissions over the last 40 years, dramatic increases in population have increased the number of sources of air pollution. Therefore, the potential for air quality improvements has been reduced.

Location and Extent

El Segundo's coastal location protects the City from the worst of the Basin's air pollution problem. Daily onshore sea breezes bring clean air onshore and blow air pollutants inland. These onshore winds are most active during the summer months when smog is typically at its highest level. Existing levels of ambient air quality and historical trends in air quality for the City are well-documented by measurements taken at the South Coast Air Quality Management District (South Coast AQMD) Hawthorne monitoring station. The beneficial effects of onshore breezes are substantiated by measurements taken at the Compton station, where the federal ozone standard of 70 ppb was exceeded only 6.8 days per year over the 2020-2024 period versus 19 exceedances in downtown Los Angeles and 48.1 in Reseda⁷⁶. Also, fewer first-stage smog alerts are recorded in the El Segundo area than in the majority of the South Coast Air Basin.

A number of factors still contribute to periods of poor air quality in the City despite the beneficial influences of onshore breezes. Offshore winds are more frequent during winter months and at night, shifting pollutants to coastal areas. Although air quality is generally better along the coast, polluted air and incomplete ventilation of the Basin still cause periodic smog alerts. The increasingly common wildfires that scorch the wildlands around the Basin can generate thick smoke that can travel miles, especially when offshore winds predominate. Calm wind conditions can also cause stagnation of pollutants near the source.

Major stationary sources of air pollutants in and adjacent to El Segundo include the Chevron Oil Refinery, Southern California Edison facilities, Los Angeles International Airport, the Hyperion Wastewater Treatment Plant, and the Scattergood Generating Station. Major mobile sources of air emissions include Los Angeles International Airport, Sepulveda Boulevard, and the I-405 freeway.

⁷⁶ South Coast AQMD. "[Historical Data: AQ Details - Daily High](#)."

The Chevron refinery, perhaps El Segundo's single largest point pollution source, has installed a [fenceline air monitoring array](#) in compliance with South Coast AQMD Rule 1180, adopted in December 2017. It measures 18 pollutants and compounds known to degrade air quality.

Past Events

Toxic air pollution in the South Coast Air Basin has decreased by more than 54% between 2012 and 2018 but continues to contribute to health risks, including cancers and other chronic diseases. For residents in the South Coast Air Basin in 2018, exposure to toxic air contaminants increased the chances of developing cancer by 455 chances in one million. Diesel particulate matter causes 67% of the residential cancer risk due to toxic air contaminants.⁷⁷ El Segundo's dense road grid may aggravate residents' exposure to these contaminants.

While this seems dire, a great deal of progress has been made. The Air Toxics Cancer Risk measured at the Compton MATES monitoring station (the closest to El Segundo) dropped from 4,998 parts per million (ppm) in 1998 to 800 ppm in 2018. Similarly, the Non-Cancer Residential Chronic Hazard Index fell from 25.8 to 5 in the same period.⁷⁸ However, ozone levels measured at the LAX Hastings station have hardly fallen since 2005 (0.066 ppm in 2020 versus 0.069 ppm in 2005), as did NO₂ exposures in the same period (13 parts per billion [ppb] in 2005 to 9 ppb in 2020).⁷⁹

Chronic air pollution can lead to various non-cancer health conditions, including cardiovascular disease, respiratory diseases (including asthma and leukemia), diabetes mellitus, obesity, and reproductive, neurological, and immune system disorders.⁸⁰

Risk of Future Events

Southern California has been struggling with air pollution since the 1960s. While much has been accomplished—SoCal has gone from experiencing an average of 300 bad air days a year in the early '60s to around 90 today—that progress came through regulating and abating the major sources of pollution. Lowering pollution levels now relies on cutting ever-smaller and more difficult contributors to the problem, some of which may not be solvable through state effort alone. Even full electrification of ground transport and elimination of natural gas as a cooking and heating fuel will still leave significant pollution sources in place. This virtually guarantees that air pollution will continue for decades to come.

Climate Change Considerations

Climate change can affect air quality, and certain air pollutants can affect climate change. For example, hot, sunny days associated with a warming climate can increase ground-level ozone in some areas. Ground-level ozone is also a greenhouse gas that contributes to climate change by trapping heat in the atmosphere.

Climate change can also affect indoor air quality. Increases in outside air pollutants, such as ozone and particulate matter, could lead to higher indoor exposures. These pollutants can enter a building in many ways, including through open doors and windows and ventilation systems.

⁷⁷ South Coast AQMD. 2018. "[Cancer Risk due to Toxic Air Contaminants in the South Coast Air Basin, Comparing 2012 vs 2018 Data.](#)" SC AQMD MATES.

⁷⁸ South Coast AQMD. 2018. "[Air Toxics Trends.](#)" SC AQMD MATES.

⁷⁹ South Coast AQMD. 2020. "[Criteria Pollutant Map.](#)" SC AQMD MATES.

⁸⁰ National Institute of Environmental Health Sciences. "[Air Pollution and Your Health.](#)"

Mold, dust mites, bacteria, and other indoor pollutants may increase as climate change-related precipitation and storms increase.⁸¹

Climate change is already helping to spark more and larger wildfires. Smoke from these fires can affect air quality for dozens to hundreds of miles downwind, generating a toxic stew of noxious gases and particulate matter that is difficult to escape. Long-term exposure to these pollutants can lead to asthma, chronic obstructive pulmonary disease, and bronchitis.

Pipeline Hazards

Description

Although pipelines are the safest and most reliable way to transport natural gas, crude oil, liquid petroleum products, and chemical products, there's still an inherent risk due to the nature of the hazardous materials.

Crude oil is a complex mixture of thousands of different hydrocarbons and varying amounts of other compounds containing sulfur, nitrogen, and oxygen, as well as salts, trace metals, and water. Crude oils can vary from a clear liquid similar to gasoline, to a thick tar-like material needing to be heated to flow through a pipeline. A petroleum refinery's main job is to split crude oil into its many parts (or fractions) that are then reprocessed into useful products. The type, number, and size of process units required at a particular refinery depends on a variety of factors, including the type of crude oil and the products required. The interconnected units making up a refinery are tanks, furnaces, distillation towers (fractionating columns), reactors, heat exchangers, pumps, pipes, fittings, and valves.

Products of crude oil refineries include:

- Fuels such as gasoline, diesel fuel, heating oil, kerosene, jet fuel, bunker fuel oil, and liquefied petroleum gas
- Petroleum solvents, including benzene, toluene, xylene, hexane, and heptane, which are used in paint thinners, dry-cleaning solvents, degreasers, and pesticide solvents
- Lubricating oils produced for a variety of purposes, and insulating, hydraulic, and medicinal oils
- Petroleum wax
- Greases, which are primarily a mixture of various fillers
- Asphalt

Most, if not all, of these component stream chemicals are inherently hazardous to humans, as are the other chemicals added during processing. Hazards include fire, explosion, toxicity, corrosiveness, and asphyxiation.

Refineries process a multitude of products with low flash points. Although systems and operating practices are designed to prevent fires and explosions, they can occur.

At the Chevron Marine Terminal, the potential for fires, explosions, releases of flammable or toxic materials, or other accidents that could cause injuries, fatalities, or spills, are primarily associated with flammable vapors and other flammable materials transported as cargo by tankers visiting the Marine Terminal. Damage prevention measures include routine inspection

⁸¹ U.S. Environmental Protection Agency. "[Climate Change Impacts on Air Quality](#)."

and maintenance, corrosion protection, continuous monitoring and control technologies, public awareness programs, and integrity management and emergency response plans.

Location and Extent

Pipelines owned and operated by various companies run beneath the City's streets. Pipelines are mostly underground, which keeps them away from public contact and accidental damage. Despite safety and efficiency statistics, increases in energy consumption and population growth near pipelines present the potential for a pipeline emergency incident. While pipelines are generally the safest method of transporting hazardous chemicals, they aren't failsafe. Pipeline product releases, whether in the form of a slow leak or violent rupture, are a risk in any community.

For example, the pipeline that transports jet fuel to the Los Angeles International Airport runs underground along Virginia Street in the residential section of the city. The Chevron Refinery has more than 1,100 miles of pipelines at the facility site with additional pipes running through the Planning Area. Some pipelines enter from the south and travel north along Sepulveda Boulevard and Aviation Boulevard, exiting the City to the north. The pipes vary in size from six to 18 inches in diameter and are buried at different depths.

Tankers deliver about 90% of the crude oil processed at the El Segundo Refinery. The crude oil is pumped into underwater pipelines at the offshore Marine Terminal to the onshore refinery. The terminal has two separate mooring berths and can handle two tankers at a time. The two separate berths are located approximately one and a half miles from shore and are designed to allow for the safe maneuvering of vessels.

Most fires, explosions, or pipeline spill incidents occurring at the Chevron Refinery are isolated on the site. Pipelines running through the City are unlikely to burst or combust unless breached from the outside. For example, jet fuel pipelines are filled with oxygen-free liquid; without oxygen, combustion can't occur.

The State Fire Marshal Pipeline Safety Division regulates pipelines. Pipelines are also monitored by a complex data web called System Control and Data Acquisition (SCADA) measuring the flow rate, temperature, and pressure. The network transfers real-time data via satellite from the pipelines to a control center where the valves, pumps, and motors are remotely operated. If any tampering with the pipeline occurs, an alarm sounds. The ensuing valve reaction is instantaneous, with the alarm system isolating any rupture and setting off a chain reaction that shuts down pipeline pumps and alerts pipeline operators within seconds.

Most jet fuel pipelines that run underground in populated areas must be over three feet below the asphalt. The pipes are at least one-inch-thick steel. If the pipe does rupture, valves will cut off and operators would receive an automatic alarm.

The Chevron Marine Terminal reportedly offloads approximately 81,760,00 barrels of oil annually.⁸² Oil spills can have a significant impact along the coast and in the coastal waters. Small spills can be mitigated and are classified as less than significant. Large oil spills (greater than 50 barrels) may not be completely contained and, therefore, would be considered significant impacts. Significant adverse impacts on biological resources would occur from a

⁸² Chevron Corporation. "[El Segundo Refinery Overview](#)." 2015.

major oil spill. There are a great number of state, federal, and international regulations governing marine terminals and the transportation of hydrocarbons by vessel.

A moderate-to-large earthquake along one of the faults in the vicinity may result in strong to intense ground motions at the site and could include ground accelerations beyond design specifications for facilities and, potentially, tsunamis. Ruptures of onshore tanks, pipelines, and other components of the Marine Terminal facilities could occur and spill petroleum products. Water quality impacts would result from changes in water chemistry after an uncontained spill of crude oil or product either at the Marine Terminal or en route. The severity of the impact depends on the size of the spill, composition of the oil, characteristics of the spill event quantity of discharge, location of the spill, type of operation, the environmental conditions and the effect of these conditions on propagation of the spill, and the effectiveness of cleanup operations. If a large oil spill were to cause enough biological damage to result in or contribute to the elimination of a species, the damage would be irreversible.

Southern California Gas Company (SoCalGas) owns and operates approximately 10.25 miles of natural gas transmission pipeline under El Segundo's streets. These pipelines can range from 6 to 48 inches in diameter. Depending on the age and maintenance of each line, these pipelines may be benign or may pose a potential hazard for the neighborhoods they run through. Not only is natural gas highly combustible, but pipelines may be vulnerable to construction and street maintenance work involving digging deep holes.

Past Events

According to the Cal OES Hazardous Materials Spill Report archive, seven reportable pipeline-related releases occurred in El Segundo between 2006 and 2024. This doesn't include releases below the reporting thresholds.⁸³

The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) records reports of deaths and injuries caused by various types of pipeline upsets ("serious incidents"). **Table 20** (page 84) shows the numbers nationally and in California. One incident included in these figures is the September 2010 San Bruno gas pipeline explosion, in which a 30-inch PG&E gas transmission line exploded inside the Crestmoor neighborhood, destroying 37 homes and killing 8 people. It left a 167-foot-long, 40-foot-deep crater in the street. The 1956-built pipeline had defective welds and variances in the pipeline body's thickness, causing a failure when PG&E increased the gas pressure to meet demand.⁸⁴

A less spectacular but more common incident happened in July 2019 in Murrieta, when the local fire department responded to a SoCalGas report of a damaged gas service line. A contractor had punctured the line while driving a ground rod. The resulting explosion destroyed 4 houses, damaged 13 more, killed one person and injured 7.⁸⁵

Documented pipeline mishaps involving the Chevron refinery marine terminal:

- On December 28, 1980, the *John McCone*, a single-hulled oil tanker, spilled 105,000 gallons of heavy crude off El Segundo due to a hole in the ship's bottom.

⁸³ Cal OES, State Watch Center. 2025. "[Spill Release Reporting](#)."

⁸⁴ Wikipedia. "[San Bruno Pipeline Explosion](#)."

⁸⁵ California Public Utilities Council. "[Citation Issued Pursuant to Decision 16-09-055](#)."

- On August 13, 1984, a fuel line ruptured in an Edison power plant near the Manhattan Beach border, dumping 2,000 gallons of heavy diesel fuel onto the beach in southern El Segundo.⁸⁶
- On March 16, 1991, the oil tanker *OMI Dynachem*'s anchor ripped open a 26-inch pipeline at Chevron's offshore marine terminal, causing a spill of about 7,320 gallons of a diesel-like oil mixture into Santa Monica Bay.⁸⁷

TABLE 20. PHMSA PIPELINE INCIDENTS, 2010-2024						
	Serious Incidents		Fatalities		Hospitalizations	
	CA	US	CA	US	CA	US
Gas Transmission Pipelines	5	41	10	32	68	120
Gas Distribution Pipelines	15	332	6	121	19	606
Total	20	373	16	153	87	726

Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. "[Pipeline Incident 20 Year Trends](#)."

Risk of Future Events

Previous occurrences indicate there have been at least four pipeline or oil spill emergencies in the past 23 years. This equates to a pipeline emergency every 5.75 years on average or a 17.4% chance of occurrence in any given year. The hazard ranking sets the annual probability of a pipeline-related HAZMAT release at between 0.1% and 1.0%.

Climate Change Considerations

Pipeline discharges are mostly the result of operational mishaps, collisions (with ships, trains, or heavy digging equipment), earth movement, or neglect on the part of the owners. Climate change is unlikely to directly affect the number or rate of pipeline breaches.

Methane-Containing Soils

Description

Methane (CH₄ in chemical notation) is a naturally occurring colorless, odorless gas. It is the simplest form of a group of molecules called hydrocarbons, including propane, butane, and other compounds. Methane and other hydrocarbons have a variety of uses but are most valuable as fuel sources. Petroleum is made of a blend of various hydrocarbons, including methane, and methane is the primary component of natural gas. As a result, soils containing high levels of methane are common in areas with extensive fossil fuel deposits or places contaminated by fossil fuel extraction activities. It can also be found in soils on top of closed

⁸⁶ Los Angeles Herald Examiner Photo Collection. "[Oil spill in El Segundo](#)." Los Angeles Public Library digital Collection Order # 00044223.

⁸⁷ NOAA IncidentNews. "[Chevron El Segundo Mooring; El Segundo, California](#)."

landfills, as the oxygen-free environment in a closed landfill causes organic material to decompose into methane.

While a useful substance, methane can pose a substantial health and safety hazard. It is nontoxic but is extremely flammable and explosive in some concentrations. High-enough levels of methane in the air may displace oxygen, causing a risk of asphyxiation in closed spaces such as building interiors. Methane in the soils can seep to the surface, posing risks for structures on top of these soils. Methane can be trapped under impervious surfaces such as roadways or in enclosed underground areas such as basements, where it can increase to potentially dangerous levels if it is not vented.

Location and Extent

There are five active oil fields in the City. Methane occurs naturally in soil at many locations within the City, likely associated with the underlying El Segundo oilfield and oil production. Typically, there is no immediate health or safety risk because the public is not exposed to the methane. However, without adequate protection, the methane gas can migrate into buildings or other enclosed spaces, where it can accumulate and present a fire or explosion hazard. Methane becomes explosive at about 50,000 parts per million (ppm) and requires some type of remediation above a level of 5,000 ppm.

New development and building projects must conduct a geotechnical report and often an environmental investigation to identify whether methane remediation is required. The developers must then prepare a remedy plan to protect the health and safety of people due to toxic substances like methane.

Figure 15 (page 86) shows the locations of oil wells and landfills in and near El Segundo. The oil wells are marked with a 300-foot buffer zone; a 1000-foot buffer circles the landfill. All these facilities are potential loci for methane-containing soils.

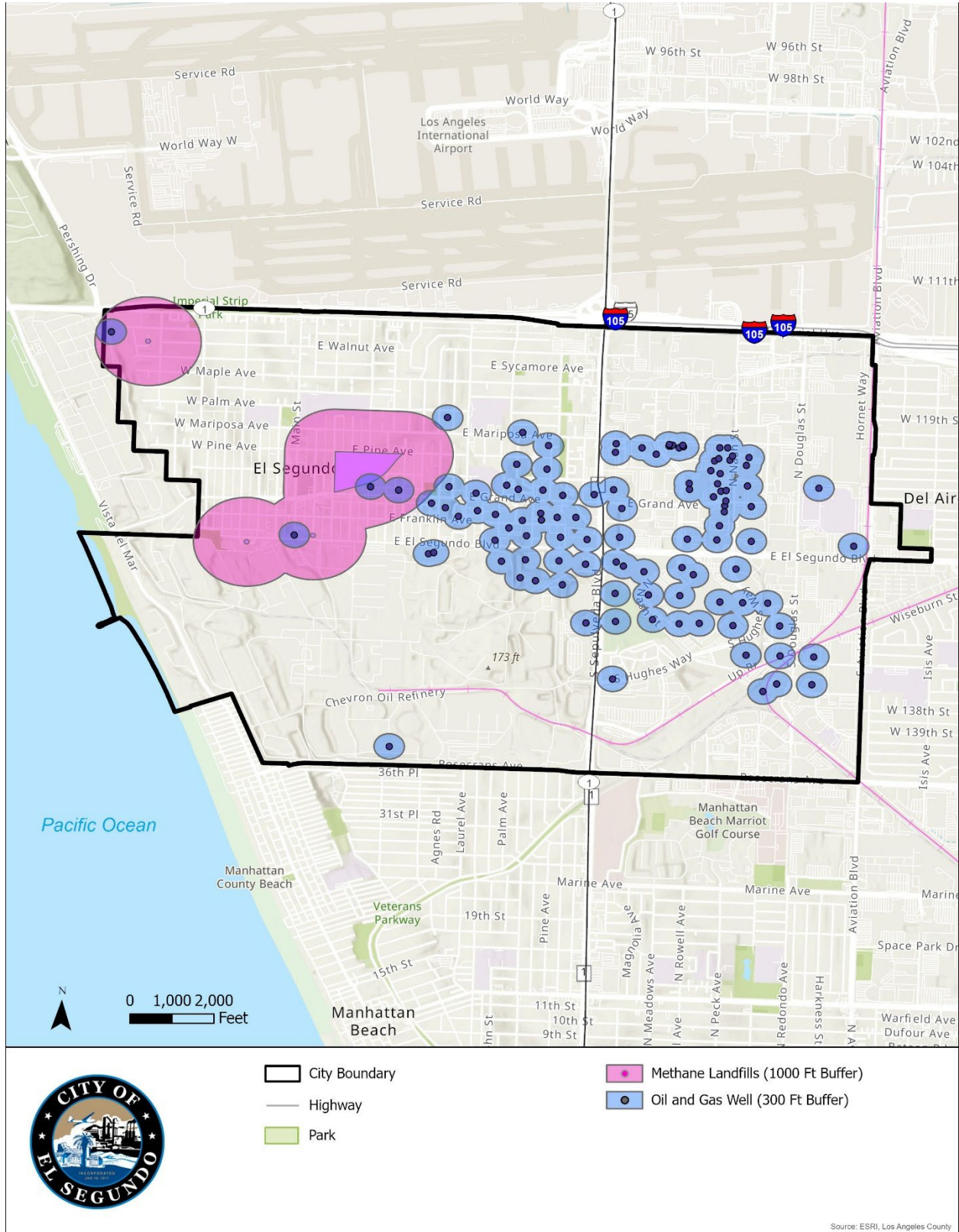
Past Events

While no major methane soil related events have occurred within the City, the El Segundo Fire Department recognizes the potential risk associated with exposure and release of methane gas from soils within the City. Protocols have been established to properly notify the City prior to excavation and ensure safety procedures are followed. Minor incidents involving potential exposure have occurred in the past, but nothing that has caused damage to structures or harm to workers or residents.

Risk of Future Events

Elevated levels of methane have likely been present in City soils for a very long period, given the natural presence of oil and natural gas underneath the community. All expectations are that methane will continue to be present in the soil beneath El Segundo and that the risk of methane levels increasing to potentially dangerous concentrations within some enclosed spaces will persist. It is unknown how continued oil and natural gas extraction activities in the City will affect the rate of methane seepage, both in individual locations and as a citywide average. Any increase in the rate of methane seepage would not necessarily lead to an increase in the risk of a methane-related emergency as long as proper ventilation procedures are followed.

FIGURE 14. OIL WELLS AND LANDFILLS IN AND AROUND EL SEGUNDO



Climate Change Considerations

While methane itself is a potent contributor to climate change, there is no evidence that changing climate conditions will affect the rate of methane seepage in the City.

URBAN FIRE

Description

Due to the urban setting of El Segundo, there is no potential for wildland fires. As a result, fire safety in the City is focused on commercial, industrial, and residential areas. The main fire hazards of concern are those associated with industrial facilities using large amounts of flammable or toxic materials, high-rise buildings, public gathering places, older buildings with substandard electrical and heating systems, and residential neighborhoods interspersed with untreated wood shingle roofs.

Location and Extent

Major urban fires are typically associated with large or high-density commercial, industrial, and residential developments. Although the City's residential area is primarily single-family detached homes, there are numerous multi-family complexes throughout the residential area. Recent experiences with runaway urban fires in Los Angeles have shown that single-family houses can sustain large-scale fire spread in the proper weather conditions.

There are numerous high-rise buildings and industrial facilities in the City's commercial district that have the potential for large urban fires. These commercial businesses comply with fire hazard regulations, so the probability of a large, uncontrollable fire is not great.

The Smoky Hollow district—sandwiched between Grand Avenue and El Segundo Boulevard west of Sepulveda Boulevard—is a transitional, predominately light-industrial district characterized by a pattern of traditional industrial buildings, typically built over 50 years ago, and some newer structures. It's susceptible to large fires or a conflagration because the structures were built close together. The Zoning Code was modified in 1990 to require sprinkler protection in all new structures in that area due to the closeness of the buildings and lack of water supply. This requirement was codified in the 2007 California Fire Code when the adoption of that code took place.

A true urban conflagration is a large fire occurring in a built environment that spreads beyond a city block to destroy sections of a city, or potentially engulfing adjoining areas. A conflagration can be caused or driven by:

- Building infrastructure incidents, such as faulty electrical and heating systems, improper storage or handling of flammable materials, or faulty connections.
- Industrial accidents, such as hazardous material incidents, large quantities of combustible fuel, explosions, rupture of gas mains, and transportation accidents.
- Natural hazards, such as weather, lightning strikes, earthquakes, etc.
- High winds that spread fire between buildings.
- Petroleum-related fires in the City's oil fields, at the refinery, or oil and gas storage.
- Criminal acts, such as arson, explosive devices, acts of terrorism, or riots.

Between 1935 and 1987, 76 oil wells were drilled in the El Segundo oil field, producing 13.6 million barrels of oil. Gas and oil deposits underlay many areas within the City. Such deposits that exist under the City can work their way to the surface or infiltrate structures, causing potential fires and health hazards.

****Past Events***

From January 1, 2015, through December 31, 2024, there have been 148 structure fires, 26 other classifications of fires, and 60 cooking fires in El Segundo totaling \$15,686,186 in damages. Although none of these fires resulted in an urban conflagration or spread to multiple buildings, the costs in damage and danger to people are worth the efforts to mitigate fires in the City.

Risk of Future Events

The hazard ranking (**Table 14**, page **35**) sets the annual probability of a major urban fire at between 0.1% and 1%.

Climate Change Considerations

As weather patterns become more extreme and unpredictable as the climate warms, high-wind conditions may become more common. This will increase the chance that a house or industrial fire may spread more quickly to nearby structures, and that conditions will hamper firefighters' efforts to extinguish the fire, as happened during the 2025 Palisades Fire.

CHAPTER 4 –

THREAT AND VULNERABILITY

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

KEY FACILITIES

A *key facility* is a building or structure that plays an important role in protecting the health, safety, and well-being of El Segundo’s community members. It includes major government and institutional facilities, care centers for vulnerable people, and pieces of infrastructure. Some key facilities are owned by the City, while others are owned by other government agencies or private organizations. The Hazard Mitigation Planning Team has classified key facilities into three groups:

- **Critical facilities.** This includes public safety buildings—such as fire stations and hospitals, schools, community centers (which can function as shelters or assembly points during a disaster)—and facilities that keep vital services operational—such as electricity and water systems. It also includes City administrative and maintenance centers.
- **High potential loss.** This category includes facilities that permanently or regularly house large numbers of vulnerable people, including adult and senior residential care, childcare, and foster agencies.
- **Transportation and lifeline.** This category includes pieces of infrastructure that help maintain the City’s transportation and communication systems. Cell phone towers, rail bridges, and highway and major road bridges are all included in this category.

Table 21 (page 90) shows the number of key facilities by their category and specific function.

The likelihood that all facilities are completely damaged simultaneously is extremely remote. Most impacts are anticipated to be isolated to specific locations based on the hazard. This estimate does not include the value of underground infrastructure and surface drainage facilities owned and operated by the City.

TABLE 21. KEY FACILITIES				
Type	Critical Facilities		Facilities of Concern	
	Number	Value	Number	Value
Administration/Operations	3	\$16,565,035	0	
Maintenance/Storage	6	\$8,096,674	6	\$1,775,662
Public Safety	4	\$35,115,342	0	
Recreation	3	\$19,644,952	21	\$14,609,767
Residential	0		1	\$19,583,249
Wastewater Operations	2	\$5,945,277	0	
Water Operations	14	\$8,868,738	0	
Water Storage	4	\$14,147,163	0	
Total	36	\$108,383,181	28	\$35,968,678

The threat assessment looks at the number and types of key facilities that lie within the areas of elevated risk for different hazards. These facilities face the risk of damage or destruction during a hazard event, reducing their ability to function or rendering them entirely nonfunctional. Facilities outside of the elevated risk areas may still be affected by hazards, although the risk of damage is lower. The threat assessment will also assess how key facilities may be harmed by hazard types that are not limited to specific risk areas, such as extreme heat. **Figure 16** (page 91) shows the location of key facilities in El Segundo except for those whose locations are restricted for security reasons.

If a hazard event causes the destruction of any key facility, the cost to replace the facility (paid by insurers, the City, other agencies, or private companies) will likely be considerable. The specific value of a handful of key facilities owned by the City is known. The threat assessment will identify the replacement costs of key facilities at risk of various hazards if any of the facilities with a known value are within a mapped hazard zone.

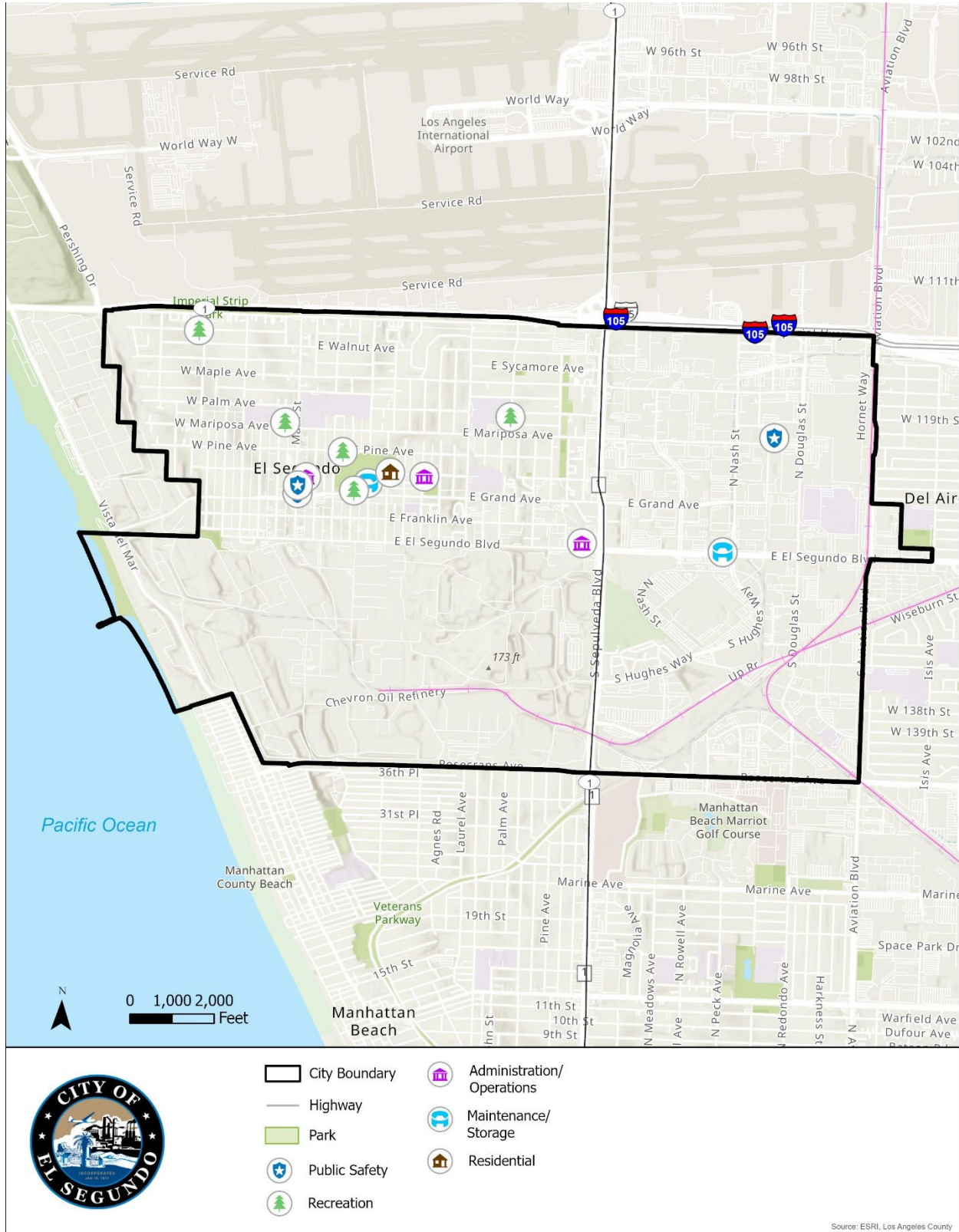
OTHER COMMUNITY ASSETS

There are other assets in the City that may also be harmed by hazardous events. These assets include structures and pieces of infrastructure not identified as key facilities, important economic drivers, vital services, and local ecosystems. This chapter will identify the potential threat to these other community assets to the extent information is available.

VULNERABLE POPULATIONS

As previously mentioned, a hazard event that strikes the City with equal severity may have very different impacts on different groups of people. Age, socioeconomic status, physical and mental condition, and many other factors can influence the ability of people to be more resilient to hazard events. For example, wealthier homeowners living in older homes are more likely to be able to afford seismic retrofitting, compared to homeowners in similar homes with lower income levels. As a result, lower-income households may suffer greater damage from an earthquake than those with higher income levels.

FIGURE 15. KEY FACILITIES IN EL SEGUNDO



The threat analysis looks at how people with various characteristics may be more vulnerable to hazard events and therefore may be considered vulnerable populations. This Plan assesses the following characteristics:

- **Disability status.** People with disabilities often have reduced mobility, and in some cases may have challenges taking care of themselves. This can reduce their ability to mitigate themselves, their homes, and their property against hazard events, particularly if they do not have assistance from others.
- **Limited English proficiency.** People who have a limited command of English can have a harder time obtaining information to help mitigate against hazard events, including information about financing opportunities and alerts about pending disasters.
- **Income levels.** People with lower incomes are less likely to have adequate financial resources to carry out mitigation activities on themselves and their homes and property, particularly if assistance programs are not available. These people are more likely to rent rather than own their homes, leaving them dependent on owners to mitigate their properties. Low-income individuals are also more likely to be transit- or transportation-dependent and thus less able to evacuate threatened areas without assistance. Limited financial resources can also make them more vulnerable to disruptions in the local economy from hazard events, which could cause significant financial hardship. Households that are under the poverty limit can face greater threats from hazard events.
- **Senior citizens.** Residents who are at least 65 years of age are more likely to have reduced mobility and physical or mental disabilities, which can decrease their ability to mitigate hazard events. Physical and mental characteristics may also make senior citizens more likely to be injured and more likely to suffer health complications from any injuries during a hazard event. Senior citizens who live alone face even higher levels of vulnerability.

Table 22 (page 92) shows the metrics for El Segundo residents who meet at least one of the criteria for threatened or vulnerable populations. Chapter 2 provides additional demographic details for the community.

TABLE 22. EL SEGUNDO VULNERABLE POPULATION METRICS	
Vulnerable Population Metric	Community-Wide Data
Population	16,816
Households	7,131
Median household income	\$162,833
Renter households	52.3%
Median Age	40.2
Percentage of households with one member aged 65+	22.9%
Percentage of households with at least one person living with a disability	17.8%
Percentage of households living under poverty limit	4.8%
Area affected by hazard	5.45 sq. miles
<p>Source: ESRI 2025, U.S. Census Bureau 2020 Decennial Census, and U.S. Census Bureau American Community Survey 2019-23.</p> <p>Note: Due to data limitations, the population data used for the threat assessment may not be consistent with the Census demographic figures given in Chapter 2. The demographic data are used in the threat assessment for comparative purposes only and are not meant to replace the more accurate demographic data in Chapter 2. The demographics shown in this table include people living in El Segundo’s sphere of influence.</p>	

In addition to vulnerable populations that are included in Census counts, there are other vulnerable people who cannot be as easily measured but may face just as great a risk as other socially vulnerable groups.

- People without access to lifelines (such as cars and basic telecommunication services) can have a difficult time getting information about hazard mitigation and may not have the resources to adequately prepare for future hazard events or escape them when they come.
- The City’s homeless population is fairly small: an estimated 12 unsheltered people in 2025.⁸⁸ Without shelter, this population is exposed to the direct effects of hazards (natural and human caused) far more than other populations. They have very few (if any) resources to help make themselves more resilient to hazard conditions; social services may be limited or nonexistent; and it can be difficult to effectively communicate information about potential hazard events to homeless people.
- Undocumented people also face increased vulnerability from hazard events in the City. They frequently have lower income levels and may live in substandard housing, which can render their homes more susceptible to damage and make it more difficult for them to retrofit their homes to be more resilient. Distrust of government or other authority figures can mean that undocumented people are less likely to participate in government-run hazard mitigation programs or less willing to listen to official notices about potential hazard events. Although there is no accurate count of undocumented people in the City, the total undocumented population in Los Angeles County Supervisorial District 2 (covering El Segundo) is estimated at 220,000, over 70% percent of whom have limited English proficiency.⁸⁹

*DISASTER DECLARATION CONNECTIONS

FEMA has issued the following major disasters, emergency declarations, and fire management assistance grants (**Table 23**) in Los Angeles County. While few 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 Cal OES Southern Region and regularly updated OARRS (software platform for emergency management) with new information. 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 23. DISASTER DECLARATIONS – LOS ANGELES COUNTY (2019-2025)					
Year	Declaration Number	Declaration Title	Incident Type	Affected the City	Activated EOC or Requested PA
2025	FM-5551-CA	Hurst Fire	Fire	No	No
2025	FM-5550-CA	Eaton Fire	Fire	No	No

⁸⁸ Los Angeles Homeless Services Authority. “[2025 Homeless Count](#).”

⁸⁹ USC Equity Research Institute. “[RepresentLA: Capturing the Program’s Direction and Impact Since its Inception](#).” July 2024.

TABLE 23. DISASTER DECLARATIONS – LOS ANGELES COUNTY (2019-2025)					
Year	Declaration Number	Declaration Title	Incident Type	Affected the City	Activated EOC or Requested PA
2025	FM-5549-CA	Palisades Fire	Fire	No	No
2025	DR-4856-CA	Wildfires and Straight-line Winds	Fire	No	No
2024	FM-5537-CA	Bridge Fire	Fire	No	No
2024	DR-4769-CA	Severe Winter Storms, Tornadoes, Flooding, Landslides and Mudslides	Flood	No	Yes
2023	EM-3591-CA	Severe Winter Storms, Flooding, and Mudslides	Flood	No	No
2023	DR-4750-CA	Hurricane Hilary	Flood	No	No
2023	DR-4699-CA	Severe Winter Storms, Straight-line Winds, Flooding, Landslides, and Mudslides	Flood	No	No
2023	EM-3592-CA	Severe Winter Storms, Flooding, Landslides, and Mudslides	Flood	No	No
2020	FM-5363-CA FM-5374-CA	Slater and Bobcat Fires	Fire	No	No
2020	EM-3428-CA	Covid-19	Biological	Yes	Yes
2020	DR-4482-CA	Covid-19 Pandemic	Biological	Yes	Yes
2019	FM-5296-CA FM-5295-CA	Kincade and Tick Fires	Fire	No	No
2019	FM-5293-CA	Saddleridge Fire	Fire	No	No
DR = Major Disaster EM = Emergency Declaration FM = Fire Management					

Threat Profiles

DROUGHT

Key Facilities

The primary threat from drought events is a reduced water supply. There is not likely to be any damage to key facilities from drought events, although it is possible that any water delivery infrastructure that is not used or used less during drought conditions may fall into some degree of disrepair if regular maintenance is deferred.

Vulnerable Populations

Drought conditions are generally consistent across the community, so there is no specific hazard area to evaluate. In urbanized areas, drought conditions are highly unlikely to become severe enough that a lack of water supplies poses a health or safety risk.

A drier climate and less watering of outside spaces often leads to increased dust and other air pollutants. This in turn aggravates allergies and respiratory diseases in people who already have them and increases their prevalence among the general population.

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. The California Department of Public Health documented a rise in West Nile Virus cases during the 2013-6 drought; decreased availability of open water forced birds and mosquitos into closer contact, promoting spread of the disease to humans.

The community members at greatest risk are likely to be lower-income people, as droughts often bring increased water rates and fines for excessive water use. Depending on how these rates and fines are structured, they could have a disproportionately severe impact on people with lower incomes who may not have the financial resources to afford increased water bills and fines on top of other bills. This impact can be particularly severe if information about new rates and fines, as well as information about ways to conserve water, is not effectively communicated to community members. Additionally, community members who work in businesses that suffer during drought (e.g., swimming pool services, some types of farming) or in industries that rely on large amounts of water (nurseries, car washes, restaurants, and hospitality) may also face economic hardship.

Other Community Assets

Water service could be impacted during droughts; the greater the length or severity of the drought, the more extensive the impact. It is possible that water supplies may need to be rationed or otherwise subjected to strict controls during worse-than-normal droughts. The resulting dry flowerbeds and dead lawns can promote the infiltration of dust and plant spores into homes and businesses, leading to chronic heat and abrasive stress on electronics, appliances, and machinery, as well as increases in disease (as discussed above). Dead or non-existent landscaping can have a serious effect on the market value of both residential and commercial property, eventually leading to decreasing property-tax assessments and receipts. Cutting back on normal watering may also damage the urban forest, increasing the number of trees the City has to replace each year.

Acre for acre, golf courses are among the most water-intensive real estate in California. The average 18-hole golf course consumes up to 130,000 gallons of water each day. El Segundo has one 10-hole golf course—The Lakes at El Segundo—and it is unlikely to be able to bear the cost of so much water use during a severe shortage. Shutting down the course or letting it go brown will damage its usefulness for recreation and greatly diminish its revenue.

Changes in Population and Land Use Development

Droughts occur periodically (primarily during the summer/fall months) and generally do not affect populations to the degree that they would need to migrate in and out of the City. 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. Water shortages or expensive water coupled with an increase in high-heat days may cause current residents to move to less rigorous conditions and may cause potential residents to look elsewhere.

It is unlikely that a “normal” drought—that is, the kind that has become semi-permanent in Southern California—will affect land use and development because the development review process will take steps to mitigate or minimize the impacts and vulnerability of drought in the City. However, a lengthy, severe drought or a long-term reduction of the City’s water supply may force drastic changes. Faced with a water shortage that has no foreseeable end, 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.

SEISMIC HAZARDS

El Segundo’s ground has relatively uniform seismic shaking potential, with only a coastal strip that has heightened potential. **Figure 17** (page 98) places the City’s key facilities in the two seismic-shaking potential zones.

There are two types of landslide risks in the City: deep-seated landslides and earthquake-induced landslides. Weak rock in the sliding surface and steep slopes are more likely to generate deep-seated landslides when changes happen to the geology or underlying hydrology (such as a change in groundwater levels or building on the slope). **Figure 18** (page 99) locates critical City facilities against the deep-seated landslide high susceptibility zone. **Figure 19** (page 100) does the same for the earthquake-induced landslide zones.

The City’s very narrow tsunami runup zone runs along El Segundo Beach west of Vista del Mar.

Key Facilities

All City key facilities and facilities of concern are in the elevated seismic-shaking potential zones (see **Table 24** below). None are in the high-hazard landslide zones or the tsunami runup zone.

TABLE 24. KEY FACILITIES IN THE 0.851 – 0.95G SEISMIC SHAKING ZONE				
Type	Critical Facilities		Facilities of Concern	
	Number	Potential Loss*	Number	Potential Loss*
Administration/Operations	3	\$16,565,035	0	
Maintenance/Storage	6	\$8,096,674	6	\$1,775,662
Public Safety	4	\$35,115,342	0	
Recreation	3	\$19,644,952	21	\$14,609,767
Residential	0		1	\$19,583,249
Wastewater Operations	2	\$5,945,277	0	
Water Operations	14	\$8,868,738	0	
Water Storage	4	\$14,147,163	0	
Total	36	\$108,383,181	28	\$35,968,678

*Potential loss data are estimates only, as replacement values for some facilities were not available. Actual losses may be greater than the estimate presented in this table.

Vulnerable Populations

The entire population of El Segundo lives or works in a seismic shaking hazard zone.

The area of high landslide risk covers approximately 0.13 square miles and is home to an estimated 262 people. By most metrics, the residents of this area are not substantially more socially vulnerable than the average El Segundo resident. There are slightly fewer seniors and people with disabilities than in the City as a whole. **Table 25** (page 97) shows the social vulnerability of residents in the high landslide risk zones.

No one lives in the narrow tsunami runup zone covering El Segundo Beach. Employees at the Chevron refinery and the El Segundo Energy Center may be at risk from a significant tsunami and may need to evacuate after the Pacific Tsunami Warning Center issues a watch or warning.

TABLE 25. LANDSLIDE HAZARD ZONES VULNERABLE POPULATION METRICS		
Vulnerable Population Metric	High Landslide Risk Zone	City Service Area
Population	262	16,816
Households	109	7,131
Median household income	\$162,495	\$162,833
Renter households	47.7%	52.3%
Median age	41.40	40.2
Percentage of households with one member aged 65+	21.9%	22.9%
Percentage of households with at least one person living with a disability	15.2%	17.8%
Percentage of households living under poverty limit	1.9%	4.8%
Area affected by hazard	0.13 sq. miles	5.45 sq. miles

Other Community Assets

Even small landslides and earth movements may damage homes and businesses to the extent that they are no longer economically restorable. The relatively shallow slopes in the landslide hazard zones are more a threat to property than to lives; these are not the monster landslides that suddenly wipe out entire villages.

Roads and railroads in a landslide/earth movement zone may buckle or slump enough to make them impassible. This may also break water, gas, or sewer lines under the roads or in the rights-of-way. This kind of infrastructure damage may take months to fix due to the engineering involved in designing soil stabilization measures that will resist further earth movement. Some infrastructure may need to be relocated if the existing routing cannot be mitigated.

Changes in Population and Land Use Development

Landslide zones are generally located in certain areas of the City, meaning that the damage potential is limited to these areas. Despite this potential, landslides are unlikely to cause changes in population patterns. However, land use designations and new development may be limited in these areas out of precaution, or subject to any policies developed in City documents such as the LHMP or the General Plan's Land Use, Housing, and Safety Elements. The City's development review process will identify steps to mitigate or prevent future landslide events.

FIGURE 16. KEY FACILITIES AND SEISMIC SHAKING POTENTIALS IN EL SEGUNDO

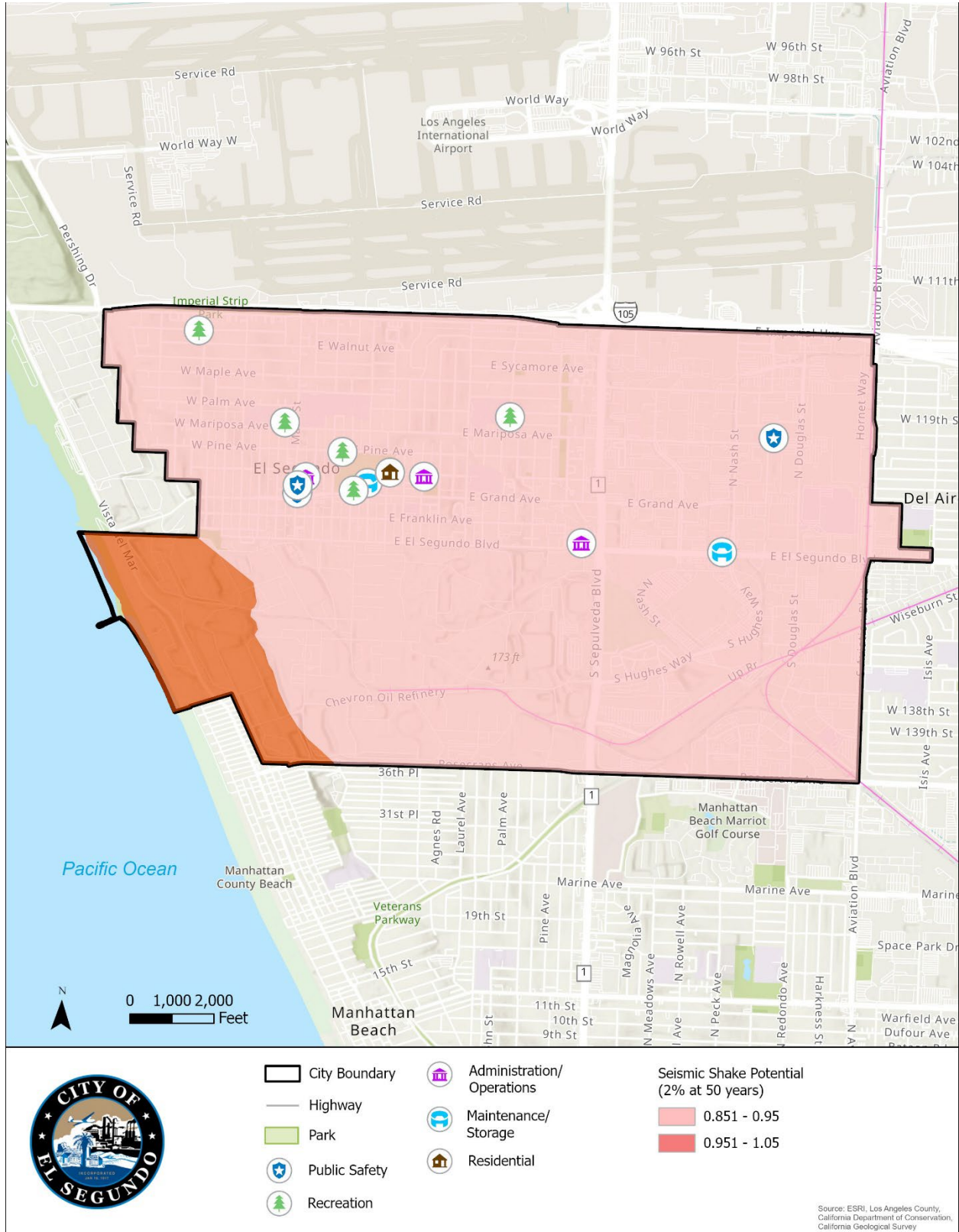


FIGURE 17. KEY FACILITIES LOCATED IN DEEP-SEATED LANDSLIDE ZONES

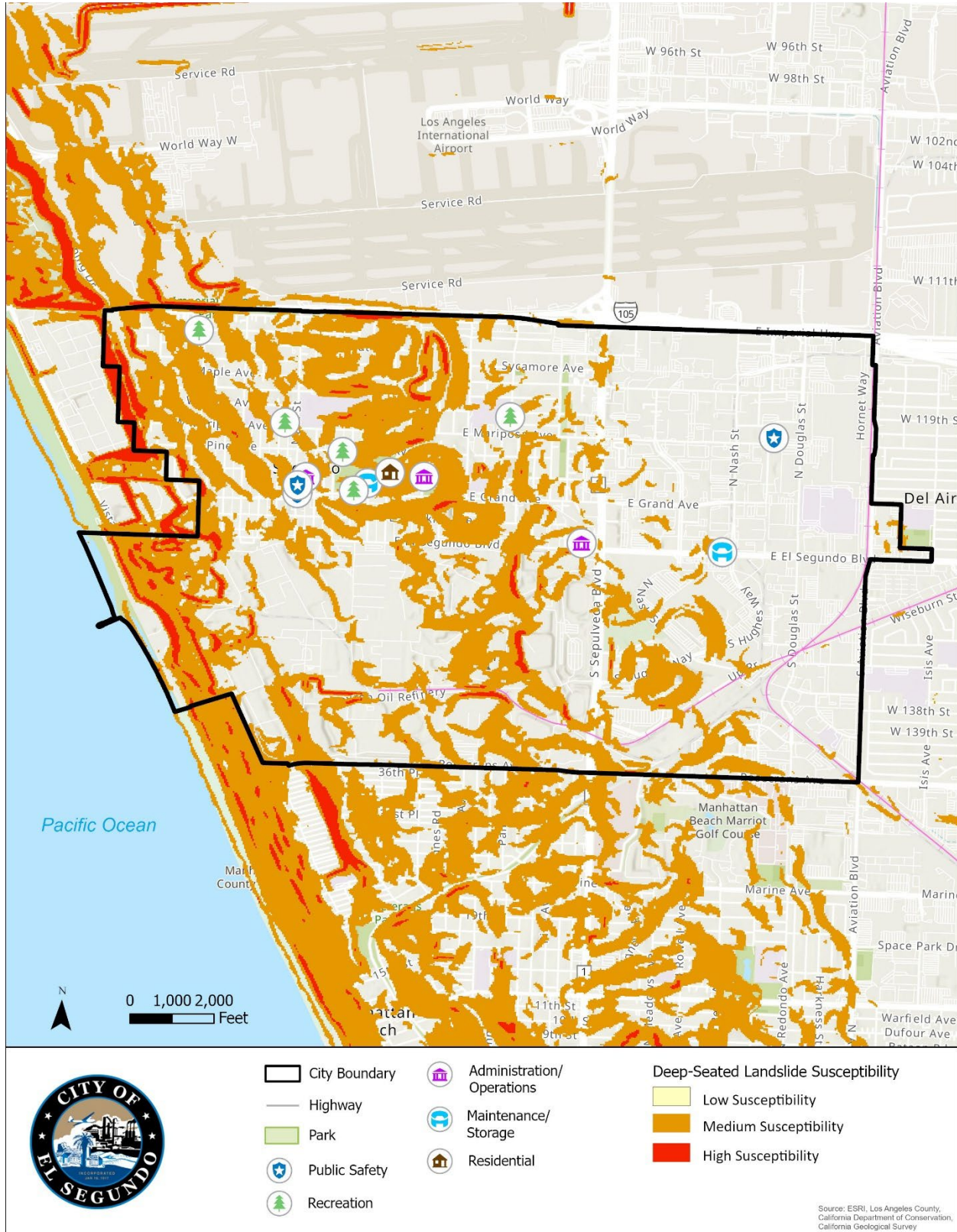
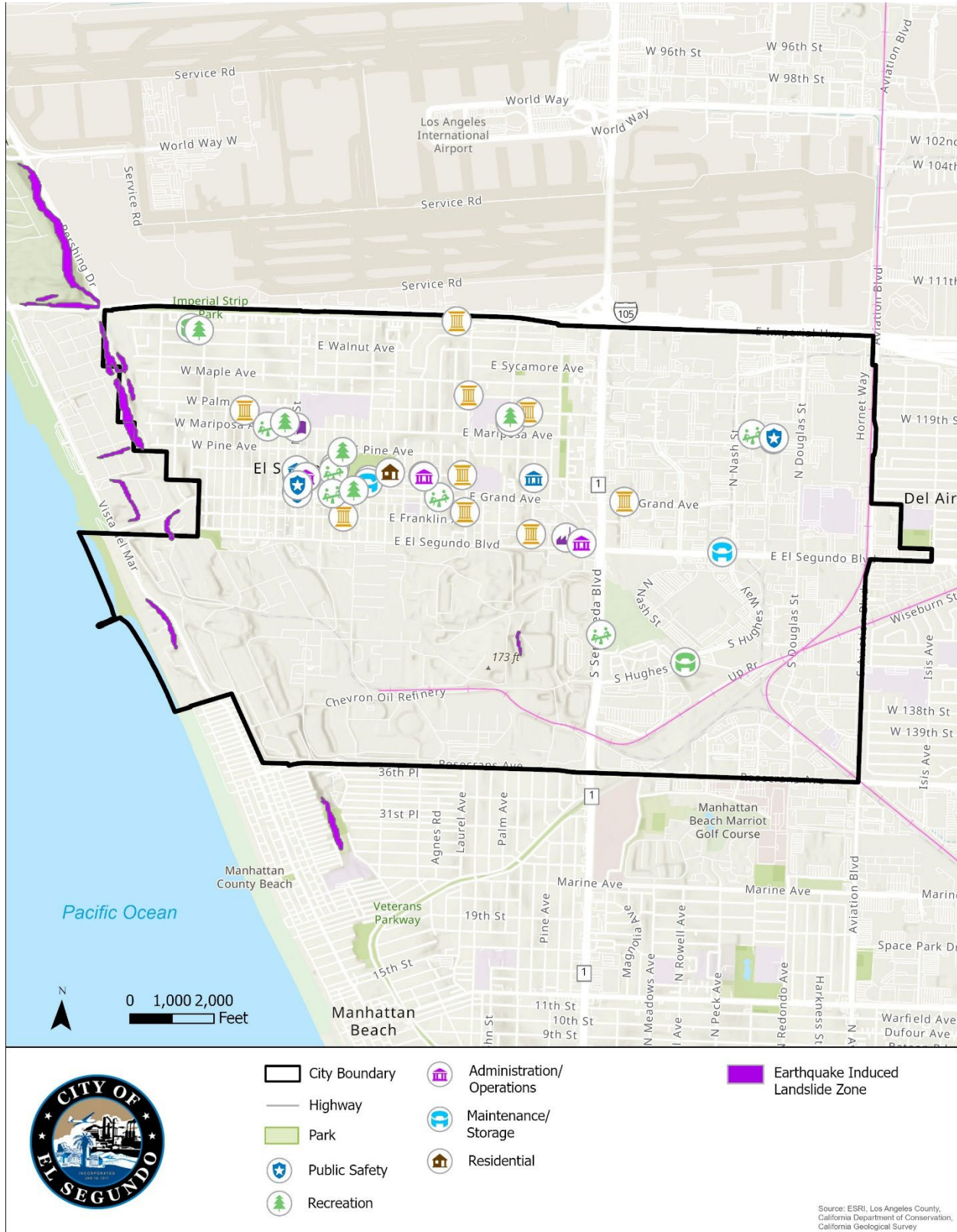


FIGURE 18. KEY FACILITIES LOCATED IN EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES



HUMAN-CAUSED HAZARDS

Key Facilities

Infrastructure failure may occur anywhere in the City; thus, any key facility may be affected. Some key facilities, such as bridges, are themselves pieces of infrastructure that could experience failure.

Due to the nature of hazardous material releases, the material and its effects may be confined to the area immediately around the release site, or it could spread over a wide distance. For the purposes of this Plan, the areas vulnerable to hazardous material releases are those within 500 feet of hazardous material facilities, a distance commonly used for environmental analysis of hazardous materials. This does not include the possibility of a hazardous material spill from a road or railway vehicle. Infrastructure and power failure are also potential effects of hazardous materials releases.

Type	Critical Facilities		Facilities of Concern	
	Number	Potential Loss*	Number	Potential Loss*
Administration/Operations	1	\$2,236,286	0	
Maintenance/Storage	5	\$7,692,999	0	
Public Safety	0		0	
Recreation	0		1	\$44,903
Residential	0		0	
Wastewater Operations	0		0	
Water Operations	3	\$1,439,995	0	
Water Storage	0		0	
Total	9	\$11,369,280	1	\$44,903

*Potential loss data are estimates only, as replacement values for some facilities were not available. Actual losses may be greater than the estimate presented in this table.

Table 26 calls out 9 critical facilities and 1 facility of concern that have known replacement values within a 500-foot buffer of hazardous material sites. The total cost to replace these facilities is estimated at \$11,414,183. **Figure 20** (page **103**) displays the location of key critical facilities within the 500-foot buffer zones of hazardous material sites.

Because of the density of methane-generating subsurface features in the City, multiple key facilities are located within safety buffers that may include methane-containing soils. **Figure 21** (page **104**) shows the overall relationship between critical facilities and potential methane-containing soils. **Table 27** and **Table 28** (page **102**) break out the number of critical facilities and facilities of concern located in the 300-foot oil and gas well buffers and the 1000-foot landfill buffers, respectively.

Terrorism may occur anywhere, at any time. While the vast majority of recorded terrorist attacks involve soft targets, some domestic terrorists have attacked civic buildings or infrastructure. Any key facility in El Segundo could become a target of an act of terror. Such an act may directly seek to damage or destroy the key facility, or the structure may be damaged as a side effect of an act of terror that targets the people in the facility.

TABLE 27. KEY FACILITIES WITHIN AN OIL OR GAS WELL 300-FOOT BUFFER ZONE				
Type	Critical Facilities		Facilities of Concern	
	Number	Potential Loss*	Number	Potential Loss*
Administration/Operations	1	\$2,236,286	0	
Maintenance/Storage	2	\$316,187	5	\$7,692,999
Public Safety	0		0	
Recreation	0		6	\$4,070,775
Residential	0		0	
Wastewater Operations	0		0	
Water Operations	3	\$1,637,201	0	
Water Storage	0		0	
Total	6	\$4,189,673	11	\$11,763,774

*Potential loss data are estimates only, as replacement values for some facilities were not available. Actual losses may be greater than the estimate presented in this table.

TABLE 28. KEY FACILITIES WITHIN A METHANE LANDFILL 1000-FOOT BUFFER ZONE				
Type	Critical Facilities		Facilities of Concern	
	Number	Potential Loss*	Number	Potential Loss*
Administration/Operations	0		0	
Maintenance/Storage	0		2	\$316,187
Public Safety	0		0	
Recreation	0		8	\$8,150,269
Residential	0		0	
Wastewater Operations	0		0	
Water Operations	0		0	
Water Storage	0		0	
Total	0	0	10	\$8,466,455

*Potential loss data are estimates only, as replacement values for some facilities were not available. Actual losses may be greater than the estimate presented in this table.

FIGURE 19. KEY FACILITIES LOCATED WITHIN 500-FOOT BUFFER ZONE OF HAZARDOUS MATERIAL SITES

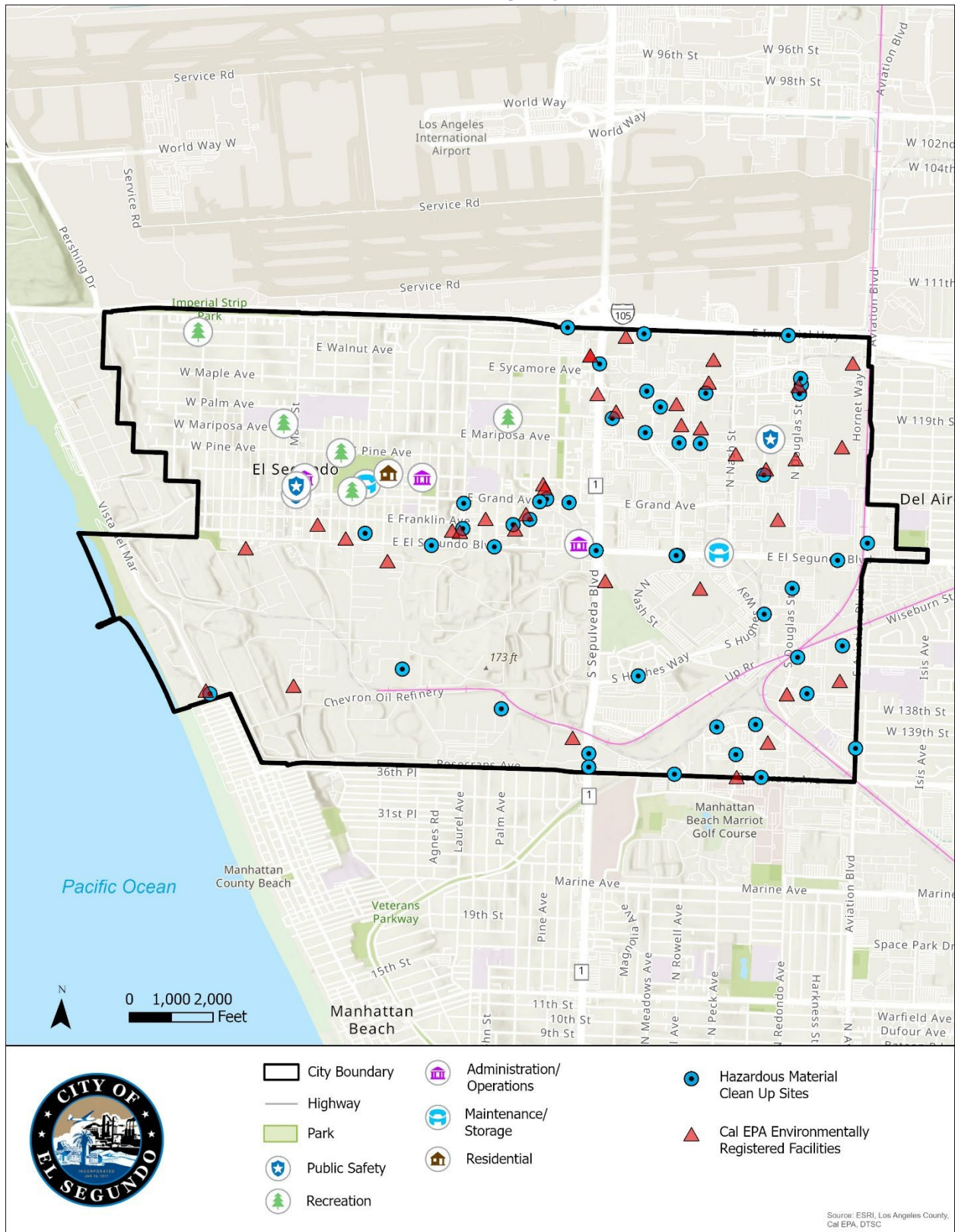
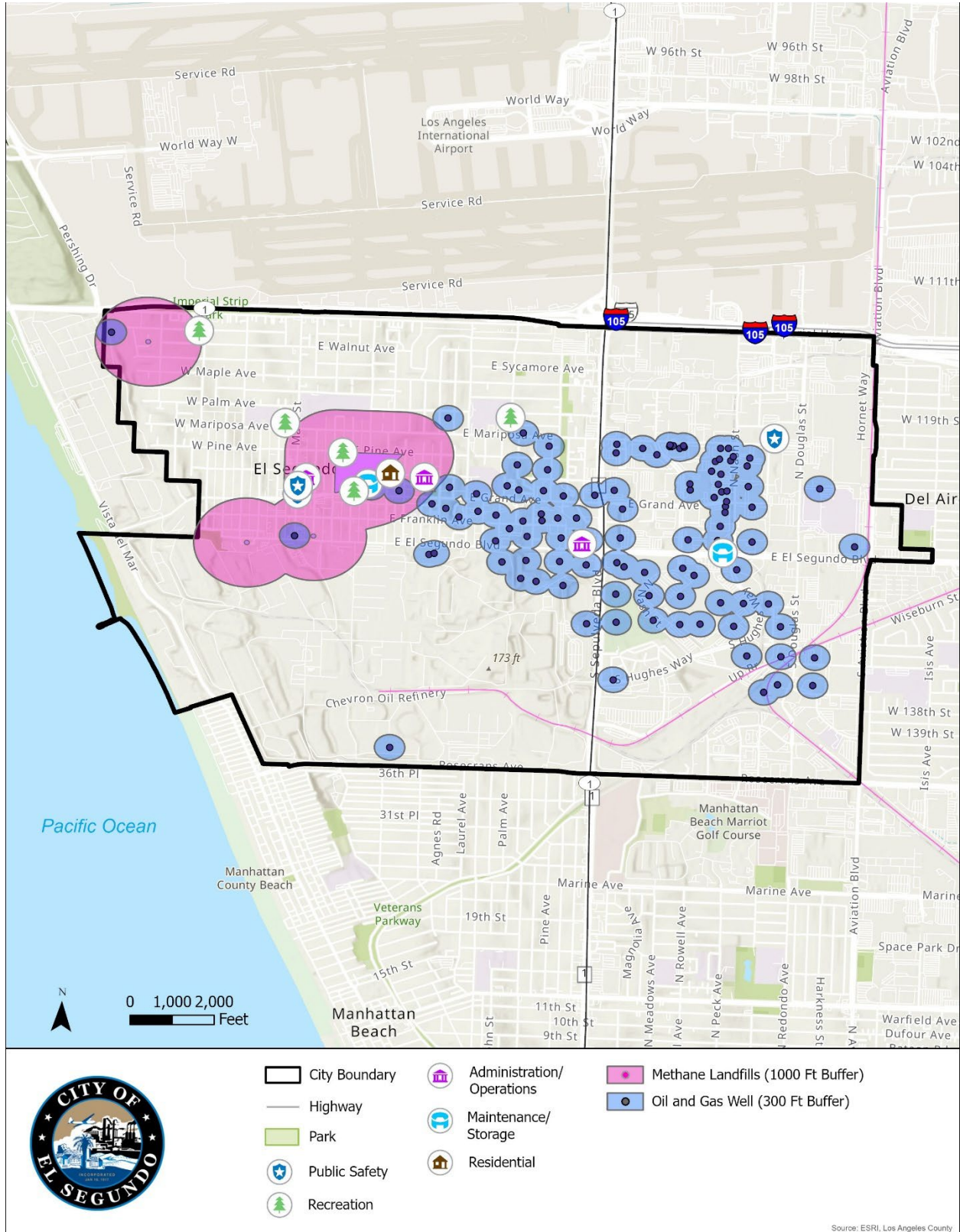


FIGURE 20. RELATIONSHIP BETWEEN CRITICAL FACILITIES AND METHANE-CONTAINING SOILS



Vulnerable Populations

All residents and visitors are vulnerable to infrastructure failure. As with many other types of hazards, people with lower income levels are more likely to live in housing that has been poorly built or poorly maintained (particularly rental homes). Such structures are more likely to be damaged during an infrastructure failure event. Residents with mobility challenges are more likely to have difficulty evacuating if an infrastructure failure event requires it.

An estimated 22,436 people or more live within a 500-foot buffer zone of hazardous material sites, approximately 42 percent of El Segundo’s population. The level of social vulnerability for people within this buffer zone compared to the City at large is similar, although people in the hazard zone have a household income level that is approximately 4 percent higher than the average income for all El Segundo households. Additionally, a similar proportion of senior citizens in the hazard zone live alone and could require additional assistance if evacuation or sheltering in place is necessary. Depending on the nature of the hazardous material, young children or people with existing health problems may have a greater risk of being harmed by the material. People who face greater exposure, such as homeless people or people who work outside, are also more likely to be harmed by such an event if they are unable to seek shelter in time. **Table 29** below shows the social vulnerability of residents within a 500-foot buffer zone of hazardous material facilities.

TABLE 29. HAZARDOUS MATERIAL HAZARD ZONE SOCIAL VULNERABILITY METRICS		
Vulnerable Population Metric	Within 500-ft Buffer of Hazardous Material Sites	City of El Segundo
Population	1,044	16,816
Households	461	7,131
Median household income	\$150,633	\$162,833
Renter-occupied households	65.3%	52.3%
Median Age	38.2	40.2
Percentage of households with one member aged 65+	17.3%	22.9%
Percentage of households with at least one person living with a disability	15.7%	17.8%
Percentage of households living under poverty limit	1.9%	4.8%
Area affected by hazard	1.43 sq. miles	5.45 sq. miles
<p>Source: ESRI 2024.</p> <p>Note: Due to data limitations, the population data used for the threat assessment may not be consistent with the Census demographic figures given in Chapter 2. The demographic data are used in the threat assessment for comparative purposes only and are not meant to replace the more accurate demographic data in Chapter 2. The demographics shown in this table include people living in El Segundo’s sphere of influence.</p>		

Approximately 6,000 people live within a buffer zone around an oil or gas well or landfill, meaning their homes may be resting on methane-containing soil. This is not a major problem if the building site was mitigated properly and methane gas accumulation is minimal. However, it is likely that some number of older homes are in parcels that were never surveyed for methane contamination and have not been properly mitigated, especially those built before the current requirements became law. In these cases, it is possible that methane may accumulate in crawl

areas, garages, or sheds, posing an explosive hazard. Also, chronic methane exposure in these properties may cause various respiratory and other medical conditions. **Table 30** (page **106**) details these at-risk populations.

Most City residents generally face a similar threat level from terrorist activities. Individuals who work in high-profile positions or at sites that are more likely to be targeted could face a somewhat greater threat, although it is unclear if such an increase in threat levels would be appreciably higher. No population group faces a greater threat from terrorism than others.

TABLE 30. METHANE-CONTAINING SOILS HAZARD ZONE SOCIAL VULNERABILITY METRICS			
Vulnerable Population Metric	Oil and Gas Well 300-ft Buffer	Landfill 1000-ft Buffer	City of El Segundo
Population	1,126	4,890	16,816
Households	467	2,248	7,131
Median household income	\$137,344	\$133,899	\$162,833
Renter-occupied households	81.0%	69.8%	52.3%
Median Age	36.3	39.8	40.2
Percentage of households with one member aged 65+	17.7%	23.5%	22.9%
Percentage of households with at least one person living with a disability	6.6%	16.3%	17.8%
Percentage of households living under poverty limit	1.2%	7.2%	4.8%
Area affected by hazard	0.8 sq. miles	0.57 sq. miles	5.45 sq. miles
Source: ESRI 2024. Note: Due to data limitations, the population data used for the threat assessment may not be consistent with the Census demographic figures given in Chapter 2. The demographic data are used in the threat assessment for comparative purposes only and are not meant to replace the more accurate demographic data in Chapter 2. The demographics shown in this table include people living in El Segundo's sphere of influence.			

Other Community Assets

A substantial infrastructure failure event would likely disrupt a number of City services depending on the nature of the event, potentially including electricity and natural gas delivery, telecommunications, and water and wastewater. A citywide or even regionwide power failure could also occur, potentially leaving thousands without power until service is restored. Damage to roads or railways could affect transportation and freight-shipping activities. Any number of non-key facilities, such as homes or businesses, could be damaged or destroyed by an infrastructure failure that creates a flood, explosion, or fire.

The primary threat to other community assets from hazardous material releases is the disruption of transportation networks. Depending on the size, location, and nature of the release, large areas of the local road or rail systems may be closed to keep people away from hazardous conditions and to allow for cleanup activities. The release of highly corrosive hazardous material could cause direct damage to physical assets, such as homes and businesses. Hazardous

material releases could also be highly dangerous to local ecosystems and may cause harm to domestic plants and animals.

As mentioned above, well-mitigated structures built on methane-containing soils pose minimal risk to their occupants. But just as a number of homes built before the methane mitigation requirements may be at elevated risk, so too may be many businesses in older, unmitigated buildings.

Terrorism may threaten any number of community assets. Depending on the nature of the terrorist act, community assets such as shopping areas, entertainment venues, banks, or schools could be damaged or destroyed with possible loss of life. Larger-scale terrorist acts could target energy or transportation infrastructure directly, causing service outages in part or all of El Segundo along with any collateral damage to adjoining soft targets.

Changes in Population and Land Use Development

A change in population pattern would only occur if a hazardous materials release was severe enough to require people to move permanently. It is unlikely that hazardous materials releases will significantly affect land use and development because the development review process will take steps to mitigate or minimize impacts from a hazardous materials release event. Locations that store, produce, and dispose of hazardous materials are highly regulated within the City and monitored regularly. Through this process, as well as the development review process, it is not anticipated that land use and development patterns will change. Based on the current Housing Element data, the City's population growth has been essentially static between 2010 and 2020. A relatively small number of new units over the next Housing Element cycle will be accommodated through rezoning or redevelopment of existing residential or commercial areas. To the extent that these new units are built inside any 500-foot hazmat facility buffers, the City's potential vulnerability to hazardous materials release as development may increase moderately.

SEVERE WEATHER

Key Facilities

Most key facilities are unlikely to be harmed by extreme heat. However, cellular telephone sites and electrical facilities such as substations and power plants could be affected by very high temperatures, as such conditions place increased stress on electronic components and the electrical grid. If demand is not properly managed, it is possible that electrical facilities may be damaged during extreme heat events. Severe wind and severe winter storms could cause damage to key facilities, particularly if they have not been well built or have been poorly maintained. This could range from relatively minor damage—such as some lost roofing material—to more significant structural damage or even some degree of destruction in extreme cases.

Vulnerable Populations

Extreme Heat

All types of severe weather events may occur anywhere in El Segundo, so there are no specific risk zones to analyze for social vulnerability. Extreme heat likely has the greatest potential to cause disproportionate harm to the City's residents because extreme heat is very dangerous to

young children, senior citizens, and people who live or work outside. This can create significant health risk, particularly for seniors who do not live near a cooling center (or have no way of reaching one), seniors who rely on help from another person to fulfill their basic needs, and residents who live in homes without air conditioning. Other exposed people, such as outdoor workers (such as gardeners and construction workers) and individuals experiencing homelessness, also face an elevated risk from extreme heat events.

Severe Wind

Severe wind may be harmful to people who live in poorly constructed or maintained housing, or to people who live in mobile homes. Such housing is more likely to be damaged by strong winds. Residents of these homes who have limited financial resources may face further hardships if their homes are damaged, as reconstruction may be a significant economic burden.

Severe Winter Weather

Severe winter weather can also harm people in poorly built or maintained houses, as such buildings may be similarly vulnerable to damage from an intense storm system. It also poses a threat to people working outside and people experiencing homelessness. If these weather systems create a need to evacuate, senior citizens, people with disabilities, and people without access to a vehicle may have difficulty doing so and could require assistance from formal or informal support groups.

Other Community Assets

Severe wind and severe winter weather can topple aboveground phone lines, street signs, trees (including parts of the City's urban forest), street furniture (bus shelters, trash cans, wayfinding signage), decorative banners, awnings and sun shades, and road barricades, sometimes creating missile hazards. Flying debris can damage buildings and injure people caught outside in the storm. Throughout the City, there is a risk of severe wind damaging buildings, particularly those that are poorly built or have been poorly maintained. Even if such buildings are not considered key facilities, damage to these structures may pose a safety hazard and could affect the local economy.

Changes in Population and Land Use Development

Extreme Heat

There could be minor changes in population patterns due to extreme heat if people cannot continue to live in older structures with limited insulation and older cooling units. The City's anticipated population growth is not expected to significantly impact the City's vulnerability to extreme heat. However, if extreme heat becomes more common, both current and prospective residents may move to places that do not experience triple-digit temperatures, leading to lower population and economic growth.

The City's development review process will attempt to take steps to mitigate or minimize the impact of extreme heat on land use and development. However, these mitigation steps (in addition to those for flood and seismic safety, energy and water efficiency, and so on) will add costs to the resulting buildings that may eventually render them uneconomical. Zoning and development plans may need to change the type and location of new building to accommodate these new realities. In the meantime, additional investment may become necessary in older parts of the City to modify structures to handle extreme heat conditions. Without these

expenditures, a growing portion of the existing residential and commercial building stock may become uninhabitable.

Severe Wind

Severe windstorms occur periodically (primarily during the fall months) and generally do not affect populations in a way that would cause them to leave the City. The anticipated population growth in El Segundo is not expected to have a significant impact on the City's vulnerability to severe windstorms. It is unlikely that severe wind will affect land use and development because the development review process will take steps to mitigate or minimize the impacts of severe wind. There is the potential that older structures in the City may be impacted more severely than newer structures. Potential damage to overhead powerlines and mature trees may be difficult to mitigate. Older structures may not comply with current building codes, far less more stringent ones, and may be difficult to retrofit without sacrificing design details that make them distinctive and more valuable.

Severe Winter Weather

Based on the current Housing Element data, the relatively small number of new units expected over the next Housing Element cycle will be accommodated through rezoning or redevelopment of existing residential or commercial areas. In that these new units will be built to current standards in already settled areas, it is unlikely that this modest growth will increase the City's vulnerability to severe winter storms.

ARs and ENSO precipitation variations are likely to add increasing rain to severe winter storms. Mitigating the effects of torrential downpours will resemble the efforts the City makes to control its flood risk (see the "**Flooding**" section, above). Zoning, planning, and the development review process will need to coordinate to mitigate or minimize impacts from severe storms.

URBAN FIRES

Key Facilities

Since urban fires can, in principle, start anywhere, it can be said that all the City's critical facilities are at some level of risk due to urban fires. The degree of risk depends on when and where the fire starts, the environmental conditions affecting it (high winds, water shortages), how the fire starts, collateral impacts (hazardous materials releases, utilities damage, road network blockage), and the success of ESFD's suppression operations.

Vulnerable Populations

Everyone near or downwind of a major urban fire is vulnerable to the effects of that fire: smoke, ashfall, toxic substances, ember casting, and power and water service interruptions. However, urban fires can have more widespread impacts on socially vulnerable people. Ash and smoke inhalation can be disproportionately affect children, senior citizens, and people with respiratory conditions, creating or exacerbating health impacts throughout the City and in the broader region. The Palisades and Eaton fires clearly demonstrated that urban populations with lower incomes are more likely to be transit or transportation dependent, live in structures that are more combustible, and be unable to quickly evacuate in the face of a rapidly moving fire.

Other Community Assets

The residential area in the City's northwest and the commercial/industrial area in the northeast are both densely developed. A significant fire in the northwest driven by a stiff wind could spread easily through the closely packed, mostly wood-frame homes, many of which are decades old. A similar fire in the northeast, while less likely to spread quickly, would be more likely to spread hazardous materials in liquid and gaseous forms and could trigger evacuations of high-population facilities and high-rise buildings. Intense fires often damage or destroy power lines and may also interrupt natural gas pipelines or cause them to be shut down for safety reasons, creating energy service outages.

Changes in Population and Land Use Development

If a large urban fire were to occur, it could displace hundreds or even thousands of people for some years. Future land-use designations, redevelopment, or new development in the burn zones could be changed or restricted depending on the City's recovery plans and wishes of the residents. The relatively small number of new housing units in the current Housing Element cycle is unlikely to increase the City's vulnerability to urban fire, though increased density may complicate evacuation planning and put somewhat more people at risk.

CHAPTER 5 – HAZARD MITIGATION STRATEGY

Strategy Development Process

El Segundo'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. A LHMP does not require preparedness actions, but they support and complement mitigation activities. The HMPT chose to include them as part of the overall hazard mitigation strategy.

USE OF HAZARD AND THREAT ASSESSMENT

The HMPT 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 the City's residents, businesses, and community assets. The HMPT strove to craft mitigation actions that will 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 HMPT 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 that included reviewing existing policies, personnel, and technical resources to support the City's hazard mitigation activities. The hazard mitigation actions build on 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; other agencies' employees and volunteers
- 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 rely upon the budgeting allocated for each department/program for that fiscal year. The level at which these programs may or may not expand will depend upon the amount of funding received. FEMA has released

a series of guides over the past few years that highlight some of the ways that 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 increases resilience within the community.
- Engage parts of the community that may not be actively involved in mitigation efforts.
- Expand the number and types of organizations involved in mitigation planning and implementation, increasing both efficiency and bandwidth.
- Foster new relationships to bring underrepresented populations and partners to the hazard 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 31 (page 112) shows the capabilities assessment for El Segundo.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
LEGAL AND REGULATORY CAPABILITIES		
Adopted FY Budget	The City adopts its budget annually. It identifies the funding available for each fiscal year that can be used to support governmental operations.	This budget is a key location where future mitigation projects can be identified for funding.
Zoning Ordinance	The El Segundo Zoning Ordinance is an implementation tool for the City’s General Plan. It establishes regulations for land uses throughout the community, including where different types of development and land-use activity can occur, how these developments can look, and how they may be operated.	Mitigation actions that relate to the siting, construction, and operation of new developments in El Segundo may be implemented through the Zoning Code to ensure these locations address risks identified in the plan
Uniform Codes	Adoption of the Uniform Codes (to include the Administrative Codes, Building Codes, Electrical Codes, Energy Codes, Fire Codes, Mechanical Codes, and Plumbing Codes) and incorporation into the El Segundo Municipal Code is a means for the City to provide sufficient and effective protection of life, health, and property.	Using the latest building codes leads to stronger, safer buildings of all kinds. These buildings may also be able to withstand some of the forces various disasters can visit on them, leaving them potentially economically repairable after a disaster.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Building Code	Per CA Health and Safety Code 17958.7, adoption of the CA Building Code to regulate the general design requirements applicable to construction of all structures and portion-regulated by the Code for seismic strengthening and structural integrity.	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. As such, they may support hazard mitigation activities.
Fire Code	Provides the means to ensure fire protection systems are installed and maintained; fire protection and life safety equipment is installed in existing and new construction buildings/structures; and prohibits the use of fireworks.	Strong fire codes can stop fires or limit when they happen, protect nearby structures during a fire, and potentially lower fire-related injuries and deaths during “normal” conditions as well as disasters.
Water Ordinance (No. 1433)	Establishes water conservation measures to encourage efficient water use and discourage waste to avoid a water emergency related to contamination, drought, or damage to the City's potable water infrastructure.	Continuing water conservation measures even when there is no drought will help slow the drawdown of groundwater sources and will lessen the damage stringent emergency water controls can do during a disaster.
Floodplain Ordinance (No. 1427)	Adoption of the model floodplain management ordinance for special flood hazards within the City to maintain eligibility with the National Flood Insurance Program.	Amendments to the Floodplain Management Ordinance could help implement mitigation actions that address the vulnerability of buildings in the 100-year floodplain.
Capital Improvement Program	The El Segundo Capital Improvement Program (CIP) is a long-range fiscal forecast that identifies major public improvements to the City's infrastructure over the next five years. The Plan is important for planning and managing the City's growth and development, as well as maintaining existing infrastructure. During Plan development, capital projects affecting public health and safety and/or legal mandates receive the highest priority. Emphasis is also placed on projects maintaining service levels or preventing deterioration of facilities. Integration of this Plan into the CIP can assist in mitigation efforts by identifying new funding sources for future improvements.	As new grant opportunities become available, the CIP may already include projects consistent with the LHMP that can easily be used for grant submittals. Leveraging these two plans can help secure needed funds to reduce vulnerabilities throughout the City.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
El Segundo General Plan Housing Element	The Housing Element includes demographics, such as age and race; a description of the households, including size, income, and home ownership; new housing growth needs; sustainability and energy efficiency; and the Building Code.	The Housing Element and LHMP will be aligned to describe the City and its population.
El Segundo General Plan Land Use Element	The Land Use Element serves as a guide to the ultimate development pattern for the City, both within its incorporated boundaries and its sphere of influence. The Land Use Element includes the distribution, location, and balance of land uses; the desired build-out of the City; building intensity standards for each land use; population density targets; and compatibility between land uses.	The City will align the Land Use Element and LHMP to describe developmental trends, hazards, and potential development in hazard areas.
El Segundo General Plan Safety Element	Addresses hazards associated with geology and seismicity, flooding, fire, and hazardous materials in order to reduce death, injuries, property damage, and economic and social dislocation resulting from natural and man-made hazards such as urban fire, flooding, mass-casualty incidents, earthquakes, and hazardous materials incidents.	The LHMP will be linked by reference to the Safety Element of the General Plan. 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.
El Segundo General Plan Air Quality Element	Addresses the problems of maximum air pollution levels, reducing the health and economic impacts of air pollution, and compliance with the requirements of the Air Quality Management Plan for the South Coast Air Basin.	Determines the best means of addressing the AQMP measures for local government and increases awareness of local community and governmental responsibility for air quality.
El Segundo General Plan Hazardous Materials and Waste Management Element	In compliance with Chapter 1167 (SB 477, Greene) of the 1987 State Statutes, this element addresses polluted ground and surface water, soil, and air; improper disposal associated with elevated levels of toxics in humans, aquatic species, and livestock; and illegal dumping of hazardous waste along roadsides or in open fields resulting in explosions, fires, contaminated ground water, and air pollution; in order to protect public health, the environment, and the economy.	The Hazardous Materials and Waste Management Element identifies and locates concentrations of hazmat and hazmat-related activities that endanger the community. Some of this data has informed the drafting of this Plan.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Sewer System Management Plan	A plan to meet the requirements established in the State Water Resources Control Board's Order No. 2006-0003-DWQ to prevent sanitary sewer overflows by establishing a statewide monitoring and reporting program.	The Sewer System Management Plan helps prevent the sewer system from adding to problems caused by flooding and sea-level rise.
System Evaluation and Capacity Assurance Plan / Rehabilitation and Replacement Program	A report that provides an assessment of the wastewater system and provides recommendations for upgrades to meet future capacities.	The System Evaluation and Capacity Assurance Plan helps prevent the wastewater system from adding to problems caused by flooding and sea-level rise.
Emergency Operations Plan	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. It includes the hazards, with a description of each; the concept of operations during a major emergency or disaster; the role of the EOC, and the coordination that occurs between the EOC and City departments and other local, state, and federal governments in times of disaster.	The LHMP informs the hazards section of the EOP, as the two are closely correlated.
El Segundo Hazardous Materials Plan / Hazardous Material Business Plan	Addresses the storage, use, and emergency planning for hazardous materials and extremely hazardous substances in the community and at businesses.	Measures identified in the Hazardous Materials Plan have informed some of the mitigations actions listed in this Plan.
2020 Los Angeles County All-Hazards Mitigation Plan	The Los Angeles County All-Hazards Mitigation Plan identifies hazard events present in the unincorporated areas of Los Angeles County and recommends mitigation actions to reduce the harm from these events.	The county and El Segundo can share resources and best practices for hazard mitigation activities. Similar mitigation actions in the county's and El Segundo's plan can help create more regional consistency. Mitigation actions that require coordination with the County Office of Emergency Services or other county agencies may be integrated into the county's plan.

TABLE 31. CITY OF EL SEGUNDO 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 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	The California State Hazard Mitigation Plan assesses the types of hazards that may be present in California. It includes descriptions of these hazards, summaries of past hazard events, descriptions of how these hazards may occur in the future, and how these hazards may harm the people and assets of California.	Like a local hazard mitigation plan, the State Hazard Mitigation Plan is updated every five years. The HMPT can use the State Hazard Mitigation Plan as a source of information to refine the hazard profiles and vulnerability assessments in future El Segundo LHMPs.
Cal-Adapt	Cal-Adapt is an online tool to share information about climate change projections in California. It allows users to learn about expected climate conditions throughout the state, at a highly refined level, for a variety of factors such as temperature, precipitation, wind, wildfire, and sea level rise. The California Energy Commission and a host of institutional, governmental, and nonprofit partners developed this tool.	Cal-Adapt can be a tool to support implementation of this LHMP and future updates, providing the best available science on climate change to guide El Segundo’s mitigation actions.
National Flood Insurance Program (NFIP)	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.	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		
Building and Safety Division	Issues building permits; reviews plans for new construction and improvements; conducts plan checks; works with architects, engineers, designers and building owners during pre-construction; inspects all phases of residential and commercial/industrial construction for compliance; enforces municipal code violations.	The Building and Safety Division staff can carry out any mitigation actions related to land use, construction of new structures or retrofits to existing ones, and operating conditions of private property.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Emergency Management Coordinator (Fire Department)	Provides for the coordinated response and recovery from major emergencies and disasters; develops, administers and coordinates the emergency planning preparedness program in conformity with local, state, and federal requirements; develops emergency management and hazard mitigation plans; provides training to City staff in emergency planning and preparedness; develops, maintains, and coordinates the City Emergency Operations Center; provides businesses and residents with emergency planning and preparedness material to help reduce the loss of life and property resulting from a disaster; coordinates with county, state, and federal counterparts; prepares emergency management grants; coordinates the efforts of volunteer organizations.	The Emergency Management Coordinator (EMC) is the focus for the City’s emergency planning, preparedness, training, exercises, and public education. The EMC is an advocate for planning, seeking grant funding, and engaging with City employees and community members to accomplish measures to make El Segundo safer and more resilient.
Environmental Safety Manager (Fire Department)	Conducts inspections involving hazardous materials, hazardous wastes, extremely hazardous substances, underground tanks, emergency release planning; responds to hazardous materials incidents; reviews business hazardous materials/risk management plans; provides hazardous materials and waste operations training; serves on Cal-OSHA Refinery Task Force.	Develop additional enforcement capabilities to better monitor, track, inspect, and audit properties with hazardous materials. (Source: GP Safety Element - Program PS3-1.3B)
Fire Department	The El Segundo Fire Department is responsible 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 urban and industrial fires.	Provides training to employees to enable them to see potential hazards better and take action to report them.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Fire Marshal (Fire Department)	Performs fire inspections for construction, commercial, multi-family occupancies, and high-rise buildings; conducts fire prevention, emergency evacuation, and extinguisher training to businesses and the public; conducts enforcement and identify and issue notices for fire code violations; updates Fire Prevention Regulations to conform with currently adopted codes, regulations, and standards; coordinates with industry for fire prevention.	The Fire Marshal provides input into the LHMP mitigation action plan.
Floodplain Manager (Public Works Director)	As a member of the National Flood Insurance Program (NFIP), the Floodplain Manager is responsible for working with stakeholders to ensure the City of El Segundo follows the Floodplain Management Ordinance (Ordinance 1427, Feb. 2009). Floodplain management is a collaborative effort between Public Works and Community Development.	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.
Information Systems Division (Information technology and Geographic Information System / HAZUS-MH-skilled personnel)	Provides the technical resources and support necessary to operate all of the application systems detailed in the Technology Master Plan relating to the City's information resources. Responds to the service needs to all departments based on citywide priorities as established by the City Manager and the Executive Technology Review Committee; responsible for the training and effective use of all City technology, computer hardware, software, and peripherals; provides internal coordination of technology efforts Citywide including substantial interface with all technology vendors to assure cost-effective, secure, and reliable technologies compatible with the long-range needs of the City; provides high-quality geospatial data to El Segundo departments.	Acquires and conducts training for GIS technicians on the latest versions of ArcGIS. Integrates GIS into the City EOC.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Planning Division	Plans future City land use; develops and implements the General Plan, land use regulations through zoning and subdivision codes, and environmental review of development; administer the Community Development Block Grant Program (CDBG) and the Air Pollution Reduction Fund; conducts Code Compliance program with the Building Safety Division; conducts conditional use permits, variances, land subdivision, CEQA review, public hearings, noise permits, alcohol permits (in collaboration with the Police Department), and zoning information.	City planners have a huge influence on the City’s safety and resiliency through their efforts to set the rules for future development and population distribution. City planners also endeavor to separate incompatible development types to prevent future risks to the City’s population.
Police Department	The Police Department is responsible for law enforcement, criminal investigation, traffic control, emergency response, and evacuations.	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 emergency events.
Public Information Officers (Police & Fire Departments)	Provide public and media information regarding El Segundo’s disaster response, mitigation, and recovery efforts.	PIOs are the official voice of the City. They provide residents, visitors, and businesses with critical information during emergencies to help decrease injuries and deaths and to maintain public morale.
Public Works Wastewater Division (Sewer/Sanitation)	Ensures both sewer and storm drain systems are clear and capable of managing wastewater and stormwater throughout the community. Proper coordination ensures these systems function efficiently, preventing flooding and environmental contamination. Reports to the Utilities Superintendent.	The Wastewater Division staff may implement any mitigation actions that involve the City’s wastewater-related infrastructure and other issues related to wastewater services.
Public Works Water Division	Supplies water to the City’s customers and performs the operation, maintenance, and repair of the City’s water distribution system. Additionally, the City’s Water Division oversees the quality of the water served to the community, including the monitoring of disinfectant levels within the distribution system to determine whether the water is free of contamination to prevent waterborne illnesses. Reports to the Utilities Superintendent.	The Water Division staff may implement any mitigation actions that involve El Segundo’s water sources, how much water the community uses, the City’s water-related infrastructure, or other issues related to water services.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Public Works Engineering Division	Oversees public and private improvements in the public right-of-way; develops and implements the Capital Improvement Program by providing staff support to the Capital Improvement Program Advisory Committee relative to city streets, sanitary sewer, storm drains, water system facilities, traffic signals, and park and recreational facilities; maintains and upgrades public infrastructure; provides services related to traffic issues; monitors the street lighting system maintained by Southern California Edison; keeps and maintains record drawings of City-owned infrastructure; conducts traffic committee meetings with the Police Department; and provides engineering support to other City departments and other divisions within the Public Works Department.	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.
Public Works Environmental Division	Oversees solid waste management, adherence to all CalRecycle policies, and handles environmental-related issues such as Hyperion Water Treatment Plant.	
Risk Management (Human Resources Department)	Provide services to assist City departments in managing their risk of injury to employees, City property, and the public at large. Purchases insurance for City departments and acts in an advisory capacity with respect to workers' compensation, public liability, City property, and City contracts.	Manages the City's financial response to repairing property damage and human injuries during an emergency response.
Los Angeles County Office of Emergency Management	The Los Angeles County Office of Emergency Management (OEM) is responsible for emergency planning, hazard mitigation, and emergency response and recovery activities throughout the county, in collaboration with local communities. OEM helps coordinate activities between the county and cities, conducts emergency training and exercises, manages emergency grants, among other activities.	Mitigation actions involving coordination with county agencies or other cities may be facilitated through work with OEM. Additionally, OEM can support El Segundo's own hazard mitigation activities by providing funding or other resources. El Segundo belongs to County OEM Disaster Management Area G.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Los Angeles County Flood Control District (a division of LA County Public Works)	<p>The District provides flood protection, water conservation, recreation, and aesthetic enhancement within its boundaries. It is governed as a separate entity by the County of Los Angeles Board of Supervisors.</p> <p>In 1984, the Flood Control District entered into an operational agreement with the Los Angeles County Department of Public Works transferring planning and operational activities to the Department of Public Works. Watershed Management Division is the planning and policy arm of the Flood Control District. Public Works Flood Maintenance and Water Resources Divisions, respectively, oversee its maintenance and operational efforts. The Flood Control District encompasses more than 2,700 square miles and approximately 2.1 million land parcels within 6 major watersheds.</p>	<p>Mitigation actions that involve changes to flood control infrastructure in El Segundo will likely require support and coordination with the County Flood Control District.</p>
Los Angeles County Metropolitan Transportation Authority (Metro)	<p>Responsible for planning, operating, and coordinating funding for most public transit in the greater Los Angeles area. It operates light- and heavy-rail subways and tramways, the Metro bus system, and other transit initiatives. The Metro K Line light rail passes north/south through eastern El Segundo, serving four stations in the City.</p>	<p>Mitigation actions that may affect the Metro rights-of-way or ground operations will need to be coordinated with Metro.</p>
Metropolitan Water District of Southern California (MWD)	<p>The MWD is a public agency that supplies water to various water providers throughout the Southern California region, many of which in turn distribute the water to more localized water suppliers. MWD supplies water used in El Segundo that comes from outside Los Angeles County.</p>	<p>Mitigation actions that involve local water supplies may be implemented through coordination with both MWDOC and MWD. The agency may also provide technical support and other resources for mitigation actions involving water use.</p>
Municipal Information Systems Association of California (MISAC)	<p>El Segundo's Information Technology Services Department (ITSD) now belongs to the MISAC Southern Chapter. MISAC's membership includes IT professionals from cities, towns, public safety, special districts, and other local governmental agencies/districts.</p>	<p>MISAC's Four Pillars (education, member resources, relationships, and advocacy) will help ITSD integrate with regional peers and draw from a wide body of knowledge when responding to IT-related events.</p>

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Southern California Association of Governments (SCAG)	Functions as the Metropolitan Planning Organization for Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties. SCAG is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality.	Attend SCAG meetings. Continue to participate in SCAG-sponsored programs. Routinely coordinate with SCAG staff to stay informed of current planning initiatives.
South Coast Air Quality Management District (South Coast AQMD)	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.	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.
California Coastal Commission	In partnership with coastal cities and counties, the Coastal Commission plans and regulates the use of land and water in the coastal zone. Development activities (broadly defined by the Coastal Act to include [among others] construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters) generally require a coastal permit from either the Coastal Commission or the local government.	Any mitigation actions that will affect the area west of Vista del Mar in El Segundo will likely fall under the Commission's purview.
California Department of Transportation (Caltrans)	Caltrans is responsible for construction and maintenance of California's state-owned highways, including Interstates 105 and 405 and State Highway 1 in El Segundo. Caltrans also provides funding and other resources to local and regional governments to support other transportation-related projects.	Mitigation actions related to Interstates 105 and 405 and Highway 1 can be implemented in coordination with Caltrans. The agency can also provide support for other transportation-related mitigation actions.
California Governor's Office of Emergency Services (Cal OES)	Cal OES is responsible for conducting statewide hazard mitigation and other emergency-related planning, supporting emergency response and recovery activities, and coordinating emergency-related activities (including disaster recovery funding) between local jurisdictions and the federal government. Cal OES can distribute grant funding, provide guidance on hazard mitigation, and share best practices.	Mitigation actions in El Segundo may be funded through grant opportunities provided by Cal OES and may be supported by Cal OES guidance or other resources.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Federal Emergency Management Agency (FEMA)	FEMA is the federal agency 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 several grants for hazard mitigation activities.	Mitigation actions in El Segundo can be supported through FEMA grants and developed with assistance from FEMA. The agency also provides guidance that will be used in future updates to El Segundo's LHMP.
American Red Cross	The American Red Cross is a humanitarian assistance organization that provides disaster relief services in the aftermath of major hazard events. This includes operating emergency shelters, distributing meals and relief supplies, and providing basic health services.	Although the American Red Cross's services are more related to preparation than mitigation actions, there may be opportunities for the organization to support mitigation activities related to community engagement and education.
Southern California Edison (SCE)	SCE is the electrical service provider for El Segundo. SCE also owns the electrical distribution grid in the community.	Mitigation actions relating to the resiliency of El Segundo's electrical grid will be implemented through coordination with SCE.
Southern California Gas Company (SoCalGas)	SoCalGas is the natural gas provider for El Segundo. It owns the natural gas infrastructure in the community.	Mitigation actions that address the resiliency of natural gas infrastructure and services in El Segundo will be implemented through coordination with SoCalGas.
Union Pacific Railroad (UPRR)	UPRR is a major freight railroad company. It transports petroleum products from the Chevron refinery to external customers.	Mitigation actions related to railway resiliency in the community and related issues will require coordination with UPRR to implement.
FINANCIAL RESOURCES		
General Fund	The 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.	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.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
Water Utility Fund	Provides funding for Water Division operations, maintenance and repair of the City's water distribution system, meter reading, and water quality testing.	The water utility fund may support mitigation actions that involve water service or infrastructure in the City.
Sewer Fund	Provides funding for the operation and maintenance of the sewer system, as well as the replacement of facilities.	The sewer fund may support mitigation actions that involve wastewater service or infrastructure in the City.
Facilities Maintenance Funds	Provides a cost center for major maintenance and upgrading City-owned buildings such as roofs, water sealing, flooring, HVAC, etc.	These funds may be used to help fund mitigation actions that affect City-owned buildings.
Capital Improvement Funds	Monies are transferred from various funds to this fund for City capital improvement projects approved by the City Council.	Mitigation actions that involve construction or retrofits to City buildings, facilities, and infrastructure may be included in the CIP.
Equipment Replacement Funds	Funds used for the replacement of office furniture and equipment, vehicles, and other capital equipment.	
State Gas Tax Funds	Special Revenue Funds used exclusively for projects that build, repair and/or maintain highways, streets, bikeways, or sidewalks.	Gas Tax funds may be used to pay for mitigation actions that affect the City's streets and sidewalks.
Community Development Block Grants (CDBG)	The 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 availability of supplemental appropriations.	Where applicable, CDBG grants should be used to fund mitigation projects that enhance the resiliency of low-income and underserved communities.
FEMA Hazard Mitigation Grant Program (HMGP)	Provides support for pre- and post-disaster mitigation plans and projects.	Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.

TABLE 31. CITY OF EL SEGUNDO CAPABILITIES ASSESSMENT		
Resource	Resource Description	Connection to Current Mitigation/Future Opportunities for Expansion and Improvement
FEMA Flood Mitigation Assistance grant program (FMA)	Mitigates structures and infrastructure that have been repetitively flooded.	Train staff on NOI procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
FEMA/U.S. Fire Administration Assistance to Firefighters Grant Program (AFG)	Provides emergency vehicles, equipment, protective gear, training, and other resources for protection from fire and related hazards.	Purchase equipment and training that may complement the City’s mitigation or prevention measures.
EDUCATION AND OUTREACH CAPABILITIES		
City Social Media Accounts	In addition to normal City business and events, El Segundo’s social media accounts provide alert and warning information, safety and evacuation procedures, and information on home and individual preparedness.	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.
El Segundo Community Emergency Response Team (ES CERT)	CERT is a volunteer organization of trained individuals from the community, school district and business community who will help themselves and others during a major emergency, when first responders are overwhelmed and cannot respond to all the calls for help. The El Segundo Fire Department currently has three specialized programs: community (CERT), businesses (BERT), and the school district (SERT) to offer El Segundo a comprehensive training program.	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.
Cal OES Family Readiness Guide	The Guide provides a comprehensive toolkit for making a family emergency plan.	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.	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 acted as checkpoints to help City staff determine implementation progress.

*EVALUATION OF POTENTIAL HAZARD MITIGATION ACTIONS

The HMPT prepared a set of potential mitigation actions based on the hazard profiles, threat assessments, capabilities assessment, community survey results, discussions among HMPT members, and existing best practices. Next, the HMPT 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 HMPT 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.

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

- What is the frequency and severity of the hazard type to be addressed by the action, and how vulnerable is the community to this hazard?
- What impacts of the hazard will the action reduce or avoid?
- What benefits will the action provide to the community?

The HMPT also reviewed and revised the potential hazard mitigation actions using the STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria (**Table 32**). The HMPT did not formally assess every potential mitigation action under all STAPLE/E criteria but used the criteria to guide and inform the discussion. The HMPT also discussed how the criteria might evaluate grant applications the City may submit to receive funding for LHMP implementation.

Issues	Criteria
Social	<ul style="list-style-type: none"> • Is the action socially acceptable to El Segundo community members? • Would the action mistreat some individuals? • Is there a reasonable chance of the action causing social disruption?
Technical	<ul style="list-style-type: none"> • 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 El Segundo to take, given the City's and community members' goals?

TABLE 32. STAPLE/E CRITERIA	
Issues	Criteria
Administrative	<ul style="list-style-type: none"> • Does the City have the administrative capabilities to implement the action? • Are there existing City staff who can lead and coordinate the action'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 implement the action? • Are there administrative barriers to implementing the action?
Political	<ul style="list-style-type: none"> • Is the action politically acceptable to City officials and other relevant jurisdictions and political entities? • Do community members support the action?
Legal	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 El Segundo economy or tax base? • Could there reasonably be other budgetary and revenue impacts to the City?
Environmental	<ul style="list-style-type: none"> • 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?

RELATIVE COST ESTIMATES

The HMPT 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 (\$): \$25,000 or less
- Medium cost (\$\$): \$25,001 to \$999,999
- High cost (\$\$\$): Greater than \$1,000,000

PRIORITIZATION

As part of the mitigation actions development and review, the HMPT 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. HMPT members were asked to identify their priority actions through a voting exercise. Items are prioritized based on the number of votes the HMPT members receive. These quantitative scores were then converted to low, medium, and high priority qualitative categories.

****2025 Hazard Mitigation Actions***

Based on the criteria and evaluation processes used during Plan development, the HMPT prepared a prioritized list of mitigation actions (**Table 33**, page **129**) to improve El Segundo's resilience to hazard events. These actions collectively form the City's hazard mitigation strategy.

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

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
PREPAREDNESS ACTIVITIES						
P01	Identify and pursue funding opportunities to develop and implement local mitigation activities.	General Fund, HMA Grants, Other Grants	All Departments	\$	Short-range	High
P02	Develop a public outreach and awareness program about the hazards in El Segundo and mitigation actions community members can do in their homes.	General Fund	Emergency Management Division	\$	Ongoing	High
P03	Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.	General Fund	Emergency Management Division	\$	Ongoing	High
P04	Inventory and develop replacement values for all City-owned assets and non-City assets to help the City better understand the values of assets at risk.	General Fund	Public Works, Planning Division	\$\$	Midrange	High
P05	Integrate appropriate items from the Local Hazard Mitigation Plan (LHMP) into the General Plan Safety Element and other regulatory documents as appropriate.	General Fund	Emergency Management Division, Planning Division	\$	Short-range	Medium
P06	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business, and industry to create interest in the implementation of mitigation actions.	General Fund	All Departments	\$	Ongoing	High
P07	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.	General Fund	Police and Fire Departments	\$	Ongoing	Medium
P08	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.	General Fund	City Manager's Office, Emergency Management Division	\$	Short-range	High
P09	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.	General Fund	Police and Fire Departments	\$	Ongoing	Medium

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
P10	Continue to develop mutual aid agreements and memoranda of understanding with agencies to serve emergency and disaster purposes.	General Fund	Police and Fire Departments	\$	Short-range	High
P10	Build a cadre of committed, trained volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency Response Team, communications staff, medical and health, and human services, during and after a disaster.	General Fund, Other Grants	Police and Fire Departments, Emergency Management Division	\$	Ongoing	High
MULTIPLE HAZARDS						
M01	Train City staff to meet Safety Assessment Program (SAP) requirements.	General Fund, Other Grants	Community Development Department, Fire Department	\$	Midrange	Medium
M02	Develop inventories of at-risk City buildings and infrastructure and prioritize mitigation projects.	General Fund	Public Works, Building & Safety Division	\$	Midrange	Low
M03	Develop inventories of at-risk private buildings and infrastructure and prioritize mitigation projects.	General Fund, HMA Grants, Other Grants	Building & Safety Division	\$\$\$	Midrange	Medium
M04	Identify and implement mitigation actions for critical City-owned facilities, services, and infrastructure deemed vulnerable to a natural hazard.	Capital Improvements Program Grants, HMA Grants	Public Works	\$\$\$	Midrange	Medium
M05	Construct another 6–10-million-gallon reservoir to fulfill the requirement of having 3 days of water supply on hand for the City.	Capital Improvements Program Grants	Public Works	\$\$\$	Midrange	High
M06	Assessment of sheltering, evacuation, and mass care capacity and capabilities.	HMA Grants, Other Grants	Recreation, Parks, and Library Department, Emergency Management Division	\$	Short-Range	Medium

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
SEISMIC HAZARDS (SEISMIC SHAKING, LIQUEFACTION, TSUNAMI)						
S01	Replace Fire Station #1 apparatus bay doors	General Fund, Capital Improvements Program Grants	Public Works	\$\$	Short-range	High
S02	Develop a program to assess private properties within the City for soft-story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	General Fund, HMA Grants, Other Grants	Building & Safety Division	\$\$	Long-range	High
S03	Conduct seismic evaluations of City-owned critical facilities to identify building integrity concerns.	General Fund, Capital Improvements Program Grants, HMA Grants	Public Works	\$\$	Midrange	Medium
S04	Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.	General Fund, HMA Grants	Public Works	\$\$	Midrange	Medium
COMMUNICATIONS AND INFORMATION SYSTEMS						
C01	Develop a South Bay regional mutual aid system for IT resources.	Other Grants	Information Technology	\$	Long-range	High
C02	Conduct Department assessment of critical IT services for continuity of operations	General Fund, Other Grants	Information Technology	\$	Short-range	High
C03	Implement high availability for critical IT services at a remote location.	General Fund, Other Grants	Information Technology	\$\$	Midrange	High
C04	Coordinate with utility companies and vendors to strengthen, safeguard, or take other appropriate measures (such as providing supplemental services) to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.	General Fund	Public Works, Emergency Management Division	\$	Short-range	Medium

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
C05	Coordinate with the South Bay Regional Public Communications Authority (RCC) in hazard mitigation efforts for El Segundo to protect two-way radio equipment (such as bracing antennas, securing repeaters, etc.) from hazards.	General Fund, HMA Grants, Other Grants	Police and Fire Departments	\$	Short-range	Low
C06	Create a redundant high-speed link to RCC. Investigate the need for a link to the Lifeguard Station.	General Fund	Information Technology	\$	Short-range	Medium
LANDSLIDES						
L01	Update landslide susceptibility mapping City-wide to identify potential conditions that may impact new or existing developments.	General Fund, HMA Grants	Community Development	\$\$	Long-range	Low
DROUGHT						
D01	Establish or maintain emergency interconnections with nearby water suppliers and cities to bring in additional water during a short- or long-term emergency.	Capital Improvements Program Grants, Enterprise Funds	Water Division	\$\$\$	Long-range	Medium
D02	Encourage property owners to retrofit their properties to become more water efficient. This may include incentives to retrofit low-flow, water-saving showerheads, toilets, and appliances; replace lawns with drought-tolerant landscaping; smart timer rebates; and ensuring water sprinklers function correctly and do not water hardscape.	General Fund, Enterprise Funds, Other Grants	Building & Safety Division, Water Division	\$	Ongoing	Medium
EPIDEMIC/PANDEMIC (PUBLIC HEALTH)						
E01	Share on City social media accounts and other messaging platforms official, science-based messaging about disease outbreaks, public health emergencies, and recommended protection/prevention methods.	General Fund	City Manager's Office	\$	Ongoing – As needed	Medium

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
FLOODING (LOCALIZED STORMS, SEA-LEVEL RISE)						
F01	Develop, maintain, and inform the public of evacuation procedures in the event of failure of the Hyperion Wastewater Plant's primary sewage reservoir or related equipment or facilities. Conduct annual outreach to residents and businesses regarding this information. (Source: GP Safety Element - Program PS5-1.1B)	General Fund, Enterprise Funds	Emergency Management Division, Public Works	\$	Short-range	Medium
F02	Monitor flood management infrastructure to determine current capacity and adequacy of effectively managing current stormflow conditions. Coordinate with Los Angeles County on maintenance, repair, or modification of flood channels, culverts, and storm drainage systems not owned by the City.	General Fund, Enterprise Funds, HMA Grants	Public Works	\$	Ongoing	Low
F03	Upgrade substandard storm drain facilities that do not meet current or projected stormwater flows and runoff.	Capital Improvements Program Grants, Enterprise Fund	Public Works	\$\$\$	Long-range	Low
HAZARDOUS MATERIALS RELEASES						
HZ01	Improve community alert capabilities for hazardous materials-based incidents.	General Fund	Emergency Management Division	\$	Short-range	High
HZ02	Evaluate air quality monitoring capabilities to determine gaps in reporting and information gathering.	HMA Grants, Other Grants	Fire and Public Works (Environmental)	\$\$	Midrange	Low
HZ03	Create a map identifying areas of potential methane hazards to better inform the development process	General Fund, HMA Grants	Fire Department, Community Development Department	\$\$	Short-range	High

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
HUMAN-CAUSED HAZARDS (TRANSPORTATION INCIDENTS [AIR, RAIL], MASS-CASUALTY INCIDENTS [MASS SHOOTINGS, TERRORISM])						
H01	Institute a Crime Prevention Through Environmental Design (CPTED) program. CPTED is a multi-disciplinary approach to deterring criminal behavior through environmental design.	General Fund	Building & Safety Division, Police Department	\$	Long-range	Low
H02	Continue offering active shooter training and exercises to City and external audiences.	General Fund, Other Grants	Police, Emergency Management	\$	Ongoing	Medium
H03	Adequately train City staff regarding civil unrest activities and communicating with residents and businesses.	General Fund, Other Grants	Police, City Manager	\$	Ongoing	Low
SEVERE WEATHER (EXTREME HEAT, SEVERE WIND, RAIN)						
W01	Continue to operate accessible, safe extreme temperature shelters in City recreation facilities, including the library.	General Fund	Recreation, Parks, and Library Department	\$	Ongoing – As Needed	High
URBAN FIRES						
U01	Continue to inspect older buildings, multi-story structures, and fire-prone industrial facilities for fire safety. (Source: GP Safety Element - Program PS6-1.2A)	General Fund	Fire Department, Building & Safety Division	\$	Ongoing	High
U02	Develop an inventory of structures that are in compliance with fire protection system requirements within the City. Develop a pilot retrofit program for non-conforming properties to secure funding for sprinkler retrofits. (Source: GP Safety Element - Program PS6-1.2B)	General Fund, Other Grants	Fire Department, Building & Safety Division	\$	Ongoing	Medium
U03	Coordinate with Public Works to develop an assessment of the City's water distribution system capability to meet emergency fire-flow needs. (Source: GP Safety Element - Program PS7-1.1C)	General Fund	Public Works (Water), Fire Department	\$\$	Midrange	Medium

TABLE 33. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
U04	Actively encourage residents to inspect chimneys at least once a year. Safe fireplace/chimney use and maintenance includes spark arrestors and emphasis on proper storage of flammable items.	General Fund	Fire Department	\$	Ongoing	High

Cost Estimates: \$ (Low): Less than \$25,000; \$\$ (Medium): \$25,001 – \$999,999; \$\$\$ (High): Greater than \$1,000,000

Existing Mitigation Measures

El Segundo’s previous LHMP was adopted in 2015. Most of the mitigation actions in the previous LHMP have been incorporated into the mitigation strategy presented in this updated Plan. In many cases, the 2015 actions have either been directly copied into the updated Plan or have been integrated through multiple actions in the new Plan. Some 2015 actions are not part of the updated mitigation strategy because they have been addressed elsewhere in the LHMP planning process or are more general LHMP goals that are not suitable as a specific mitigation action under current best practices.

Table 34 shows the missing 2015 mitigation actions and how they have been addressed in this updated LHMP.

TABLE 34. STATUS OF MITIGATION ACTIONS IN 2015 LHMP	
2015 Mitigation Actions	Status in Updated LHMP
1.1 Seismically retrofit Fire Station #1 and install new apparatus bay doors and a seismic early-warning system.	Completed
1.5. Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.	City and non-City facilities have been evaluated and have been determined to be structurally sound for sheltering operations.
4.6 Develop closer relationships with South Bay municipal information technology departments and with associated state and federal agencies, such as the L.A. Joint Regional Intelligence Center and the local field office of the U.S. DHS Cybersecurity and Infrastructure Security Agency.	El Segundo ITSD is now a member of the Municipal Information Systems Association of California – Southern Chapter. ITSD will continue coordinating with JRIC and CISA.
5.1 Create a redundant data center in Equinix and complete fiber optic installation to that location.	Completed
Expand the Center Street catch basins. Hydraulic analysis was conducted and shows that the existing catch basins on Center Street between Oaks and Maple appear to be undersized to collect the 50-year design storm runoff rates and there is a potential for flooding at these locations. (Source: CIP FY 23/24)	Completed

*National Flood Insurance Program

The National Flood Insurance Program (NFIP) provides property owners in flood-prone areas with flood insurance at subsidized rates. Individual communities can choose to participate in the program, and property owners in flood-prone areas of participating communities can purchase discounted insurance. Property owners in nonparticipating communities cannot buy subsidized insurance, even if they live in a mapped flood plain. Non-participating communities are also not eligible for federal grants or loans in flood-prone areas and cannot receive federal disaster

assistance to repair flood-damaged structures in a mapped flood plain.⁹⁰ El Segundo currently participates in the NFIP.⁹¹

Continued participation in the NFIP is not a dedicated hazard mitigation action, although the City 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.⁹² The Floodplain Management Regulations act as El Segundo’s floodplain management ordinance, which all participating communities in the NFIP must adopt. These regulations apply to land within the mapped 100-year flood plain and limit the types of development and construction activities that can occur in this area. New construction must meet a number of 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.⁹³ 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.

As of July 2024, there were 23 properties in El Segundo insured under the NFIP, with a total insured value of approximately \$8.9 million. There have been 11 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.⁹⁴ **Table 35** provides the City’s NFIP information.

TABLE 35. FLOOD INSURANCE PROGRAM PARTICIPANT DATA	
Initial Flood Hazard Boundary Map (FHBM)	10/31/1975
Initial Flood Insurance Rate Map (FIRM)	9/26/2008
NFIP Participation Date	09/17/1980
Current Effective Map Date	4/21/2021

⁹⁰ FEMA. “[Participation in the National Flood Insurance Program.](#)”

⁹¹ FEMA. “[Community Status Book Report: California.](#)” Aug. 4, 2025.

⁹² City of El Segundo Ordinance No. 1427, adopted Mar. 3, 2009.

⁹³ City of El Segundo 2009. Ibid.

⁹⁴ FEMA 2025

CHAPTER 6 – PLAN MAINTENANCE

For this LHMP to remain effective and useful to the community of El Segundo, it must remain up to date. An updated version of the LHMP will continue to guide the City’s hazard mitigation activities and help keep the City eligible for state and federal hazard mitigation funding. The HMPT 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. It 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 El Segundo City Council is responsible for updating this Plan as well as all future updates. LHMPs are subject to review every five years by FEMA to determine whether the Plan meets all applicable federal requirements and thus provides additional funding benefits to El Segundo. 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 El Segundo Fire Department 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. HMPT members prioritized the hazard mitigation actions in **Table 33** (page **129**) in **Chapter 5**. These priorities will guide implementing 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 Team. **Table 1** (page **5**) lists the current Planning Team members.

In future years, representatives from the following City organizations (either current Planning Team members or others) should be included in meetings of the Planning Team:

- Fire Department
- Recreation, Parks, and Library
- City Manager's Office
- Public Works
- City Attorney's Office
- Development Services
- Finance
- Information Technology Services
- Human Resources
- Police Department

Staff members from other organizations who sat on the Planning Team during the preparation of this Plan should be invited to participate in future Planning Team meetings, plus any other applicable agencies. Based on the composition of the Planning Team during the preparation of this Plan, the other organizations that should be asked to participate are:

- Chevron Refinery
- Mattel Corporation
- City of Los Angeles
- El Segundo Unified School District
- City of Inglewood
- County of Los Angeles
- City of Hawthorne
- Los Angeles International Airport
- City of Culver City
- Los Angeles County Disaster Management Area Coordinator – Area G
- City of Manhattan Beach

The El Segundo Fire Department Emergency Management Coordinator is the staff member responsible for coordinating the implementation of the LHMP and future meetings of the Planning Team. The Emergency Management Coordinator may designate this role to another staff member.

Plan Maintenance Process

The City's plan-maintenance process will rely on the El Segundo Mitigation Implementation Handbook, located in **Appendix D**. The handbook is intended to function as a standalone 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 HMPT are not updating the Plan, they should meet at least once a year to go over mitigation action implementation and evaluate the Plan’s effectiveness. These meetings should include:

- Discussion of the timing of mitigation action implementation
- Mitigation action implementation evaluation and determination of success
- Mitigation action prioritization revisions, if deemed necessary
- Mitigation action integration into other mechanisms, as needed

The first of these meetings will be held in the 2025-2026 fiscal year. To the extent possible, HMPT meetings should be scheduled at an appropriate time in the City’s annual budgeting process, which will help ensure that funding and staffing needs for mitigation actions are considered.

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

- What hazard events, if any, have occurred in the City 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 has the City successfully implemented? Has the City been unsuccessful in implementing any mitigation actions, and if so, why?
- What mitigation actions, if any, has the City scheduled for implementation but not yet implemented?
- What is the schedule for implementing future mitigation actions? Is this schedule reasonable? Does the City need to adjust the schedule 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 the City?

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 HMPT 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 HMPT 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.

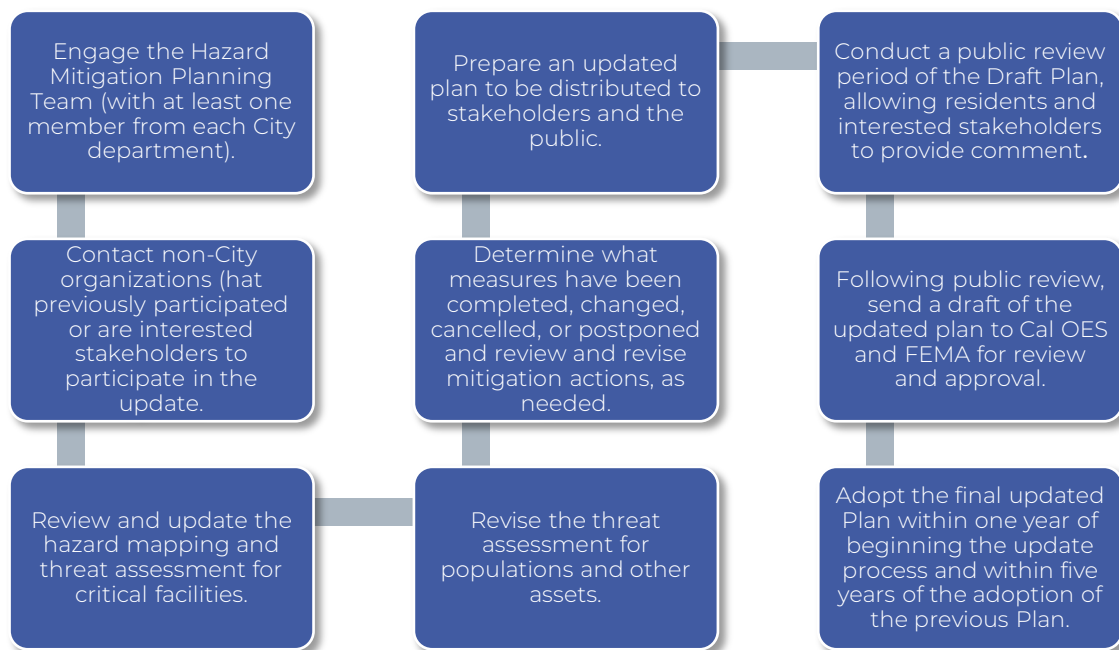
UPDATE METHOD AND SCHEDULE

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 the HMPT begins 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 El Segundo or an area that includes part of or the entire City.
- A hazard event that results in one or more fatalities in the City.

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 HMPT will determine the best process for updating the Plan, which should include the following steps:



UPDATE ADOPTION

The El Segundo City Council is responsible for adopting this Plan and all future updates. As previously mentioned, adoption should occur every five years. Once the City Council adopts the Plan, the adopted Plan should be transmitted to Cal OES and 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 El Segundo General Plan, particularly the General Plan's 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 should be incorporated into other City documents as applicable.

- Mitigation actions that involve construction of new City buildings or infrastructure or major retrofits to existing structures should be reflected in updates to the Capital Improvement Program.
- Mitigation actions that improve resiliency in new construction by increasing the standards for new construction should be reflected in updates to the City's Building and Construction Regulations.
- Revisions to requirements for new construction activities specifically within flood plains should result in changes to the City's Floodplain Management Regulations.
- 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 D provides guidance on best practices to accomplish this integration.

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 Team will develop a revised community engagement strategy that reflects the City's updated needs and capabilities. This updated strategy should include a schedule and plan for public meetings, recommendations about the appropriate use of the City website and social media accounts, and any sample content for public outreach documentations. The Planning Team should also consider distributing annual progress reports about Plan implementation to El Segundo community members. Options for receiving feedback shall include a comment portal on the City's website as well as an email address for individuals to submit their comments to the City.

Point Of Contact

The Emergency Management Coordinator of the El Segundo Fire Department is the primary point of contact for this Plan and for future updates. At the time of writing, the Emergency Management Coordinator for the El Segundo Fire Department is Melissa Mendoza-Campos, who can be contacted at 310-524-2708 or mmendoza@elsegundo.org.

APPENDIX A – HMPT Meeting Materials



City of El Segundo

Local Hazard Mitigation Plan Update HMPC Meeting #1 Agenda

I. Team Introductions

- i) Fire Chief - Elias
- ii) Director of Public Works -
- iii) Allie Hanson – Director of Parks and Library
- iv) Al Mura – Chief of Police
- v) Barbara – Deputy City Manager
- vi) Paul Silverstien - IT
- vii) Evan Siftie – Shift Battalion Chief
- viii) Senior Management Analyst –
- ix) Community Development Director – Michael Allan

II. Local Hazard Mitigation Plan Overview

III. Project Goals and Expectations

- i) Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.
- ii) Goal 2: Improve public understanding, support and need for hazard mitigation measures.
- iii) Goal 3: Promote disaster resistance for El Segundo's natural, existing, and future built environment.
- iv) Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.
- v) Goal 5: Enhance the City's ability to effectively and immediately respond to disasters.




- IV. Hazard Identification/Prioritization
- V. Data Needs (Critical Facilities List, vulnerable populations, recent/past hazards, GIS)
- VI. Community Engagement and Outreach Strategy
- VII. Next Steps and To-Do List
- VIII. Next Steps and To-Do List

HMPC Meeting 1	Today
HMPC Meeting 2	Late June
Stakeholder Meeting 1	Late June
Community Outreach Meeting 1	Late June
Stakeholder Meeting 2	Release of Public Review Draft
Community Outreach Meeting 2	Release of Public Review Draft
Public Review Draft LHMP	August

FW: Local Hazard Mitigation Plan Committee Meeting

Organizer Avery, George (Fire Chief) <gavery@elsegundo.org>
Meeting time This event occurred 3 months ago (Wed 5/14/2025 10:00 AM - 12:00 PM)
Location Council Chambers Room
My response Not yet responded
Required attendees Avery, George (Fire Chief), Mendoza-Campos, Melissa, aaron@atlasplanning.org, Mancini, Aly, Voss, Barbara, Sassoon, Elias, Siefke, Evan, Sercu, Jennifer, Joaquin Vazquez, Allen, Michael, Chung, Paul, Silverstein, Paul, Brennan, Sharon, Rodriguez, Saul (Chief of Police), Arias, Vanessa
Optional attendees Redyk, Rebecca
Message sent Tue 9/2/2025 10:54 AM

 1 attachment (169 KB)
City of El Segundo LHMP Meeting 1.docx;

From: Avery, George (Fire Chief) <gavery@elsegundo.org>
Sent: Tuesday, May 6, 2025 10:46:31 AM (UTC-08:00) Pacific Time (US & Canada)
To: Avery, George (Fire Chief) <gavery@elsegundo.org>; aaron@atlasplanning.org <aaron@atlasplanning.org>; Mancini, Aly <amancini@elsegundo.org>; Voss, Barbara <bvoss@elsegundo.org>; Sassoon, Elias <esassoon@elsegundo.org>; Siefke, Evan <ESiefke@elsegundo.org>; Sercu, Jennifer <jsercu@elsegundo.org>; Joaquin Vazquez <jvazquez@hensleylawgroup.com>; Allen, Michael <mallen@elsegundo.org>; Chung, Paul <pchung@elsegundo.org>; Silverstein, Paul <psilverstein@elsegundo.org>; Brennan, Sharon <sbrennan@elsegundo.org>; Rodriguez, Saul (Chief of Police) <srodriguez@elsegundo.org>; Arias, Vanessa <varias@elsegundo.org>
Cc: Redyk, Rebecca <rredyk@elsegundo.org>
Subject: Local Hazard Mitigation Plan Committee Meeting
When: Wednesday, May 14, 2025 10:00 AM-12:00 PM.
Where: Council Chambers Room

Agenda attached. Additional staff are welcome to attend.



Location: Zoom/ In Person
Date: May 14, 2025
Time: 10:00 AM – 12:00 PM

City of El Segundo

Local Hazard Mitigation Plan Update

HMPC Meeting #1 Agenda

I. Team Introductions

- i) Fire Chief - Elias
- ii) Director of Public Works -
- iii) Allie Hanson – Director of Parks and Library
- iv) Al Mura – Chief of Police
- v) Barbara – Deputy City Manager
- vi) Paul Silverstien - IT
- vii) Evan Siftie – Shift Battalion Chief
- viii) Senior Management Analyst –
- ix) Community Development Director – Michael Allan

II. Local Hazard Mitigation Plan Overview

III. Project Goals and Expectations

- i) Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.
- ii) Goal 2: Improve public understanding, support and need for hazard mitigation measures.
- iii) Goal 3: Promote disaster resistance for El Segundo's natural, existing, and future built environment.
- iv) Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.
- v) Goal 5: Enhance the City's ability to effectively and immediately respond to disasters.



- IV. Hazard Identification/Prioritization
- V. Data Needs (Critical Facilities List, vulnerable populations, recent/past hazards, GIS)
- VI. Community Engagement and Outreach Strategy
- VII. Next Steps and To-Do List
- VIII. Next Steps and To-Do List

HMPC Meeting 1	Today
HMPC Meeting 2	Late June
Stakeholder Meeting 1	Late June
Community Outreach Meeting 1	Late June
Stakeholder Meeting 2	Release of Public Review Draft
Community Outreach Meeting 2	Release of Public Review Draft
Public Review Draft LHMP	August



City of El Segundo
Local Hazard Mitigation Plan Update
HMPC Meeting #2 Agenda

I. Introductions

II. Review of Project Goals

- Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.
- Goal 2: Improve public understanding, support and need for hazard mitigation measures.
- Goal 3: Promote disaster resistance for El Segundo's natural, existing, and future built environment.
- Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.
- Goal 5: Enhance the City's ability to effectively and immediately respond to disasters.

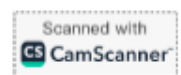
III. Overview of Mitigation Strategies

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



Local Hazard Mitigation Plan Team meeting
 Mitigation Strategies finalization
 Tuesday August 19, 2025 2:00pm-4:00pm

Name	Email	Sign In
Michael Allen	mallen@elsegundo.org	<i>Michael Allen</i>
George Avery	gavery@elsegundo.org	<i>[Signature]</i>
Sharon Brennan	sbrennan@elsegundo.org	<i>Mary Shara Brennan</i>
Paul Chung	pchung@elsegundo.org	<i>[Signature]</i>
Cheryl Ebert	cebert@elsegundo.org	<i>[Signature]</i>
David King	dking@hensleylawgroup.com	
Aly Manini	amancini@elsegundo.org	<i>am</i>
Melissa Mendoza-Campos	mmendoza@elsegundo.org	<i>[Signature]</i>
Aaron Pfannenstiel	aaron@atlasplanning.org	<i>[Signature]</i>
Jorge Prado	jprado@elsegundo.org	<i>[Signature]</i>
Paul Silverstein	psilverstein@elsegundo.gov	<i>[Signature]</i>
Barbara Voss	bvoss@elsegundo.org	<i>Barbara Voss</i>



APPENDIX B – Outreach Materials

Community Survey

Survey participation was gathered through an online survey (utilizing Google forms). The survey was available to the public from August 21, 2025 to September 2, 2025. The survey was posted on the City’s website, sent out to residents via the community GovDelivery Newsletter, advertised on social media, presented at an El Segundo Farmer’s Market booth, and emailed to the Area G Disaster Management Area members.

Results from the survey are included below:

2025 City of El Segundo Hazard Mitigation Plan Survey

11 responses

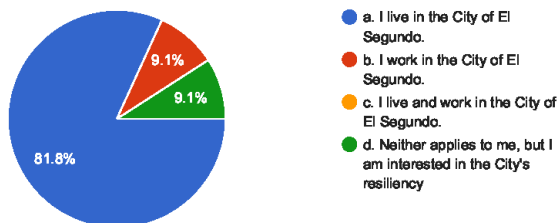
[Publish analytics](#)

II. Hazard Awareness

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

[Copy](#)

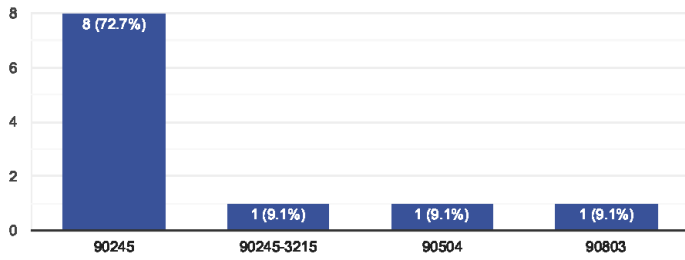
11 responses



2. What is the Zip Code of your home?

[Copy](#)

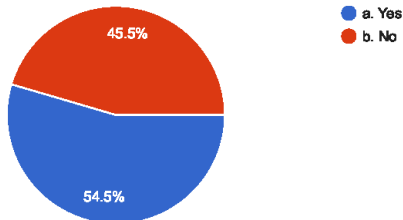
11 responses



3. Have you been impacted by a hazard event in your current residence?

[Copy](#)

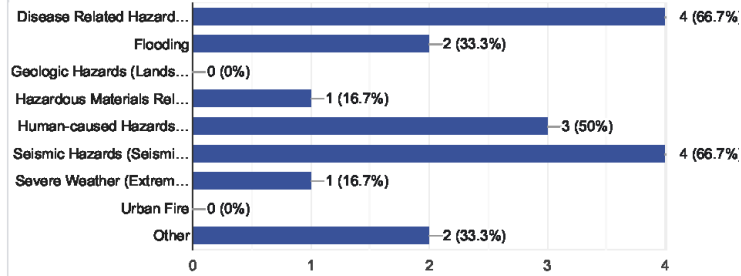
11 responses



4. 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).

[Copy](#)

6 responses



If you selected "Other" above, please list any additional hazards that have previously impacted your neighborhood or home.

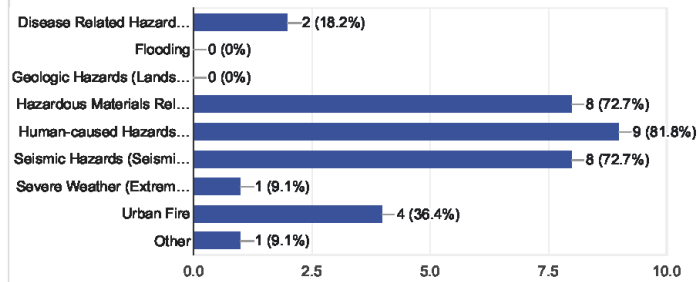
2 responses

- Hyperion incident
- Hyperion odor releases into El Segundo.

5. The following hazards could potentially impact the city. Please mark the THREE (3) hazards that are of most concern to your neighborhood or home.

[Copy](#)

11 responses



If you selected "Other" above, please list any additional hazards that are of most concern to your neighborhood or home.

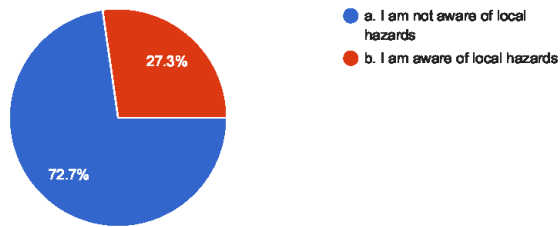
1 response

terrorist event at lax, terrorist attack of hyperion or scattergood

6. The Planning Team uses various data sources to identify hazards in your community. Sometimes these sources do not capture smaller events. Are there any issues (intersections that flood, hills that erode during rain storms) that you'd like share with our team?

[Copy](#)

11 responses



Please provide as much detail as possible, including location and type of hazard.

2 responses

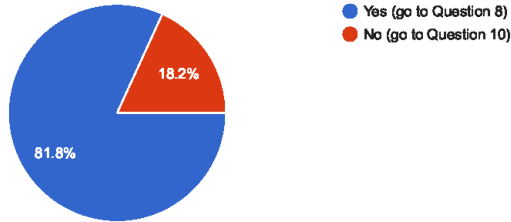
There are multiple businesses within the city of El Segundo that are target hazards.

flooding along 700 block of virginia street

7. Do you believe that our climate is changing?

[Copy](#)

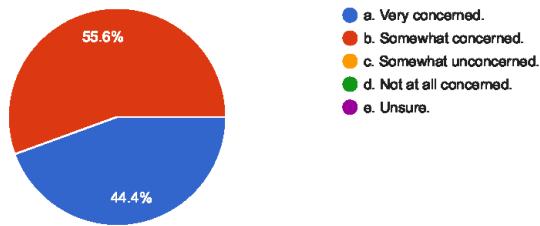
11 responses



8. How concerned are you that climate change may create new hazardous situations in El Segundo or make existing natural hazards worse?

[Copy](#)

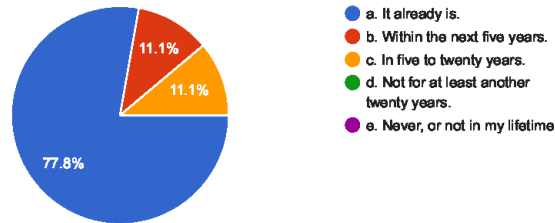
9 responses



9. When do you think climate change will pose a threat to your health, property, livelihood, or overall wellbeing?

[Copy](#)

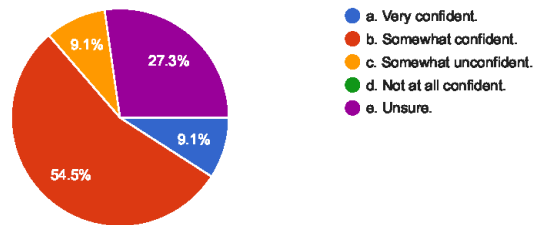
9 responses



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

[Copy](#)

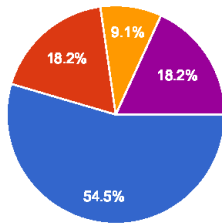
11 responses



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

 Copy

11 responses

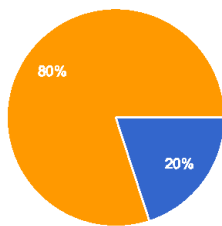


- a. Yes, my insurance coverage should be adequate.
- b. No, I don't believe my insurance coverage would be adequate for a major disaster.
- c. Unsure.
- d. I do not have an insurance policy.
- e. Not applicable; I rent my current residence.

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

 Copy

10 responses

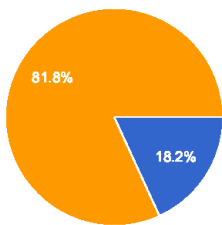


- a. Yes
- b. No
- c. Not applicable; I own my residence.

13. Do you have flood insurance for your home?

 Copy

11 responses

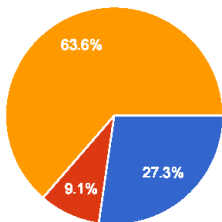


- a. Yes, I own my home and have flood insurance.
- b. Yes, I rent my home and have flood insurance.
- c. No, but I am interested in reviewing flood insurance options (<https://www.floodsmart.gov>).

14. Do you have earthquake insurance for your home?

 Copy

11 responses

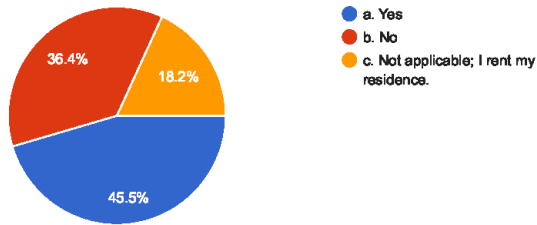


- a. Yes, I own my home and have earthquake insurance.
- b. Yes, I rent my home and have earthquake insurance.
- c. No, but I'm interested in earthquake insurance resources. (<https://www.earthquakeauthority.com/>)

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

 Copy

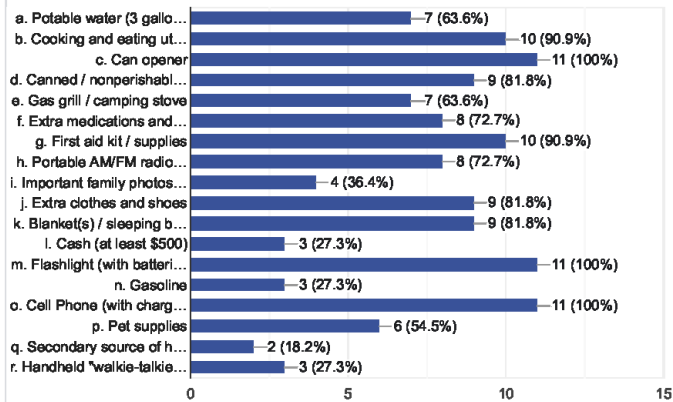
11 responses



16. 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?

 Copy

11 responses



What else do you have in your emergency kit? For more information on emergency kits, visit <https://www.ready.gov/kit>

2 responses

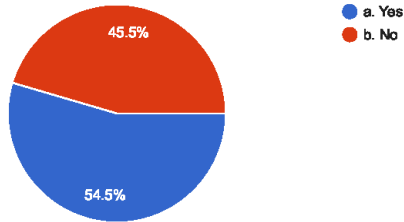
Extra pair of prescription glasses

Paper plates, emergency water packs, etc

17. Do you know if your neighbors have any physical, mental, or situational circumstances that a hazard situation could make worse (may include limited mobility, severe medical conditions, memory impairments, language barriers, or no access to a vehicle)?

 Copy

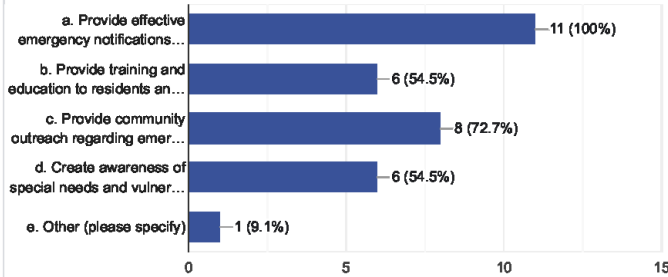
11 responses



18. How can the City help you become better prepared for a disaster? (Choose all that apply)

 Copy

11 responses



If you selected "Other" above, please describe.

2 responses

Subsidize landscape hardening (fire "proofing") activities like palm tree removal, installation of fire resistant plants around house

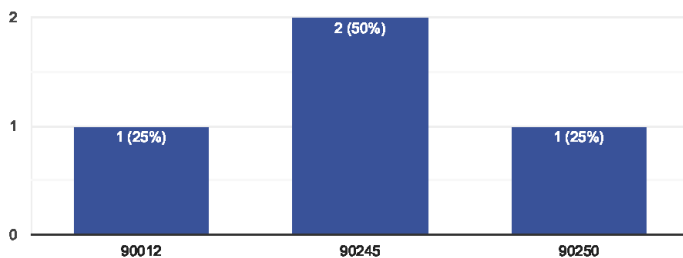
Help connect residents and businesses to financial resources

If you do NOT work in the City of El Segundo, please skip to question 22.

19. What is the ZIP code of your workplace?

 Copy

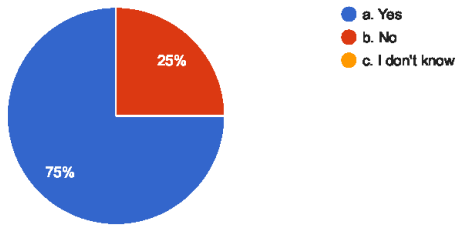
4 responses



20. Does your employer have a plan for disaster recovery in place?

[Copy](#)

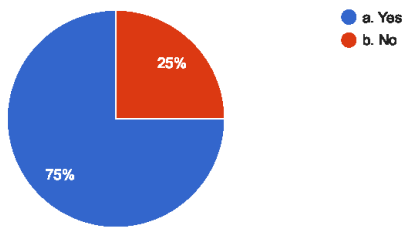
4 responses



21. Does your employer have a workforce communications plan to implement following a disaster, so they can contact you?

[Copy](#)

4 responses

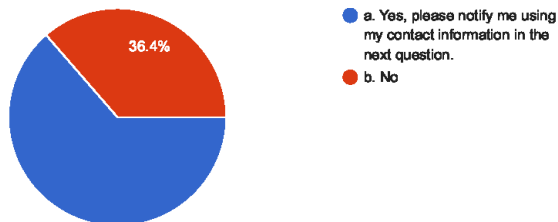


III. Recommendations and Future Participation

2. Would you like to be contacted when the 2025 Public Draft Hazard Mitigation Plan is available for review?

[Copy](#)

11 responses



Redacted due to privacy concerns

24. Please provide us with any additional comments/suggestions/questions regarding your risk of future hazard events.

2 responses

Fire preparedness/prevention is my biggest concern after what happened earlier this year

LACounty and City LHMP are good resource documents/maps for local cities to consult when updating LHMP

Thank you for taking the time to complete this survey. If you have any questions, or if you know of other people/organizations that should be involved, please contact (Placeholder)

This content is neither created nor endorsed by Google. - [Contact form owner](#) - [Terms of Service](#) - [Privacy Policy](#)

Does this form look suspicious? [Report](#)

Google Forms



- + Contact Us
- + Community Outreach
- Emergency Management/Disaster Preparedness
 - Emergency Alerts
 - Fee Schedule
 - Feedback
- + Request a Record
- Health Insurance Portability and Accountability Act (HIPAA)
- Transport Billing

Administration

Emergency Management/Disaster Preparedness

Font Size: Share & Bookmark Feedback Print

The City of El Segundo strives to ensure that residents, businesses and visitors are informed, prepared, and able to recover from a natural, technology-related or human-caused emergency or disaster.

The Emergency Management Team takes a proactive approach to keep El Segundo safe and prepared, including:


- Creating and maintaining emergency plans in accordance with local, State and Federal legislation.
- Coordinating the Emergency Operations Center (EOC), ensuring the facility, employees, equipment and supplies are ready to respond 24/7.
- Working directly with business and industry to advance emergency management and disaster preparedness, response and recovery.
- Conducting employee training to strengthen emergency preparedness, response and recovery procedures.
- Provides technical guidance as advisory to the City's departments including Police and Fire Departments.
- Engaging the public with events such as Emergency Preparedness Day and Community Emergency Response Team (CERT) program.

- Local Hazard Mitigation Plan (LHMP) +
- Why have an LHMP? +
- What's in the LHMP? +
- What Hazards Will the LMP Help Protect +
- How is the LHMP Prepared & When Will It Be Done? +
- How Can I Get Involved? -

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

- The City will have public engagement opportunities to share information about our LHMP and obtain community feedback. The first of these opportunities is scheduled for Thursday August 28, 2025 at the Farmer's Market.
- The City has released an online survey to members of the public, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take our survey and encourage your friends and family to do the same -> <https://forms.gle/GR5XY34azZEVkbbP7>
- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document in our online survey or a future Farmer's Market event.
- Encourage members of the El Segundo City Council to adopt the plan and begin implementing it.

Flyer: Survey flyer posted on Instagram/Facebook August 21, 2025 and August 22, 2025, emailed to the Area G Disaster Management Area on August 27, 2025, and presented at an El Segundo Farmer's Market booth on August 28, 2025,



THE CITY OF EL SEGUNDO IS UPDATING ITS LOCAL HAZARD MITIGATION PLAN

WHAT DOES A LOCAL HAZARD MITIGATION PLAN DO?

- Summarizes the hazards that threaten the City
- Identifies potential vulnerabilities to these hazards
- identifies strategies to increase resiliency to these hazards

WHY HAVE A LOCAL HAZARD MITIGATION PLAN?

- Protect El Segundo from current and future hazards
- Gain eligibility to state and federal disaster relief and mitigation grant funding

GET INVOLVED! TAKE OUR SURVEY:

Visit www.elsegundo.org/our-city/emergency-management for more information



GovDelivery Newsletter:

August 26, 2025:


<https://content.govdelivery.com/accounts/CAELSEGUNDO/bulletins/3ef14fb>

City of El Segundo Local Hazard Mitigation Plan
City of El Segundo sent this bulletin at 08/26/2025 08:32 AM PDT
[View as a webpage / Share](#)

CITY OF EL SEGUNDO
FIRE DEPARTMENT

Local Hazard Mitigation Plan

The City of El Segundo is Updating Its Local Hazard Mitigation Plan



THE CITY OF EL SEGUNDO IS UPDATING ITS LOCAL HAZARD MITIGATION PLAN

<p>WHAT DOES A LOCAL HAZARD MITIGATION PLAN DO?</p> <ul style="list-style-type: none">• Summarizes the hazards that threaten the City• Identifies potential vulnerabilities to these hazards• identifies strategies to increase resiliency to these hazards	<p>WHY HAVE A LOCAL HAZARD MITIGATION PLAN?</p> <ul style="list-style-type: none">• Protect El Segundo from current and future hazards• Gain eligibility to state and federal disaster relief and mitigation grant funding
--	--

GET INVOLVED! TAKE OUR SURVEY:

Visit www.elsegundo.org/our-city/emergency-management
for more information



Floods, earthquakes, and fires. We've all heard about these disasters, and many of us have lived through them, often several times. It's easy to think that there's nothing we can do about these events. But while we often can't stop them from happening, we can make sure that the damage to our community is reduced.

At the City of El Segundo, we want to make our community as safe as possible, so we're preparing a Local Hazard Mitigation Plan (LHMP). This plan will help our community assess the potential for future disasters, take steps to prepare for them, and make us eligible for additional funding from the federal and state government. Our LHMP will cover four major topics:

- Summarize the natural and human-caused hazards that pose a threat to our community.
- Look at how our community members, buildings, and infrastructure are vulnerable to these hazards.
- Outline a Hazard Mitigation Strategy, with specific policy recommendations for future actions to help reduce the threat from these hazards.
- Maintenance procedures to keep the plan current in the face of changing conditions.

It's vital to us that our LHMP reflects the opinions, concerns, and goals of our community members, which is why we want your input.

We've posted an online survey for all community members that will help us better understand the issues important to you, how prepared we are as a community, and what actions we should take to be better prepared in the future. The survey should only take five to ten minutes of your time, and all responses are completely anonymous.

[Click Here to Take Our Survey](#)

To learn more about the El Segundo LHMP, visit our project [website](#) and visit us at the Farmer's Market on Thursday August 28, 2025.

Please direct any questions Emergency Management Coordinator, Melissa
Mendoza-Campos at mmendoza@elsegundo.org

POWERED BY



[Privacy Policy](#) | [Cookie Statement](#) | [Help](#)

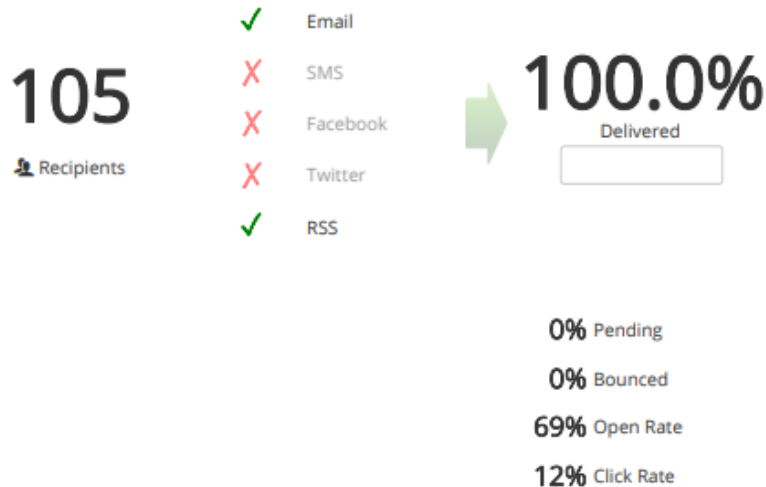
We only use cookies that are necessary for this site to function, and to provide you with the best experience. Learn more in [our Cookie Statement](#).

Details

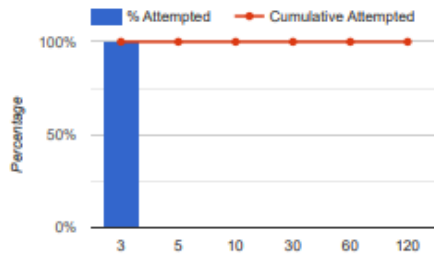
Subject: City of El Segundo Local Hazard Mitigation Plan
Sent: 08/26/2025 08:32 AM PDT
Sent By: jsercu@elsegundo.org
Sent To: Subscribers of CERT Training (Community Emergency Response Training), Disaster Preparedness Day, Fire Service Day, General City News, or Internal - All City Staff who answered "Yes" to "Are you currently a resident of El Segundo?"

- PDF
- RECIPIENT REPORT
- COPY BULLETIN
- VIEW BULLETIN

Overview



Email Delivery Stats



Minutes	Cumulative Attempted
3	100%
5	100%
10	100%
30	100%
60	100%
120	100%

Delivery Metrics - Details

105 Total Sent
105 (100%) Delivered
0 (0%) Pending
0 (0%) Bounced
0 (0%) Unsubscribed

Bulletin Analytics

111 Total Opens
72 (69%) Unique Opens
17 Total Clicks
13 (12%) Unique Clicks
13 # of Links

Delivery and Performance

These figures represent all data since the bulletin was first sent to present time.

Email Bulletin	Digest	Text Message
Delivered	Digests are sent on daily and weekly intervals	Delivered
105 Recipients	0 Recipients	0 Recipients
105 Delivered	0 Delivered	0 Delivered
72 Opened	0 Opened	0 Bounced or Failed
68.6% Unique Opens	0.0% Unique Opens	
0 Bounced or Failed		
0 Unsubscribed		

Bulletin Link Overview

LINK URL	UNIQUE CLICKS	TOTAL CLICKS
https://forms.gle/GR5XY34azZEVkbbP7?utm_medium=email&utm_source=govdelivery	10	11
https://www.racewire.com/register.php?id=14075&utm_medium=email&utm_sour...	3	6
https://public.govdelivery.com/accounts/CAELSEGUNDO/subscriber/one_click...	0	0
https://content.govdelivery.com/accounts/CAELSEGUNDO/bulletins/3ef14fb	0	0
https://subscriberhelp.granicus.com/?utm_medium=email&utm_source=govdeli...	0	0
https://public.govdelivery.com/accounts/CAELSEGUNDO/subscriber/new?prefe...	0	0
https://www.elsegundo.org/depts/fire/contacts.asp?utm_medium=email&utm_s...	0	0
https://www.facebook.com/elsegundofiredepartment/?utm_medium=email&utm_s...	0	0
https://www.instagram.com/elsegundofd?utm_medium=email&utm_source=govdel...	0	0
https://twitter.com/gundofire?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ct...	0	0
https://www.elsegundo.org/depts/fire/default.asp?utm_medium=email&utm_so...	0	0
https://subscriberhelp.govdelivery.com/	0	0

Last Updated on 08/30/2025 06:57 AM PDT

© GRANICUS [Privacy Policy](#) | [Cookie Statement](#)

APPENDIX C – Adopting Resolution

Pending City Council Meeting September 16, 2025

APPENDIX D – Implementation Workbook



Local Hazard Mitigation Plan Implementation
Handbook

September 2025

What Is This Handbook?

The Local Hazard Mitigation Plan (LHMP) for the City of El Segundo 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 El Segundo 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
- El Segundo is undergoing its budgeting process
- El Segundo is holding its annual meeting of the Hazard Mitigation Planning Team
- El Segundo 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 Team (HMPT) leader is responsible for maintaining this Handbook. At the time of writing, the current HMPT leader is Melissa Mendoza-Campos, Emergency Management Coordinator, City of El Segundo Fire Department. The HMPT may delegate this responsibility to someone else should they choose.

What to do when a disaster has been proclaimed or declared

Disasters may be proclaimed or declared by the El Segundo City Council, the State of California, or the federal government. Responsibilities may differ depending on who proclaims or declares the disaster. If multiple organizations proclaim or declare a disaster, consult all applicable lists.

The El Segundo City Council

If the El Segundo 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 El Segundo.
- 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 El Segundo 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 El Segundo, consider updating the LHMP. Consult the section on updating the LHMP in this Handbook for details.

The State of California

If the State of California proclaims a disaster for El Segundo, or an area that includes part or all of El Segundo, take the following steps:

- Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of El Segundo.
- 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 El Segundo 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 El Segundo, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Handbook for details.

The Federal Government

If the federal government declares a disaster for El Segundo, or any area that includes part or all of El Segundo, take the following steps:

- Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of El Segundo.
- Collaborate with Cal OES and FEMA representatives to assess the damage.
- Determine if El Segundo 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. El Segundo may be eligible for funding because of the federal disaster declaration, although not all activities may meet the program's requirements. If El Segundo is eligible, work with FEMA to apply for this funding.
- Chapter 6** of the El Segundo 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 El Segundo, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Handbook for details.

I Want to Apply for Mitigation Grant Funding

There are three potential grant funding programs that FEMA administers for hazard mitigation activities. Two of these programs, the Building Resilient Infrastructure and Communities (BRIC)⁹⁵ and Flood Mitigation Assistance (FMA) funding sources, are available to communities with an LHMP that complies with FEMA guidelines and has been adopted within the past five years.

The third funding program is the Hazard Mitigation Grant Program (HMGP), which is available for communities that are part of a federal disaster declaration. This section discusses the BRIC and FMA programs and how to apply for them. The HMGP is discussed under the "Federal Government" subsection of the above "What to Do When a Disaster Has Been Proclaimed or Declared" section.

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>.

TAKE THE FOLLOWING STEPS TO APPLY FOR BRIC FUNDING:

- 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

⁹⁵ The BRIC Program still exists; however, it is currently not being funded.

- actions are consistent with the requirements of the BRIC grant.
- Coordinate with Cal OES representatives to compile and submit materials for the grant application.

Flood Mitigation Assistance

The FMA grant program is a competitive, national program that awards funding for physical development projects and planning efforts that mitigate against long-term damage from flooding. The funding is only available to communities participating in the National Flood Insurance Program (NFIP), which El Segundo 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>.

TAKE THE FOLLOWING STEPS TO APPLY FOR FMA FUNDING:

- Confirm that the program is currently accepting funding applications. Check with representatives from Cal OES or consult the Cal OES webpage on the FMA program. At 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.

El Segundo is going through the budgeting process

El Segundo'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. El Segundo 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 El Segundo's annual budget:

- Include hazard mitigation activities into El Segundo'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 Team (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.

El Segundo is Conducting its Annual meeting of the Hazard Mitigation Planning Team

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 El Segundo and how to mitigate them effectively. As mentioned in **Chapter 6** of the LHMP, the Planning Team should meet at least once each year, beginning a year after the LHMP is adopted. During these meetings, the Planning Team should discuss implementation progress and integration of hazard mitigation actions in other City documents. At these meetings, the Planning Team 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 Team to strategically plan for the upcoming year.

It may help for the Planning Team to meet early in the year, in advance of annual budget activities. **Attachment 3** contains an example of a Planning Team Meeting Agenda.

The annual meeting should include representatives from City departments and other organizations that originally prepared the LHMP. Representatives from other relevant organizations should also be invited. During the preparation of the current LHMP, the following individuals were part of the Planning Team:

Name	Title	Department
Melissa Mendoza-Campos	Emergency Management Coordinator	Fire
George Avery	Fire Chief	Fire
Evan Siefke	Battalion Chief	Fire
Vaness Arias	Senior Management Analyst	Fire
Jennifer Sercu	Senior Administrative Analyst	Fire
Aly Mancini	Director	Recreation, Parks, and Library
Barbara Voss	Deputy City Manager	City Manager's Office
Elias Sassoon	Director	Public Works
Cheryl Ebert	Senior Civil Engineer	Public Works
Jorge Prado	General Services Superintendent	Public Works
Joaquin Vazquez	Deputy City Attorney	City Attorney's Office
Michael Allen	Director	Development Services
Paul Chung	Chief Financial Officer	Finance

Paul Silverstein	Director	Information Technology Services
Sharon Brennan	Risk Manager	Human Resources
Mark Hensley	City Attorney	City Attorney's Office
David King	Asst. City Attorney	City Attorney's Office
Saul Rodriguez	Police Chief	Police

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 El Segundo 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.

El Segundo is updating its policy and regulatory documents

If El Segundo is updating the LHMP, the Safety Element or Housing Element of the General Plan, or the Zoning Code, consult the following applicable section.

Local Hazard Mitigation Plan

All LHMPs should be updated every five years. This helps keep the plan up to date and ensures that it reflects the most recent guidance, requirements, science, and best practices. An updated LHMP also helps keep El Segundo 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 El Segundo, or if a disaster leads to a loss of life in El Segundo (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 TEAM

- 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 El Segundo. 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 to make them more feasible or remove them from the list of mitigation actions if they are no longer appropriate for El Segundo.
- Develop mitigation actions to improve the status of hazard mitigation activities in El Segundo 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 HMPT 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 Cal OES and FEMA for approval and make any necessary revisions.
- Submit the plan to the El Segundo City Council for adoption.

The Safety Element of the General Plan

The Safety Element is a required component of El Segundo's General Plan. It can be updated as a stand-alone activity or as part of a more comprehensive process to update multiple sections or all of the General Plan. The Safety Element does not need to be updated on any set schedule, but updates should be frequent enough for the element to remain current and applicable to the community.

Local communities can incorporate their LHMP into their Safety Element as allowed under Section 65302.6 of the California Government Code, as long as the LHMP meets minimum federal guidelines. This allows communities to be eligible for an increased share of post-disaster relief funding from the State if a hazard situation occurs, as per Section 8685.9 of the California Government Code.

Take the following steps to incorporate the LHMP into the Safety Element:

INCORPORATE NEW REQUIREMENTS INTO THE SAFETY ELEMENT AND ENSURE THAT THE LHMP IS CONSISTENT WITH THE SAFETY ELEMENT

- Review the requirements for Safety Elements in Section 65302(g) 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.

The Housing Element of the General Plan

The Housing Element is a required component of El Segundo'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).

The El Segundo Floodplain Management Ordinance

El Segundo'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 El Segundo's local context.

As a participant in the National Flood Insurance Program (NFIP), El Segundo 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 El Segundo 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, El Segundo 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 EL SEGUNDO 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 2: Plan 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.

Section	Is Anything Incorrect?	Is Anything Missing?	Should Any Other Changes Be Made?
Multiple sections or throughout			
Chapter 1: Introduction			
Chapter 2: Community Profile			
Chapter 3: Risk Assessment			
Chapter 4: Threat Assessment			
Chapter 5: Mitigation Strategy			
Chapter 6: Plan Maintenance			
Appendices			

Attachment 3: Sample Agenda and Topics for the Hazard Mitigation Planning Team

This attachment includes a sample agenda and discussion topics for the annual meeting of the Planning 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 El Segundo or nearby in a way that affected the community?
 - Identify events that caused loss of life or significant injury to El Segundo community members, significant property damage in El Segundo, or widespread disruption to El Segundo.
 - 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**).

ITEMS 2: MITIGATION ACTION ACTIVITIES

- 2.1. What mitigation actions have been fully implemented? Are they working as expected, or do they need to be revised?
- 2.2. What mitigation actions have started to be implemented since the Planning Team last met? Is 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 El Segundo 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?

ITEMS 6: NEW BUSINESS

- 6.1. Are there any other items related to the Planning Team's mission?

Attachment 4: Hazard Mitigation Strategy

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN						
Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
PREPAREDNESS ACTIVITIES						
P01	Identify and pursue funding opportunities to develop and implement local mitigation activities.	General Fund, HMA Grants, Other Grants	Public Works	\$	Short-range	High
P02	Develop a public outreach and awareness program about the hazards in El Segundo and mitigation actions community members can do in their homes.	General Fund	Emergency Management Division	\$	Ongoing	High
P03	Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.	General Fund	Emergency Management Division	\$	Ongoing	High
P04	Inventory and develop replacement values for all City-owned assets and non-City assets to help the City better understand the values of assets at risk.	General Fund	Public Works, Planning Division	\$\$	Midrange	High
P05	Integrate appropriate items from the Local Hazard Mitigation Plan (LHMP) into the General Plan Safety Element and other regulatory documents as appropriate.	General Fund	Emergency Management Division, Planning Division	\$	Short-range	Medium
P06	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business, and industry to create interest in the implementation of mitigation actions.	General Fund	All Departments	\$	Ongoing	High
P07	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.	General Fund	Police and Fire Departments	\$	Ongoing	Medium

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
P08	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.	General Fund	City Manager's Office, Emergency Management Division	\$	Short-range	High
P09	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.	General Fund	Police and Fire Departments	\$	Ongoing	Medium
P10	Continue to develop mutual aid agreements and memoranda of understanding with agencies to serve emergency and disaster purposes.	General Fund	Police and Fire Departments	\$	Short-range	High
P10	Build a cadre of committed, trained volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency Response Team, communications staff, medical and health, and human services, during and after a disaster.	General Fund, Other Grants	Police and Fire Departments, Emergency Management Division	\$	Ongoing	High
MULTIPLE HAZARDS						
M01	Train City staff to meet Safety Assessment Program (SAP) requirements.	General Fund, Other Grants	Community Development Department, Fire Department	\$	Midrange	Medium
M02	Develop inventories of at-risk City buildings and infrastructure and prioritize mitigation projects.	General Fund	Public Works, Building & Safety Division	\$	Midrange	Low
M03	Develop inventories of at-risk private buildings and infrastructure and prioritize mitigation projects.	General Fund, HMA Grants, Other Grants	Building & Safety Division	\$\$\$	Midrange	Medium
M04	Identify and implement mitigation actions for critical City-owned facilities, services, and infrastructure deemed vulnerable to a natural hazard.	Capital Improvements Program Grants, HMA Grants	Public Works	\$\$\$	Midrange	Medium

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
M05	Construct another 6–10-million-gallon reservoir to fulfill the requirement of having 3 days of water supply on hand for the City.	Capital Improvements Program Grants	Public Works	\$\$\$	Midrange	High
M06	Assessment of sheltering, evacuation, and mass care capacity and capabilities.	HMA Grants, Other Grants	Recreation, Parks, and Library Department, Emergency Management Division	\$	Short-Range	Medium
SEISMIC HAZARDS (SEISMIC SHAKING, LIQUEFACTION, TSUNAMI)						
S01	Replace Fire Station #1 apparatus bay doors	General Fund, Capital Improvements Program Grants	Public Works	\$\$	Short-range	High
S02	Develop a program to assess private properties within the City for soft-story buildings requiring seismic retrofiting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	General Fund, HMA Grants, Other Grants	Building & Safety Division	\$\$	Long-range	High
S03	Conduct seismic evaluations of City-owned critical facilities to identify building integrity concerns.	General Fund, Capital Improvements Program Grants, HMA Grants	Public Works	\$\$	Midrange	Medium
S04	Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.	General Fund, HMA Grants	Public Works	\$\$	Midrange	Medium
COMMUNICATIONS AND INFORMATION SYSTEMS						
C01	Develop a South Bay regional mutual aid system for IT resources.	Other Grants	Information Technology	\$	Long-range	High
C02	Conduct Department assessment of critical IT services for continuity of operations	General Fund, Other Grants	Information Technology	\$	Short-range	High

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
C03	Implement high availability for critical IT services at a remote location.	General Fund, Other Grants	Information Technology	\$\$	Midrange	High
C04	Coordinate with utility companies and vendors to strengthen, safeguard, or take other appropriate measures (such as providing supplemental services) to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.	General Fund	Public Works, Emergency Management Division	\$	Short-range	Medium
C05	Coordinate with the South Bay Regional Public Communications Authority (RCC) in hazard mitigation efforts for El Segundo to protect two-way radio equipment (such as bracing antennas, securing repeaters, etc.) from hazards.	General Fund, HMA Grants, Other Grants	Police and Fire Departments	\$	Short-range	Low
C06	Create a redundant high-speed link to RCC. Investigate the need for a link to the Lifeguard Station.	General Fund	Information Technology	\$	Short-range	Medium
LANDSLIDES						
L01	Update landslide susceptibility mapping City-wide to identify potential conditions that may impact new or existing developments.	General Fund, HMA Grants	Community Development	\$\$	Long-range	Low
DROUGHT						
D01	Establish or maintain emergency interconnections with nearby water suppliers and cities to bring in additional water during a short- or long-term emergency.	Capital Improvements Program Grants, Enterprise Funds	Water Division	\$\$\$	Long-range	Medium

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
D02	Encourage property owners to retrofit their properties to become more water efficient. This may include incentives to retrofit low-flow, water-saving showerheads, toilets, and appliances; replace lawns with drought-tolerant landscaping; smart timer rebates; and ensuring water sprinklers function correctly and do not water hardscape.	General Fund, Enterprise Funds, Other Grants	Building & Safety Division, Water Division	\$	Ongoing	Medium
EPIDEMIC/PANDEMIC (PUBLIC HEALTH)						
E01	Share on City social media accounts and other messaging platforms official, science-based messaging about disease outbreaks, public health emergencies, and recommended protection/prevention methods.	General Fund	City Manager's Office	\$	Ongoing – As needed	Medium
FLOODING (LOCALIZED STORMS, SEA-LEVEL RISE)						
F01	Develop, maintain, and inform the public of evacuation procedures in the event of failure of the Hyperion Wastewater Plant's primary sewage reservoir or related equipment or facilities. Conduct annual outreach to residents and businesses regarding this information. (Source: GP Safety Element - Program PS5-1.1B)	General Fund, Enterprise Funds	Emergency Management Division, Public Works	\$	Short-range	Medium
F02	Monitor flood management infrastructure to determine current capacity and adequacy of effectively managing current stormflow conditions. Coordinate with Los Angeles County on maintenance, repair, or modification of flood channels, culverts, and storm drainage systems not owned by the City.	General Fund, Enterprise Funds, HMA Grants	Public Works	\$	Ongoing	Low

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
F03	Upgrade substandard storm drain facilities that do not meet current or projected stormwater flows and runoff.	Capital Improvements Program Grants, Enterprise Fund	Public Works	\$\$\$	Long-range	Low
HAZARDOUS MATERIALS RELEASES						
HZ01	Improve community alert capabilities for hazardous materials-based incidents.	General Fund	Emergency Management Division	\$	Short-range	High
HZ02	Evaluate air quality monitoring capabilities to determine gaps in reporting and information gathering.	HMA Grants, Other Grants	Fire and Public Works (Environmental)	\$\$	Midrange	Low
HZ03	Create a map identifying areas of potential methane hazards to better inform the development process	General Fund, HMA Grants	Fire Department, Community Development Department	\$\$	Short-range	High
HUMAN-CAUSED HAZARDS (TRANSPORTATION INCIDENTS [AIR, RAIL], MASS-CASUALTY INCIDENTS [MASS SHOOTINGS, TERRORISM])						
H01	Institute a Crime Prevention Through Environmental Design (CPTED) program. CPTED is a multi-disciplinary approach to deterring criminal behavior through environmental design.	General Fund	Building & Safety Division, Police Department	\$	Long-range	Low
H02	Continue offering active shooter training and exercises to City and external audiences.	General Fund, Other Grants	Police, Emergency Management	\$	Ongoing	Medium
H03	Adequately train City staff regarding civil unrest activities and communicating with residents and businesses.	General Fund, Other Grants	Police, City Manager	\$	Ongoing	Low
SEVERE WEATHER (EXTREME HEAT, SEVERE WIND, RAIN)						
W01	Continue to operate accessible, safe extreme temperature shelters in City recreation facilities, including the library.	General Fund	Recreation, Parks, and Library Department	\$	Ongoing – As Needed	High

TABLE 37. MITIGATION ACTIONS IMPLEMENTATION PLAN

Action #	Mitigation Action	Potential Funding Sources	Responsible Agency	Relative Cost	Time Frame	Priority
URBAN FIRES						
U01	Continue to inspect older buildings, multi-story structures, and fire-prone industrial facilities for fire safety. (Source: GP Safety Element - Program PS6-1.2A)	General Fund	Fire Department, Building & Safety Division	\$	Ongoing	High
U02	Develop an inventory of structures that are in compliance with fire protection system requirements within the City. Develop a pilot retrofit program for non-conforming properties to secure funding for sprinkler retrofits. (Source: GP Safety Element - Program PS6-1.2B)	General Fund, Other Grants	Fire Department, Building & Safety Division	\$	Ongoing	Medium
U03	Coordinate with Public Works to develop an assessment of the City's water distribution system capability to meet emergency fire-flow needs. (Source: GP Safety Element - Program PS7-1.1C)	General Fund	Public Works (Water), Fire Department	\$\$	Midrange	Medium
U04	Actively encourage residents to inspect chimneys at least once a year. Safe fireplace/chimney use and maintenance includes spark arrestors and emphasis on proper storage of flammable items.	General Fund	Fire Department	\$	Ongoing	High

Cost Estimates: \$ (Low): Less than \$25,000; \$\$ (Medium): \$25,001 – \$999,999; \$\$\$ (High): Greater than \$1,000,000