2023

Local Hazard Mitigation Plan

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Chapter 1 – Introduction

Plan Purpose and Authority

Hazard 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 itself often gets the most attention, it is only one part of a larger emergency management cycle.

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

The City of Vernon (City), like other communities, could potentially suffer severe harm from hazard events. Although large disasters may cause widespread devastation, minor disasters can have substantial effects even more. 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 visit. This LHMP provides a comprehensive assessment of the City's threats from natural and human-caused hazard events and a coordinated strategy to reduce these threats. It identifies resources and information to help community members, City staff, and local officials understand local threats and make informed decisions. The LHMP can also support increased coordination and collaboration between the City,

Key Terms

Hazard event: An emergency due to a natural or human-caused event that has the potential to cause harm.

Hazard Mitigation: Any sustained action or set of actions taken to reduce or eliminate impacts to people and property from events associated with naturally existing or human-created hazards.

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

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 (DMA 2000), creates a federal framework for local hazard mitigation planning. DMA 2000 states that jurisdictions that wish to be eligible for federal hazard mitigation grant funding must prepare a hazard mitigation plan that meets a specific set of guidelines and submit it to the Federal Emergency Management Agency (FEMA) for review and approval. These guidelines are outlined in the Code of Federal Regulations, Title 44, Part 201, and discussed in greater detail in FEMA's Local Mitigation Planning Handbook and Local Mitigation Plan Review Tool.

State Authority

California Government Code Sections 8685.9 and 65302.6

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

All cities and counties in California must prepare a general plan, which must include a safety element that addresses various hazard conditions and other public safety issues. As the community wishes, the safety element may be a stand-alone chapter or incorporated into another section. 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 the General Plan creates a more robust mechanism for implementing the LHMP.

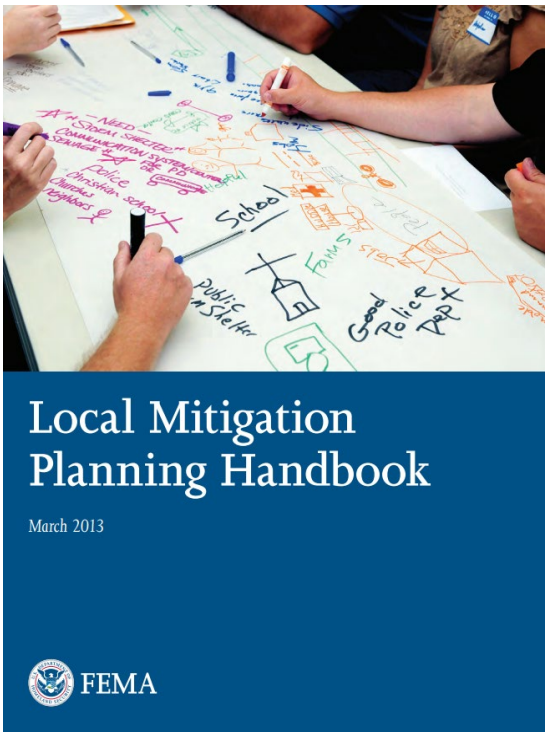
California Government Code Section 65302 (g)(4)

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

Because the LHMP can be incorporated into the safety element, including these items in the LHMP can satisfy the state requirement. SB 379 requires that climate change 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 the 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 any increased role in the City's governance or authorize either agency to take any specific action in the community.



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

Plan Organization and Use

The Vernon 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 up to improve resilience in the City. The LHMP is divided into the following chapters:

Chapter 1: Introduction. This chapter describes the background of the Plan, its goals and objectives, and the process used in its development.

Chapter 2: Community Profile. This chapter discusses the history of Vernon, its physical setting and land use designations, its demographics, and other essential community characteristics.

Chapter 3: Hazard Assessment. This chapter identifies and describes the hazards that pose a threat to Vernon and discusses past and future events and the effects of climate change.

Chapter 4: Vulnerability Assessment. This chapter describes the threat of each hazard on Vernon's critical facilities and community members, including socially vulnerable individuals.

Chapter 5: Mitigation Strategy. This chapter lists the mitigation actions to reduce Vernon's vulnerability to hazard events and provides an overview of the community's existing capabilities to improve hazard resilience.

Chapter 6: Plan Maintenance. This chapter summarizes the process for implementing, monitoring, and updating the LHMP and opportunities for continued public involvement.

Previous City LHMP

On October 20, 2004, the Vernon City Council adopted the Natural Hazards Mitigation Plan. This LHMP conforms to the original Disaster Mitigation Act of 2000. On October 20, 2009, this plan expired, and has not been updated. Since the adoption of this previous plan, the following programmatic changes have occurred, affecting updates to the City's plan:

FEMA updated its Guidance for Local Hazard Mitigation Planning Review Tool in 2011, which includes the following new requirements not covered in the 2004 LHMP:

- Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement Section 201.6(c)(4)(ii))
- Was the plan revised to reflect changes in development? (Requirement Section 201.6(d)(3))
- Was the plan revised to reflect progress in local mitigation efforts? (Requirement Section 201.6(d)(3))
- Was the plan revised to reflect changes in priorities? (Requirement Section 201.6(d)(3))

Since then, the City has taken steps to initiate the hazard mitigation planning process. Based on these circumstances, the City has developed this plan as a Single Jurisdiction Plan update, which establishes current goals and new priorities, mitigation actions, and strategies that address current issues and conditions within the City.

Plan Goals

The development of this plan is intended to increase resilience in Vernon broadly. The following are the overreaching goals developed for the City's 2023 LHMP Update:

- **Protect** against threats from natural hazards to life, injury, and property damage for Vernon residents, visitors, and employees.
- **Increase** public awareness of potential hazard events.
- **Preserve** critical services and functions by protecting key facilities and infrastructure.
- **Protect** natural systems from current and future conditions.
- **Coordinate** mitigation activities among City departments, neighboring jurisdictions, and with federal agencies.

- **Prepare** for long-term changes in hazard regimes.

These goals were revised from the 2004 plan goals and streamlined for easier use and understanding by City staff and members of the public.

Planning Process

State and federal guidance for LHMPs do not require that jurisdictions follow a standardized planning process. FEMA encourages communities to create their own planning process reflecting local values, goals, and characteristics. FEMA does suggest a general planning process that follows these general milestones:

The planning process used to create this LHMP is described in detail below.

Hazard Mitigation Planning Committee

The City established a Hazard Mitigation Planning Committee (hereafter referred to as the HMPC). The HMPC is made up of representatives from crucial City departments and stakeholder members that include representatives from local and regional agencies and companies that are key to hazard mitigation activities. Given the unique and primarily industrial/commercial nature of Vernon, a special Joint Committee Meeting was held with some of the key stakeholders of the City, including the Vernon Business and Industry Commission, the Green Vernon Commission, the Vernon Housing Commission, and representative from the Vernon Chamber of Commerce. The City coordinated with Los Angeles County Fire Department and Los Angeles County Disaster Management Area E.

Table 1-1 identifies the members who were invited and/or attended the HMPC Committee meetings.

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

Name	Title	Department
Lisa Pope (Primary POC)	City Clerk	City Clerk
Deborah Harrington	Interim Deputy City Clerk	City Clerk
Abraham Alemu	General Manager	Vernon Public Utilities
Daniel Wall	Director	Public Works and Development Services (Public Works Division)
Fredrick Agyin	Director	Health & Environmental Control
Michael A. Earl	Director of Human Resources	Human Resources and Risk Management
Scott Williams	Director / City Treasurer	Finance/ Treasury
Robert Sousa	Chief of Police	Vernon Police Dept.
Brandon Gray	Captain	Vernon Police Dept.
Al Yanagisawa	Fire Captain or Fire Marshal or Designee	Fire Department (LA County Fire)
Frank Forman	Battalion Chief	Fire Department (LA County Fire)
Lilia Hernandez	Assistant to City Administrator	Administration
Angela Kimmey	Deputy City Administrator	Administration
Lisa Umeda	Utilities Compliance Administrator	Vernon Public Utilities
Jessica Balandran	Utilities Compliance Analyst	Vernon Public Utilities
Aaron Pfannenstiel	LHMP Project Manager	Atlas Planning Solutions
Suzanne Murray	LHMP QA/QC	Atlas Planning Solutions
Crystal Stueve	LHMP Planner	Atlas Planning Solutions
Robert Jackson	LHMP Planner	Atlas Planning Solutions

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

Committee Meeting #1 (August 25, 2021): The Committee members confirmed the project goals and the responsibilities of the Committee. They revised the community engagement and outreach strategy, approved, prioritized the hazards in the Plan, and identified critical facilities for the threat assessment.

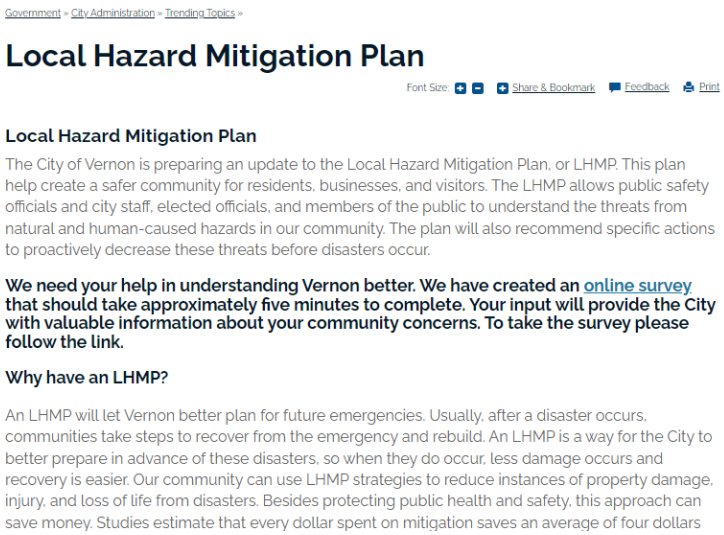
Committee Meeting #2 (February 22, 2022): Members held a detailed discussion about the results of the hazards assessment and mapping that showed the areas facing an elevated risk. The Committee also reviewed the hazard prioritization results.

Committee Meeting #3 (March 2, 2022): The Committee reviewed the risk assessment results to identify the populations and assets that may face more significant harm in a hazard event. The Committee also discussed potential hazard mitigation actions to address vulnerabilities, including reviewing the draft mitigation measures, making revisions, and assigning priorities.

Invitations to Committee meetings, as well as agendas/materials, were provided via email. **Appendix A** contains copies of invitations, meeting agendas and 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 members of the public to be involved in plan development—at a minimum, during the initial drafting stage and plan approval. The Committee chose to go beyond minimum standards and conduct more extensive community outreach to help ensure that the LHMP reflects community values, concerns, and priorities. The Committee developed a community engagement and outreach strategy to guide all public engagement activities. To ensure residents and employees were aware of the project, the City created a LHMP Update Project section on the City's website. The website included a link to the Hazard Mitigation Plan Survey. The Vernon Chamber of Commerce also distributed the survey link to the business owners of Vernon that comprise their members. **Appendix B** contains a copy of the digital project flyer and materials shared during a joint commission meeting and the Hazard Mitigation Plan survey results.


Government » City Administration » Trending Topics »

Local Hazard Mitigation Plan

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Local Hazard Mitigation Plan

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

We need your help in understanding Vernon better. We have created an online survey that should take approximately five minutes to complete. Your input will provide the City with valuable information about your community concerns. To take the survey please follow the link.

Why have an LHMP?

An LHMP will let Vernon better plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. An LHMP is a way for the City to better prepare in advance of these disasters, so when they do occur, less damage occurs and recovery is easier. Our community can use LHMP strategies to reduce instances of property damage, injury, and loss of life from disasters. Besides protecting public health and safety, this approach can save money. Studies estimate that every dollar spent on mitigation saves an average of four dollars

Vernon LHMP Webpage

Public Meetings

Virtual public meetings were a central component of the City's engagement efforts. These meetings provided an opportunity for members of the public to learn about the LHMP update project. Given the unique characteristics of Vernon's limited residential population and the more significant role played in Vernon by the Chamber of Commerce, the public hearings were conducted with the various commissions within the city, comprised of appointed local business owners and residents. Notices of each meeting were also distributed in advance on the City website's trending topics section, as shown here. These notices were also sent out to the local businesses currently enrolled as Vernon Chamber of Commerce members. This was done in accordance with City notification requirements, the engagement strategy, legal requirements, and best practices.

Public Engagement Opportunity #1 (December 15, 2021): A joint commission meeting with members of the Green Vernon Commission (GVC), Vernon Housing Commission (VHC), and the Vernon Business and Industry Commission (BIC). These commissions are composed of local business owners and residents appointed to their respective commissions. Participation in this joint commission meeting was outside of the hazard mitigation planning committee meetings conducted during the plan development process. The meeting presentation, agenda, and minutes for this opportunity are provided in **Appendix B**.

Public Engagement Opportunity #2 (September 6, 2022): The Vernon City Council released the Public Review Draft LHMP at its regularly scheduled meeting. This meeting included a presentation of the plan and process undertaken and provided opportunities for council members and the public to ask questions and provide feedback.

Appendix B includes a copy of the digital materials to promote these meetings.

Online Engagement

The City recognized that not all community members could attend public meetings and chose to conduct public engagement through social media and online platforms. To assist with engagement, the City set up a project website as a simple, one-stop location for community members to learn about the LHMP. The website included information about what a LHMP is and why the City prepared one. It had links to materials and LHMP documents as they became available and allowed public members to receive notifications about upcoming events.

The City also promoted the planning process through the following online methods:

- A page on the City's website dedicated to the Local Hazard Mitigation Plan
- A link to take the Vernon Hazards Survey: 2022 Vernon Hazard Mitigation Plan Survey Link
- Coordination with the Joint Commissions of Vernon, including the Vernon Business and Industry Commission, the Green Vernon Commission, and the

Vernon Housing Commission. This coordination was used to engage with community representatives and community interests.
- Worked with representatives from the Vernon Chamber of Commerce to disseminate information, raise project awareness amongst the many business owners and employees of Vernon, and solicit their input and comments on natural and human-caused hazards within Vernon. Distribution of this information went out to a mailing that contained over 1,400 email addresses.

A central part of the engagement strategy was an online survey. This survey asked community members about their experience and familiarity with emergency conditions, their level of preparedness for future emergencies, and preferred actions for the City to take to increase resiliency. The City distributed the survey online on the city website under "Trending Topics." The survey had responses from 10 individuals, all of which were provided in English. This response rate is approximately 10% of the City's current residential population. A summary of these responses is summarized here:

- Approximately 90% of respondents work in the City of Vernon.
- Approximately 40% of respondents have not been impacted by a disaster in their current residence.
- The top four hazards of concern for respondents were Seismic Hazards, Drought, Severe Wind Events and Air Pollution.
- Approximately 50% of respondents showed concern regarding climate change affecting future hazards.

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

NEIGHBORING JURISDICTIONS

The following are neighboring jurisdictions identified by the City for inclusion in the outreach strategy for the LHMP Update:

- California Water Service Company
- Maywood Mutual Water Company
- City of Los Angeles
- City of Huntington Park
- City of Maywood
- City of Commerce
- County of Los Angeles

Representatives from the County of Los Angeles Fire Department actively participated in the planning process. Others were notified using the City's existing contacts and methods for coordination with these neighboring agencies (phone, email, etc.)

Public Review Draft

On Tuesday, September 6, 2022, the City released a draft copy of the LHMP for public review and comment. The document was posted electronically on the City's website. The City distributed notifications about the public review draft through social media accounts and other online sources. The plan received no comments during the public review period.

Plan Revision and Adoption

Following the public review period, the City submitted the plan to Cal OES and FEMA. The City then made requested revisions to incorporate comments from state and federal agencies, as appropriate and submitted the final draft to City decision-makers. The Vernon City Council adopted the final LHMP on April 4, 2023. **Appendix C** contains a copy of the adoption resolution.

Plan Resources

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

Table 1-2: Key Resources for Plan Development

Section	Key Resources Reviewed	Data Incorporated from Resource
Multiple	• Cal-Adapt • California Department of Conservation • California Geological Survey • California Office of Emergency Services • California State Hazard Mitigation Plan • City of Vernon General Plan • City of Vernon Natural Hazards Plan (2004) • FEMA Local Hazard Mitigation Plan Guidance • National Oceanic and Atmospheric Administration • National Weather Service • US Geological Survey • US Census Bureau 2015-2019 American Community Survey	• Science and background information on different hazard conditions • Records of past disaster events in and around Vernon • Current and anticipated climate conditions in and around Vernon • Projections of future seismic conditions and events
Community Profile	• US Census Bureau 2015-2019 American Community Survey	• Demographic information for Vernon and Los Angeles County

	• City of Vernon General Plan Background Reports • California Energy Commission	• History of the region • Economic trends in Vernon • Commute patterns in Vernon • Local land-use patterns • Background information on utilities serving Vernon
Hazard Assessment (Air Pollution)	• California's Fourth Climate Assessment • California State Hazard Mitigation Plan	• Air quality reports and studies • Historical records of air pollution levels in the state, LA County region
Hazard Assessment (Epidemic/ Pandemic)	• California Department of Public Health • Centers for Disease Control • World Health Organization	• Science and historical records of disease outbreaks
Hazard Assessment (Drought)	• Cal Adapt • US Drought Monitor	• Historic drought information • Current drought conditions
Hazard Assessment (Flood Hazards)	• FEMA Map Service Center • Los Angeles County Flood Control District	• Records of past flood events in and around Vernon • Locations of flood-prone areas in Vernon
Hazard Assessment (Human-Caused Hazards)	• Global Terrorism Database	• Historical records of terrorism
Hazard Assessment (Hazardous Materials Release)	• Agency for Toxic Substances and Disease Registry • Cal OES Spill Release Reporting Database	• Location and dates of past hazardous materials release • Effects of hazardous materials release
Hazard Assessment (Seismic Hazards)	• California Department of Water Resources • US Drought Monitor • Western Regional Climate Center	• Science and background information on extreme weather events • Historical record of extreme weather events in and around Vernon
Hazard Assessment	• California Department of Water Resources • US Drought Monitor	• Records of past wind events

(Severe Weather Hazards)	• Western Regional Climate Center	• Location of severe wind hazard zones in and around Vernon

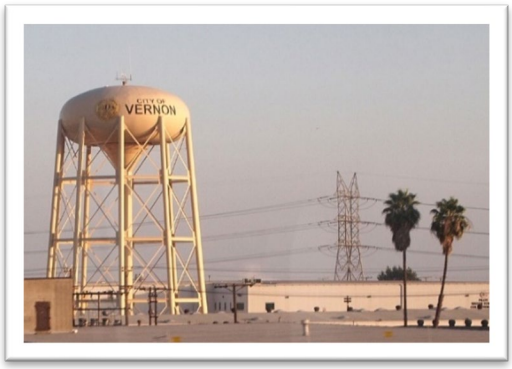
Note: Sections that are not individually called out in this table relied primarily on sources identified in multiple sections.

Chapter 2 – Community Profile

The Community Profile section of the LHMP is a summary of Vernon, 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 Vernon, which inform the development of the hazard mitigation actions in Chapter 5.

Setting and Location

Vernon is located in the southern part of Los Angeles County and encompasses roughly 5.2 square miles. According to the US Census, the residential population in 2020 was 222. However, during the day, the City's working population drastically increases to over 55,000. It is bordered by the cities of Los Angeles to the north and west, Huntington Park to the south, and Commerce and Maywood to the east.



The famous Vernon Water Tower

The City experiences an average of 283 sunny days per year, compared to a national average of 205 days. There is rarely any recorded snowfall in Vernon, ranking it as one of the least snowy places in California. Vernon experiences roughly 14.9 inches of rain every year, compared to the national average of 38.1 inches per year. The average temperature in Vernon ranges between 70-83°F for most of the year.[1]

Vernon is known as the industrial heart of Southern California. Vernon is home to major manufacturers, processors, warehouses, and distributors who have made Vernon their home for more than a century. Vernon businesses employ a labor force of almost 55,000 people from nearby communities and neighboring cities throughout the greater Los Angeles area. More than 1,800 businesses based in Vernon include food processors, textile companies like fashion apparel manufacturers, furniture manufacturers, electronics manufacturers, paper product producers, and business logistics companies. Some well-known businesses with significant operations in Vernon include Farmer John, Dunn-Edwards, and Tapatio Hot Sauce.

Vernon offers some distinct advantages for business owners compared to other nearby cities in L.A. County. Vernon offers lower permit fees; lower electricity, water, and natural gas utility rates as Vernon owns and operates its own utility company; excellent city services custom tailored to variety of specific business needs; easy access to major transportation

[1] https://www.bestplaces.net/climate/city/california/vernon

hubs (trains, airport, highways, and the harbor); and is privileged to have a substantial skilled workforce readily available, as it is located in the heart of Los Angeles County. Vernon has been exclusively industrial since the city was incorporated in 1905. Vernon has maintained a business-friendly environment that enables the city to remain one of the most attractive locations for businesses throughout Southern California.[2]

History

In the 1870s, the area in and around present-day Vernon was settled by a small group of farmers, including a Civil War hero named Captain George R. Vernon. The unincorporated rural farming district was referred to as both Vernondale and Vernon and included a good deal of what we now know today as South Los Angeles.

For many, Vernon was known as the "garden spot" of Los Angeles County and was the epitome of Southern Californian agricultural abundance and temperance. The entire area was lined and filled with magnolias, orchards of citrus and other fruits, berry patches, palm, and pear trees. Vernon became an agricultural magnet for the area as its loamy soil was ideal for crops such as alfalfa and corn. Vernon was truly an agrarian paradise. Water rights and the debate over control of those rights were a constant battle with the city of Los Angeles. The booming growth of Los Angeles during the 1880s was a threat to the rural farmland way of life in Vernon, and as early as 1889, Vernon residents sensed that their agricultural utopia was coming to an end.

By the 1890s, Vernon was divided into east and west, and developers had begun to suburbanize vast tracts of land. Much of Vernon was annexed by the city of Los Angeles and swallowed up into the ever-expanding, bourgeoning metropolis. An aspiring businessman named John B. Leonis began to purchase all of the remaining farming land on the eastern side of Vernon to begin the industrialization of the city. His vision for Vernon was not a land of ranches and farms but a modernized city of industry, providing economic growth and profits. As Vernon began to change, so too did its official status within the state, and Vernon was officially incorporated on September 22, 1905.[3]

By the 1920s, Vernon was a thriving manufacturing center, and, in many ways, it could be considered America's first "industrial park." Consequently, a steady stream of longtime residents left Vernon for other opportunities. By 1929, Vernon had 300 industrial plants in the city and roughly 20,000 workers. As more and more businesses began to make their home in Vernon, fewer and fewer residents remained, and the City's true metamorphosis into an industrial city began in earnest.

The city has continued to grow over the years and has cemented itself as one of the leading industrial cities in Southern California, serving as an economic lynchpin within the Los Angeles region. The city is now home to over 1,800 businesses with a workforce of almost

[2] City of Vernon California homepage, "Vernon Means Business"
[3] Masters, Nathan. May 30, 2014. KCET "How did Los Angeles Lose its Not-So-Central Park"

55,000 workers from multiple industries; some of the most prominent include food and agriculture, apparel, warehousing, and the manufacturing of plastics and glass. Vernon has maintained strong charitable ties with the surrounding neighboring communities, where so many of Vernon's hard-working people live. The City provides significant financial support for public services, including education and health care. Today, Vernon remains one of the most industrious cities in California.[4]

Demographics

Due to the unique industrial nature and small residential population, Vernon presented some challenges and discrepancies within the official sources (2020 U.S. Decennial Census and the 2015-2019 American Community Survey-ACS) used to research and identify the population and demographics of the City. The following demographics tables and breakdowns within this section were created using the 2015-2019 American Community Survey data.

Race/Ethnicity/Age

The data used in this section comes from the most comprehensive American Community Survey (ACS), administered by the United States Census Bureau (U.S. Census) completed in 2018 and the California Department of Finance (DOF). According to the 2019 ACS, the City's 2019 population was estimated to be 130, with a median age of 26.5. This median age is 10 years younger than the Los Angeles County median age of 36.5. **Table 2-1** identifies the race/ethnicity and age demographics for both the City and Los Angeles County, which indicates that the percentage of senior residents (aged 65 and older) in the City is 9.5% less than the rest of Los Angeles County. Additionally, a greater proportion of Vernon's residents rent their housing (90.7%) compared to Los Angeles County residents (54.2%) (**Table 2-1**).

Vernon's residential makeup, like most surrounding communities, is predominantly a family community. In both Vernon and Los Angeles County, about two-thirds of households are families. At 3.02 persons per household, the average household size in Vernon is higher than the national average, and Los Angeles County's average household size of 2.99 is only slightly lower than Vernon. Vernon and the wider region have a similar mix of age groups; however, Vernon has a much higher percentage of residents under the age of 18, while Vernon is at (37.7%) of the population compared to Los Angeles County at (22.0%) of the total population.

In terms of its racial and ethnic composition, Vernon's majority race as a population is Hispanic or Latino at 75%. The second-largest population is White non-Hispanics, with 23.8% of all residents. Black or African American come in as the third-largest population at 9.0%. As an ethnically diverse community, Hispanic or Latino residents comprise the largest ethnic group, followed by non-Hispanic White, Black or African American, and Asian residents (**Table 2-2**).

[4] Mears, Hadley. May 19, 2017. Curbed Los Angeles, "Vernon: The Implausible History of an Industrial Wasteland. How one unscrupulous landowner spoiled the city's reputation"

Table 2-1: Basic Demographics, Vernon and Los Angeles County (2019)

Demographics	Vernon	Los Angeles County
Total Population	**130**	**10,081,570**
Percent of children who are less than 10 years old	34	1,207,970
Percent of residents who are senior citizens (65+)	5	1,335,978
Median Age	26.5	36.5
Total households	45	3,542,800
Median household income	$67,917	$68,044
Percent of rental households	41 (90%)	1,797,279 (54.2%)

Note: Percentage values are rounded to the nearest tenth decimal.
Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

Table 2-2: Racial and Ethnic Composition, Vernon and Los Angeles County (2020)

Race or Ethnicity	Vernon		Los Angeles County	
	POPULATION	PERCENTAGE	POPULATION	PERCENTAGE
White	53	23.8%	5,482,585	54.4%
Black	20	9.00%	931,544	9.2%
American Indian and Alaskan Native	3	1.35%	162,763	1.6%
Asian	15	6.76%	1,647,167	16.3%
Native Hawaiian and Other Pacific Islander	0	0.00%	56,950	0.6%
Another Race	97	43.7%	2,242,205	22.2%
Two or more races	34	15.3%	12,628	0.1%
Total	**222**	**100%**	**3,155,816**	**100%**
Latinx (of any race) *	168	75%	4,888,434	48.5%

* The US Census Bureau does not currently count persons who identify as Latinx as a separate racial or ethnic category. Persons who identify as Hispanic or Latinx are already included in the other racial or ethnic categories
Source: 2020 Decennial Census
Note: Percentage values are rounded to the nearest tenth decimal.

Vernon residents have attained a lower level of higher education in comparison to Los Angeles County. For example, a smaller proportion of the population has attained bachelor's and professional degrees, roughly 13.2% of the City's residents versus 32.5% of the County's residents. However, other categories also differ. For example, Vernon has a lower percentage of people not having education past 9th grade (8.8% in Vernon versus 12.3% in the County); Vernon also has a lower percentage of people not having graduated high school (2.9%) in comparison to the County (8.6%). **Table 2-3** shows all levels of educational attainment of residents 25 years of age or older in both Vernon and Los Angeles County.

Table 2-3: Educational Attainment of Residents 25+ Years of Age in Vernon and Los Angeles County

Educational Attainment	Vernon		Los Angeles County	
	Number	Percentage	Number	Percentage
Less than 9th grade	6	8.8%	844,290	12.3%
9th grade to 12th grade (no diploma)	2	2.9%	592,769	8.6%
High school graduate or equivalent	15	22.1%	1,419,449	20.6%
Some college (no degree)	30	44.1%	1,306,985	19.0%
Associate degree	6	8.8%	482,323	7.0%
Bachelor's degree	9	13.2%	1,460,862	21.2%
Graduate or professional degree	0	0.0%	780,217	11.3%
Total	**68**	**100%**	**6,886,895**	**100%**

Source: 2019 American Community Survey
Note: Percentage values are rounded to the nearest tenth decimal.

In the City, Spanish is the primary spoken language in the home. The second most-spoken language in the home is English. Vernon has a wide range of non-English languages spoken at home among its residents, with varying proficiency levels. The majority of the residents speak English, with approximately 17.7% that are not fluent in English; this is lower than Los Angeles County as a whole, where that same percentage is approximately 23.3% not being fluent in English. Indo-European languages are the third most-spoken languages in Vernon, with approximately 5.3% of these speakers unable to speak English fluently. This is slightly higher than the rest of Los Angeles County, where a majority of Indo-European language speakers can speak English fluently. **Table 2-4** shows Vernon's most spoken languages and fluency levels among speakers aged five and older in both Vernon and Los Angeles County.

Table 2-4: English Proficiency and Languages Spoken at Home Among Residents 5 Years or Older in Vernon and Los Angeles County (2019)

Languages	Vernon		Los Angeles County	
	Number of Speakers	Percentage not fluent in English	Number of Speakers	Percentage not fluent in English
English only	30	0.0%	4,111,587	0.0%
Spanish	74	9.7%	3,716,660	15.8%
Indo-European*	6	5.3%	503,528	1.9%
Asian and Pacific Islander*	3	2.7%	1,032,901	5.6%
All other languages	0	0.0%	105,409	0.3%
Total	**113**	**17.7%**	**9,470,085**	**23.3%**

*Census data does not break down the specific languages for languages spoken in these regions, 2019 American Community Survey
Note: Percentage values are rounded to the nearest tenth decimal.

Economy and Commute Patterns

Vernon Civic Center

Vernon has a diverse economy with major employers consisting primarily of warehouses and factories. The main industries are foodservice manufacturing, metalworking, apparel companies, and glass and plastic equipment manufacturing. Vernon boasts a healthy employment base of approximately 38,767 jobs divided among 1,800 businesses.[5] Of these industries, manufacturing, wholesale trade, transportation and warehousing, waste management and remediation, and retail trade make up 91.6% of the jobs in the city. **Table 2-5** displays the top five industry types, number of employees, and percentage of workforce within Vernon.

Table 2-5: Top Five Industries in Vernon

Industry Type	Number of Employees	Percentage of Total Vernon Workforce
Manufacturing	16,951	43.7%
Wholesale Trade	11,988	30.9%
Transportation and Warehousing	3,872	10.0%
Waste Management and Remediation	1,742	4.5%
Retail Trade	980	2.5%
Totals	35,533	91.6%

Source: United States Census Bureau, 2019, https://onthemap.ces.census.gov/

According to the ACS, as of 2019, of the 83 Vernon residents (16 years and over and eligible for employment), approximately 58 (69.9%) of them are working within the City labor force. This local workforce accounts for a mere 0.15% of the entire workforce in Vernon, with the remaining workforce coming from surrounding cities throughout the region. **Table 2-6** shows the top ten cities that contribute to Vernon's workforce, accounting for 46% of those employed within the City. The remaining 54% of the employee workforce within Vernon is drawn from surrounding cities and communities (not listed individually within the data set).

[5] https://onthemap.ces.census.gov/

Table 2-6: Top Ten Cities-of-Origin for Vernon's Workforce (2019)		
Cities-of-Origin for Vernon's Workforce	**Number of Employees**	**Percentage**
Los Angeles	10,313	26.6%
Huntington Park	1,242	3.2%
South Gate	1,175	3.0%
East Los Angeles	1,067	2.8%
Long Beach	793	2.0%
Florence-Graham	784	2.0%
Downey	779	2.0%
Maywood	610	1.6%
Compton	533	1.4%
Lynwood	533	1.4%
Total	**17,833**	**46%**
Source: United States Census Bureau, 2019, https://onthemap.ces.census.gov/		

While most of Vernon's workforce commute outside the city for work, most of those employees (53.7%) travel less than 10 miles to reach their place of employment. Approximately 12.8% of commuters traveled 50 miles or more, with most of those trips heading from the southern Orange County and San Bernardino/Riverside County areas. The city boasts convenient freeway, rail, and air access to Los Angeles, San Diego, Riverside, and San Bernardino Counties. **Table 2-7** shows the inflow of workers to Vernon from other worksites in the region.

Table 2-7: Work Commute Distances for Vernon's Workforce (2019)		
Work Destinations for Vernon's Residents	**Number**	**Percentage**
Less than 10 miles	20,808	53.7%
10 to 24 miles	9,782	25.2%
25 to 50 miles	3,197	8.3%
Greater than 50 miles	4,980	12.8%
Total	**38,767**	**100%**
Source: United States Census Bureau, 2019, https://onthemap.ces.census.gov/		

Development Trends

Vernon is located within a dense part of Los Angeles County and has not experienced significant residential growth since incorporation as it is primarily an industrial city. As previously stated, the residential population of Vernon is small, while the daytime and nighttime workforce populations are much larger.

Regional Housing Needs Allocation (RHNA)

The Regional Housing Needs Allocation (RHNA) is mandated by State Housing Element law. The RHNA process determines the amount of housing growth each county and city must plan for during the 2021-2029 sixth cycle Housing Element. The RHNA ensures that all cities accept and are responsible for their fair share of the region's future housing needs, based on forecasted population growth over the next eight years. Given Vernon's industrial nature, the allocation for the city is only nine new units over the next eight years, spread across the four income levels. **Table 2-8** displays Vernon's requirements.

Table 2-8: 6th Cycle Regional Housing Needs Allocation for Vernon

Income Level Units	Units
Very-Low Income (<50% of AMI) *	5
Low Income (50-80% of AMI) *	4
Moderate Income (80-120% of AMI) *	0
Above Moderate Income (>120% of AMI) *	0
Total	**9**

Source: Southern California Association of Governments, https://scag.ca.gov/rhna
*AMI - Average Median Income

West Side Specific Plan

The City is currently developing and finalizing the Westside Specific Plan. This plan will serve as the next major step in Vernon's desire to evolve as a city. The West Side of Vernon, in its present condition of mixed land uses, building configurations, and various parcel sizes, coupled with its relative proximity to the Arts District in the City of Los Angeles, presents a unique opportunity for Vernon to begin the next step in the City's evolution. The plan calls for new zoning and development standards, which will dictate what can be developed in the various portions of the planning area. It will also create the implementation strategy governing infrastructure improvements, catalytic projects, and methods of financing the projects.

A map of Vernon including the proposed planning area for the West Side Specific Plan.

The plan's vision is the addition of multifamily residential and mixed-use development and other non-industrial uses that currently are the city's primary land use designation. There are many benefits to the project, including an increased economic opportunity for property and business owners, increased amenities for residents and employees, the establishment of new development regulations while still protecting existing established businesses, long-term stabilization of the City's financial position, and providing a greater opportunity of resilience to climate change and future economic shifts. The plan will allow Vernon to maintain its regional competitive advantage as a center of industry and production while creating a more prosperous, diversified, and resilient community.[6]

Since the 2004 LHMP update, development activities within the City have been minimal and have not increased vulnerabilities within the community. While development activities are minimal during the past five years, the City has been taking steps to increase community investments through the Housing Element update and West Side Specific Plan, which is anticipated to reduce future vulnerabilities.

Infrastructure Assessment

Infrastructure plays a vital role in mitigating the effects of hazard events. When infrastructure fails, it can exacerbate the extent of certain hazards or create complications for rescue workers trying to reach victims. For example, fallen utility poles, as a result of strong winds or seismic activity, can obstruct roadways and prevent emergency vehicles from reaching affected areas. The following are Vernon's electrical, gas, water and wastewater, and infrastructure transportation networks.

Electricity

Vernon receives its electrical supply from Vernon Public Utilities Department (VPU). This department serves as an essential resource to the city's business community, providing dependable, high-quality utility services at very competitive rates. VPU offers electricity, water, natural gas, and fiber optic services to Vernon-based businesses, often at a lower price than neighboring utility providers. The City-owned electricity has a strong, established history of reliability, capable of efficiently and successfully serving the needs of the City's unique business community.[7]

Natural Gas

The Natural Gas Division of the City of Vernon's Public Utilities Department serves as an important resource for the city's business community, providing reliable, high-quality services at some of the lowest rates in the State of California. The Vernon-owned natural gas distribution system has a history of strong and steady operation and has advanced capabilities to effectively serve the City's large manufacturing sector. The transmission pipeline is seven miles long and delivers natural gas to the MGS Power Plant from the two

[6] Reimagine Vernon, "About the Westside Specific Plan", https://www.reimaginevernon.com/about
[7] https://www.cityofvernon.org/government/public-utilities

distribution regulator stations. The transmission line is located at least five feet below the street and is coated to prevent corrosion.

Vernon's gas system, along with the SoCalGas Company system that also serves customers in Vernon, together from an extensive network of underground piping and above-ground meters transports this critical fuel source. The VPU takes great pride in its educational programs provided to the community about natural gas safety and awareness of the pipe networks located in and under the City.[8]

WATER SERVICES

The majority of the City of Vernon customers are supplied water through VPU's Water Services. However, there are several Vernon businesses in the northeast and southeast of the city that are supplied water by California Water Service Company and Maywood Mutual No. 3, respectively. The Water Department is responsible for potable drinking water for Vernon and provides this service at some of the lowest rates in Los Angeles County and the region. This is accomplished by maintaining its own system of wells, piping systems, and reservoirs. With service to over 1,000 customers, the Water Department distributes approximately 2.2 billion gallons of water annually. They are known for maintaining the highest quality and safety standards and have been recognized by some leading governmental utilities analysts. They are responsible for the construction of new service infrastructure and the maintenance of the various system pieces, whether that be the pipelines, reservoirs, or wells.

The systems help maintain the quality of Vernon's drinking water by monitoring and inspecting water well installation to keep up and maintain the high standard level when it comes to water quality for Vernon. The Department regularly takes water samples from various locations within its jurisdiction and submits them to a laboratory for water quality analysis. Vernon's water supplies for the city come from several different sources, including municipal wells and private wells. VPU also has a direct connection to the Metropolitan Water District as a way to supplement water demand during peak demand or emergencies.[9]

WASTEWATER

Los Angeles County Sanitation Districts are public agencies focused on converting waste into resources like recycled water, energy, and recycled materials. The agency consists of 24 independent special districts serving about 5.6 million people in Los Angeles County. The 24 sanitation districts work cooperatively with one administrative staff headquartered in the nearby City of Whittier to maximize efficiency and reduce costs. The sanitation districts were created in 1923 to construct, operate, and maintain facilities that collect and treat domestic and industrial wastewater (sewage). The agency operates and maintains the regional wastewater collection system, including approximately 1,400 miles of sewers, 48

[8] https://www.cityofvernon.org/government/public-utilities/electric-services
[9] https://www.cityofvernon.org/government/public-utilities/water-division

pumping plants, and 11 wastewater treatment plants that transport and treat about half the wastewater in Los Angeles County. Collectively, the Sanitation Districts treat about 400 million gallons of water per day, which is enough to fill the Rose Bowl nearly five times a day. Over the last 50 years, the Sanitation Districts have been the nation's largest producer of recycled water.

TRANSPORTATION

Much of the transportation infrastructure in Vernon consists of roadways designed for cars and large trucks used for the transportation of goods and manufacturing supplies. Vernon is also home to the BNSF and the Union Pacific Railyards used to transport goods and supplies. There are several modes of travel into and out of the City, including freeways, surface streets, busses, shuttles, and local/regional commuter trains.

There are 4 Interstates (I), I-5 (to the northeast), I-10 (to the northwest), I-110 (to the west), and the I-710 (to the east) surrounding the City and connecting Vernon to the greater Los Angeles and the Southern California regions. All interchanges from these freeways connect to major thoroughfares within the City. **Table 2-9** identifies the freeways that connect to the City of Vernon and the connections to the City's local transportation network.

Table 2-9: City of Vernon Transportation Infrastructure

Freeways near Vernon	Direction	Exists Serving the City of Vernon
I-5	Northwest/Southeast	S. Soto St, E. Slauson Ave, and Bandini Blvd
I-10	West/East	S. Santa Fe Ave, S. Alameda St
I-110	North/South	E. Vernon Ave, E. Slauson Ave
I-710	North/South	Bandini Blvd, S. Atlantic Blvd, E Washington Blvd

Source: https://www.google.com/maps/place/Vernon,+CA/@34.0026592,118.1985993,15.01z/data=!4m5!3m4!1s0x80c2c8d3cfe0eeaf:0x2165b53b36077693!8m2!3d34.003903!4d-118.230073

Public transportation options within Vernon are provided by Los Angeles Metro. Metro offers two types of public transit types that operate local train and bus services. The A Line of the Los Angeles Metro Rail service stops at Vernon Station (an at-grade light rail station), approximately one-quarter of a mile from the City, at the intersection of Vernon Ave and Long Beach Ave. From here, passengers can continue to Long Beach or take the Metro Bus service from here. The Metro Bus Service provides over 10 routes servicing local stops within Vernon and connections to neighboring cities in Los Angeles County.

Vernon Station (LA Metro Blue Line)

While Los Angeles International Airport (LAX) is not located inside the City limits, it is within 10 miles of the city. LAX plays a unique and crucial role in the Los Angeles County community as it is the only airport that provides international and domestic commercial passenger and air cargo services and is the primary provider of general aviation services and facilities in the county. Other airports within 15 miles of the City include Long Beach Airport (southeast of the City) and Burbank Airport (northwest of the City), which both serve as smaller private airports, used for domestic flights.

Chapter 3 – Risk Assessment

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

Hazard Identification

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 do not pose a threat to Vernon. **Table 3-1** lists the hazards considered and explains the reasoning for inclusion/exclusion. For context, this table also shows if a hazard is recommended for consideration by FEMA, if it is included in the 2018 California State Hazard Mitigation Plan (SHMP), and if it is included in the 2019 County of Los Angeles All-Hazards Mitigation Plan (CLAHMP).

Table 3-1: Hazard Evaluation for Vernon LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Agricultural Pests	SHMP	No	Vernon has no agricultural uses within the City that contribute to the economy.
Air Pollution	SHMP	Yes	Vernon is a major industrial and manufacturing city and, as a result, has a large amount of transportation truck/train activity. As a biproduct of manufacturing and transportation, the city experiences higher than average air pollution. It is a hazard of concern for the city, and the HMPC felt it should be addressed in the LHMP. Air pollution is a state and regional issue addressed through plans and regulations administered by the South Coast Air Quality Management District and/or California Air Resources Board.
Aircraft Incident	SHMP	No	The City is located near the Los Angeles International Airport. Given the lack of past incidents, the HMPC determined that this hazard should not be included in the plan.
Aquatic Invasive Species	SHMP	No	Vernon has no major riparian environments where aquatic invasive species could endanger the community.

Avalanche	FEMA guidance SHMP	No	Vernon is not located within potential avalanche zones.
Civil Disturbance or Riot	SHMP	No	The HMPC determined that civil disturbances of the degree that would endanger property or life to residents generally do not have a very high potential to occur, as the City does not present itself as a high priority target.
Climate Change	SHMP CLAHMP	Yes	Climate change is discussed as a function of each relevant hazard and is mentioned throughout the Plan.
Coastal Flooding and Storm	FEMA guidance SHMP	No	Vernon is not located along the coast of California. Coastal flooding and storms are not anticipated to impact the community.
Cyber Threats	SHMP	No	The HMPC decided that while this is a serious problem, it does not pose a threat to Vernon.
Dam Failure	FEMA guidance SHMP CLAHMP	Yes	The HMPC determined due to the proximity to Hansen Dam and the potential for inundation to impact the community, and they identified dam failure as a hazard of concern.
Drought	SHMP	Yes	Droughts are a recurring and potentially severe hazard in Vernon especially as climate change increases overall temperatures and decreases precipitation levels.
Energy Shortage	SHMP	No	Vernon produces its own energy and has a reliable history. The HMPC felt that the city is not at any more risk of energy shortage than the surrounding communities.
Epidemic, Pandemic, Vector-Borne Disease	SHMP	Yes	Vernon is in Los Angeles County, which has experienced several health-related incidents in the past. It is within proximity to a major airport, major attractions (i.e., Crypto.Com Arena, Dodger Stadium, etc.), and educational institutions that introduce new opportunities for diseases in the region. The City and the rest of the country are currently responding to a global pandemic (COVID-19), which has impacted staff and resources.
Erosion	FEMA guidance SHMP	No	Erosion does not occur within the City and was not deemed a hazard of concern.
Expansive Soil	FEMA guidance	No	Expansive soils are not located within the City. While they exist, the City requires compliance with the California Building Code, which is intended to mitigate hazards associated with this condition.

Extreme Cold	FEMA guidance SHMP	No	Temperatures in Vernon do not fall to a level that would be considered a danger to public safety.
Extreme Heat	FEMA guidance SHMP	No	In the past, extreme heat has occurred in Vernon; however, given Vernon's low residential population, the HMPC determined that it is not a hazard of concern.
Fault Rupture	FEMA guidance SHMP OC HMP	No	There are no known Alquist-Priolo fault zones located within Vernon; however, seismic hazards were identified. As a result, the HMPC did not identify fault rupture as a potential seismic hazard of concern.
Flooding	FEMA guidance SHMP	Yes	Several stream courses transect the City and are identified within FEMA flood hazard zones. While significant flooding events have not recently affected properties within the City, the presence of these flood zones indicates the potential for future hazards. Levees were constructed along the LA River in the southeast of the city and protect the area.
Fracking	SHMP	No	Fracking does not occur in Vernon.
Hail	FEMA guidance SHMP	No	Hail that is severe enough to pose a threat to people and property is too rare in Vernon to be included.
Hazardous Materials release	SHMP	Yes	The presence of uses for storing, manufacturing, disposing, and transporting hazardous materials was identified as a concern for the HMPC. In addition, several major roadways, freeways, and rail lines transecting the City allow for the transport of these materials that could endanger the community if a release into the environment were to occur.
Hurricane	FEMA guidance SHMP	No	Hurricanes do not occur in Vernon.
Infrastructure Failure	SHMP	No	The HMPC determined that while infrastructure failure can pose a threat to people and property in Vernon, it is not a hazard of concern.
Landslide	FEMA guidance SHMP CLAHMP	No	Areas within the City of Vernon have the potential for landslides to occur (primarily along the LA River) as a secondary effect of seismic activity. The danger to the City is minimal, and the HMPC determined it is not necessary to include it in the LHMP.

Levee Failure	SHMP	No	Some levees have been put in place near the LA River, lessening flood opportunities in that portion of the city. The HMPC did not identify levee failure as a hazard of concern.
Lightning	FEMA guidance	No	Although lightning occasionally occurs in Vernon, it does not pose a significant threat to people or property.
Liquefaction	FEMA guidance SHMP CLAHMP	Yes	According to mapping prepared by the California Geological Survey, portions of the City are located within liquefaction-prone areas. This is discussed within the Seismic Hazards section of the LHMP.
Methane-containing Soils	SHMP	No	The City does not have methane-containing soils that threaten the public health and safety of residents and businesses. However, the City does have two closed landfills that could contribute to the release of methane gas. Further discussion of this is provided in the Hazardous Materials Release hazard profile.
Natural Gas Pipeline Hazards	SHMP	No	Natural gas pipelines are run through Vernon and could pose a danger to people and property if they were to breach and release their contents into the community. However, given no real history of occurrence, the HMPC determined this is not a concern for the City.
Oil Spills	SHMP	No	There is no history of oil drilling and extraction within the City. Based on this, the HMPC did not think this hazard needed to be addressed.
Power Failure	SHMP	No	Vernon produces and distributes its own power and has a reliable history. The HMPC felt that the city is not at any more risk of power failure than the surrounding communities.
Radiological Accidents	SHMP	No	There are no known major sources of radiation in Vernon or the immediate surrounding area that could pose a serious threat to the community.
Sea-level Rise	FEMA guidance SHMP CLAHMP	No	Vernon is not located near the coast, so sea-level rise is not a concern for the City.
Seiche	FEMA guidance SHMP	No	There are no major bodies of water in Vernon that could be subjected to seiche.
Seismic Shaking	FEMA guidance SHMP CLAHMP	Yes	Vernon is in a seismically active area where shaking can be severe enough to damage property or cause loss of life. For this reason, the HMPC determined it should be addressed

			in this plan. It is discussed within the seismic hazards section of the LHMP.
Severe Wind	FEMA guidance	Yes	Severe Weather includes discussions regarding severe wind, which the HMPC determined is the severe weather-related hazard that is most common in Vernon.
Severe Weather and Storms	FEMA guidance SHMP CLAHMP	No	Severe Weather includes discussions regarding extreme heat, severe wind, and rain, which are weather-related hazards. The HMPC determined that these are not concerns to the City.
Storm Surge	FEMA guidance	No	Vernon is not a coastal community.
Subsidence	FEMA guidance	No	The HMPC believed that subsidence does not directly threaten the City; therefore, it is not a hazard of concern.
Mass-Casualty Incident (Terrorism)	SHMP	No	The HMPC was not concerned about mass-casualty incidents posing a threat to public safety.
Thunderstorm	SHMP	No	Thunderstorms that cause damage and endanger public safety are rare in the Southern California region.
Tornadoes	FEMA guidance SHMP	No	Tornadoes are not known to have ever occurred in Vernon.
Transportation Accidents	SHMP	Yes	Due to the presence of major freeways and roadways in and around Vernon, transportation accidents could endanger public safety. A discussion of this is in the Hazardous Materials Release section of the LHMP.
Tree Mortality	SHMP	No	Vernon is a primarily industrial city and does not have a significant urban forest or tree inventory.
Tsunami	FEMA guidance SHMP CLAHMP	No	Vernon is not a coastal community.
Urban Fire	SHMP	No	The HMPC did not identify urban fires as a major hazard of concern and risk to property and life in Vernon.
Volcano	SHMP	No	There are no volcanoes near Vernon to reasonably pose a threat.
Wildfire	FEMA guidance SHMP CLAHMP	No	Vernon does not have a wildland urban interface, or any areas of concern for wildfire.

After hazard evaluation and the organizational changes made by the Committee, this Plan discusses eight broad hazard types, which include sub-categories, where appropriate:

Seismic Hazards
- Seismic Shaking
- Liquefaction

Air Pollution
Hazardous Materials Release
Drought
Epidemic/Pandemic
Flooding
Severe Wind
Dam Failure

Hazard Scoring and Prioritization

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

Probability: The likelihood that the hazard will occur in Vernon 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 Vernon.
Secondary impacts: The severity of indirect damage of the hazard to Vernon.

Weighting values for these criteria are based on FEMA recommendations and described in **Table 3-2**.

Table 3-2: FEMA Recommended Criterion Scoring

Probability [Weighting -2.0] The estimated likelihood of occurrence based on historical data.	**Score**	**Maximum Probably Extent (Primary Impact)** [Weighting -0.7] The anticipated damage to a typical structure in the community.
Unlikely—less than a 1 percent chance each year.	1	Weak—little to no damage
Occasional—a 1 to 10 percent chance each year.	2	Moderate—some damage, loss of service for days
Likely—a 10 to 90 percent chance each year.	3	Severe—devastating damage, loss of service for months
Highly likely—more than a 90 percent chance each year.	4	Extreme—catastrophic damage, uninhabitable conditions
Location [Weighting -0.8] The projected area of the community affected by the hazard	**Score**	**Secondary Impact** [Weighting -0.5] The estimated secondary impacts to the community at large.
Negligible—affects less than 10 percent of the planning area.	1	Negligible—no loss of function, downtime, and/or evacuations
Limited—affects 10 to 25 percent of the planning area.	2	Limited—minimal loss of functions, downtime, and/or evacuations
Significant—affects 25 to 75 percent of the planning area.	3	Moderate—some loss of functions, downtime, and/or evacuations
Extensive—affects more than 75 percent of the planning area.	4	High—major loss of functions, downtime, and/or evacuations

After calculating the total impact score for each hazard (sum of the location, maximum probable extent, and the secondary impact). FEMA guidance recommends multiplying the total impact score by the overall probability to determine the final score for each hazard. A final score between 0 and 12 is considered a low-threat hazard, 12.1 to 42 is a medium-threat hazard, and a score above 42 is considered a high-threat hazard. This final score determines the prioritization of the hazards. **Table 3-3** shows each hazard's individual criterion scores, final score, and threat level based on the above prioritization process.

Earthquakes are high priority hazards because they are likely to happen, affect a wide area, and can be very damaging.
Source Image: LA Times.

Table 3-3: Hazard Scores and Threat Level

Hazard Type*	Probability	Impact			Total Score	Hazard Planning Consideration
		Location	Primary Impact	Secondary Impacts		
Seismic Hazards[1]*	4	4	4	4	64.00	High
Drought*	4	4	4	3	60.00	High
Epidemic/ Pandemic*	3	4	1	4	35.40	Medium
Flooding*	3	2	3	3	31.20	Medium
Air Pollution*	3	4	1	2	29.40	Medium
Hazardous Materials Release	4	2	2	1	28.00	Medium
Severe Wind*	3	2	2	3	27.00	Medium
Dam Failure	1	3	3	4	13.00	Medium

* Climate Change considerations discussed as appropriate within this hazard.
1 Seismic Hazard includes: Seismic Shaking, Liquefaction

Hazard Profiles

Seismic Hazards

Seismic hazards of concern in Vernon include seismic shaking and liquefaction.

Description

Seismic shaking

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

Liquefaction

Liquefaction occurs when seismic energy shakes an area with low-density, fine grain soil, like sand or silt, that is also saturated with water. When the shaking motion reaches these areas, it can cause these loosely packed soils to suddenly compact, making the waterlogged sediment behave more like a liquid than solid ground. During liquefaction events, the liquified soil can lose most of its stability, which can cause damage to buildings and infrastructure built upon it. In severe cases, some buildings may completely collapse. Pipelines or other utility lines running through a liquefaction zone can be breached during an event, potentially leading to flooding or the release of hazardous materials.

Location and Extent

Seismic Shaking

The intensity of seismic shaking occurs in relation to the amount of energy discharged by the seismic event, which is dictated by the length and depth of the fault. The longer and nearer the surface the fault rupture is, the greater the seismic shaking. In most cases, areas nearest to the fault rupture experience the greatest seismic shaking, while more distant areas experience less shaking. Seismic shaking can damage or destroy structures leading to partial or even total collapse. The shaking of the ground can also damage or destroy underground utilities or pipelines, potentially leading to releases of hazardous materials as well as flooding if water lines are breached.

Southern California, including Vernon, is a highly seismic area as a result of the major faults that run through the region and is subject to experiencing seismic shaking. The intensity of seismic shaking is usually measured with the Modified Mercalli Intensity (MMI) scale, which is based on the amount of observed damage. 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. Given Vernon's small size, however, it is unlikely that different sections of the City would report different MMI measurements, but it is more likely that Vernon would report a different MMI measurement than a distant city in Los Angeles

County that was closer to a potential fault rupture. The MMI scale depicted in **Table 3-4** uses Roman numerals on a 12-point scale to measure each degree of shaking intensity.

Table 3-4: Modified Mercalli Intensity Scale

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

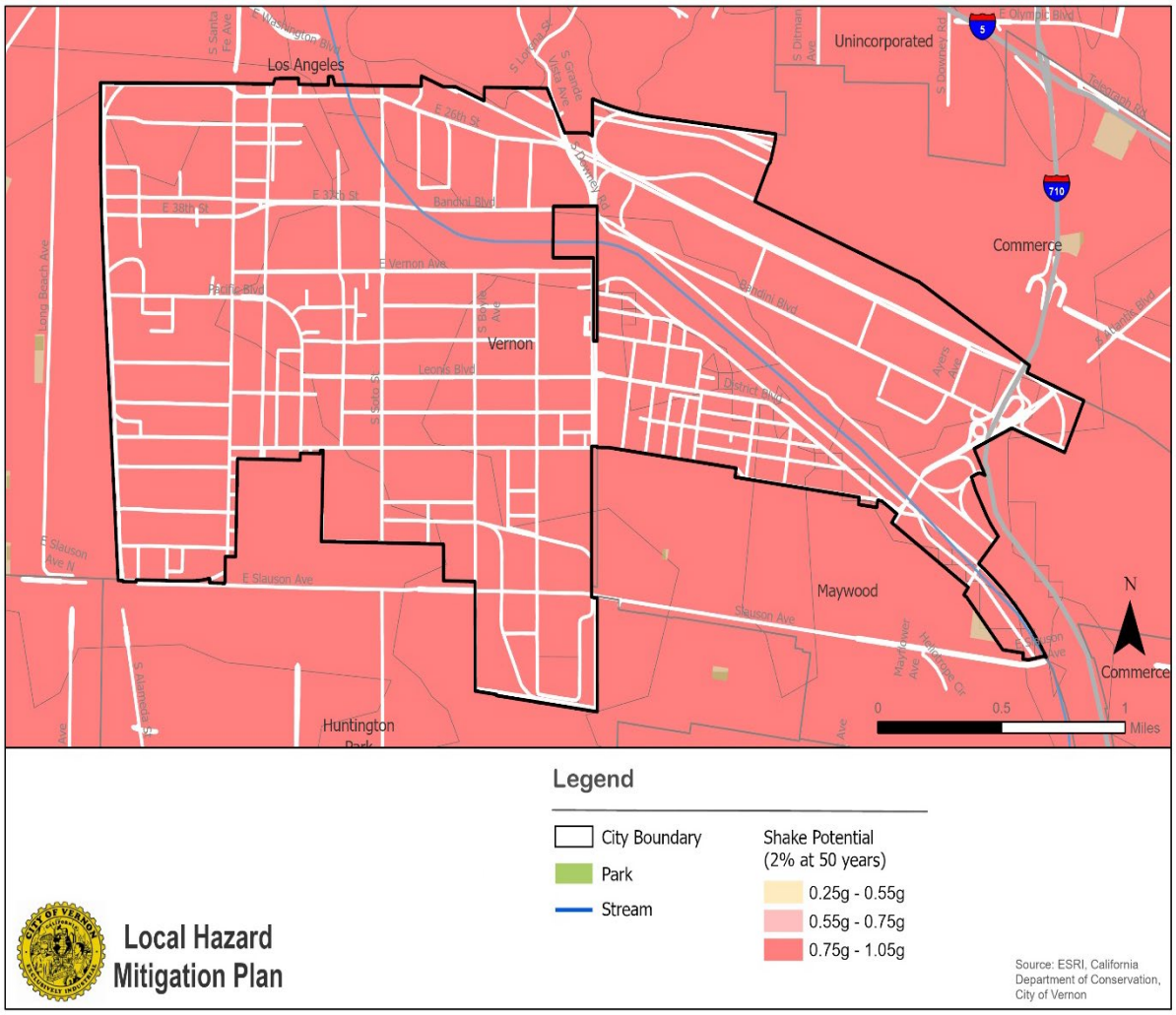
Source: United States Geological Survey. 2019. *The Modified Mercalli Intensity Scale.* https://earthquake.usgs.gov/learn/topics/mercalli.php

Another scale for measuring seismic shaking is the moment magnitude scale (MMS, denoted Mw or simply M). The MMS measures the energy released by the fault rupture beginning at 1.0 and increasing as the earthquake's energy grows. The MMS is a logarithmic scale, meaning that the difference between numbers on the scale multiplies as they increase. An earthquake with 5.0 M is approximately 1.4 times greater than 4.9 M, 32 times greater than 4.0 M, and 1,000 times greater than 3.0 M. The MMS has replaced the Richter scale, which is no longer used since it loses effectiveness when measuring larger earthquakes.

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, so if, for example, an earthquake's acceleration is measured at 765 centimeters per second, the shaking is modeled as 765/980, or .781 g (78.1% g). **Figure 3-1** shows the predicted intensity of seismic shaking in Vernon using percent g.

Figure 3-1: Seismic Shaking Intensity in Vernon



LIQUEFACTION

Soils must be saturated with water for liquefaction to occur. Areas with high water tables generally have saturated soil since the distance between the shallowest aquifer and the surface is minimal. Areas with alluvial soils—soft sands, silts, and clays—are also susceptible to liquefaction as these soils are fine grain and generally do not bond together well. Liquefaction events do not have a scale of measurement; however, other factors can be used to assess the extent of damage associated with a liquefaction event, such as:

Liquefaction caused by the 1964 Niigita, Japan earthquake caused these apartment blocks to experience severe leaning. Image from the University of Washington.

- Soil type
- Strength of seismic shaking in the area of liquefaction
- Size of the affected area
- Degree of destruction because of the liquefaction

According to the California Geological Survey (CGS), most of the City of Vernon is in a liquefaction hazard zone consistent with other southeastern Los Angeles County cities, including Huntington Park, Downey, Compton, and Cerritos. This is due to nearly all the area's soil consisting of sandy alluvial soil and the high-water table.[10] **Figure 3-2** shows the liquefaction susceptibility zones in Vernon designated by CGS.

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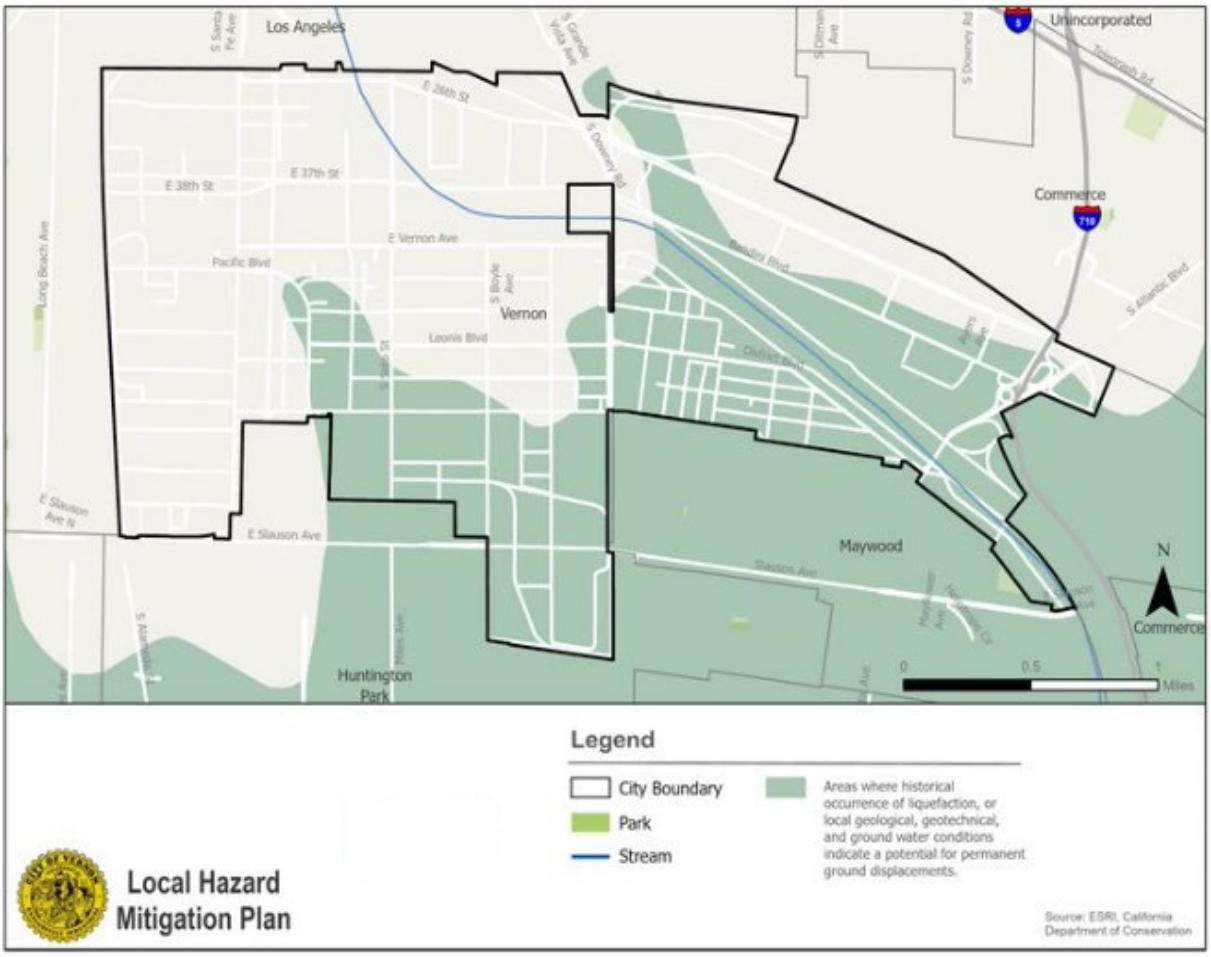
SEISMIC SHAKING

While no significant earthquake has originated within Vernon in the last 100 years, Vernon has felt the shaking of regional earthquakes. The nearest earthquake event to Vernon that caused significant damage throughout the Southern California region was the Northridge Earthquake of 1994, which caused an estimated $49 billion in property damage and resulted in the deaths of at least 57 people. More than 8,700 people were injured, including over 1,600 who required hospitalization. This quake destroyed apartment buildings, malls, California State University Northridge; parking structures collapsed, it caused the damage to multiple freeways and interchanges (most notably causing enough damage to Interstate 10 to close and congest surface streets for three months while it was repaired) and caused moderate to severe damage to over 15,000 structures. For days afterward, thousands of people and their homes had no electricity or gas; approximately 50,000 people had little to no water. Los

[10]California Geological Survey. 1998. "Seismic Hazard Zone Report for the Los Alamitos 7.5-Minute Quadrangle, Los Angeles and Orange Counties, California." http://gmw.conservation.ca.gov/SHP/EZRIM/Reports/SHZR/SHZR_019_Los_Alamitos.pdf

Angeles Mayor Richard Riordan declared a state of emergency and issued curfews in the area. Governor Pete Wilson and President Bill Clinton visited Los Angeles to see firsthand the damage caused.

Figure 3-2: Liquefaction Susceptibility Zones in Vernon



Other strong, regional earthquakes have occurred in the Southern California region, but their epicenters have been significantly distant from Vernon that seismic shaking did not cause significant property damage or harm to the City. **Table 3-5** shows significant earthquakes – magnitude 6.0 M_w or greater – that have occurred within 100 miles of Vernon since the beginning of the 20th century.[11]

[11] Federal Emergency Management Agency. 2003. California Earthquake, Aftershocks (DR-799). https://www.fema.gov/disaster/799

Liquefaction

There is limited information on the occurrence of past liquefaction events in Vernon. The nearest and most recent liquefaction event occurred near the mouth of the San Gabriel River at Alamitos Bay because of the Long Beach Earthquake in 1933. It was reported that pavement buckled, cracks appeared in the ground, and "mud volcanoes" erupted in the Los Alamitos area.[12]

Risk of Future Events

Seismic Shaking and surface Rupture

Vernon is in a seismically active area with many faults in the surrounding area and region-at-large. The only known faults that run through Vernon are the Puente Hills fault and the Elysian Park fault. These fault lines run northeast of Vernon City Hall through E 27th Street and S Santa Fe Avenue and cross the intersection of Bandini Boulevard and S Soto Street. If an earthquake were to occur on these faults, the rupture would occur underground, so there is no risk of fault rupture to residents or structures on the surface. There would still be danger posed by any seismic shaking, which could damage buildings or infrastructure.

Table 3-5: Significant Earthquakes (6.0+Mw) Within 100 Miles of Vernon

Event Name	Distance (Miles)*	Magnitude
1918 Hemet Earthquake	74	6.8
1933 Long Beach Earthquake	30	6.3
1952 Kern County	82	7.7
1971 San Fernando Earthquake	30	6.5
1986 North Palm Springs Earthquake	93	6.0
1992 Big Bear Earthquake	82	6.7
1994 Northridge Earthquake	23	6.7

*Distance between the epicenter and Vernon **Civic Center**.

It is almost inevitable that an earthquake will occur along one of the adjacent or regional fault lines and cause a major seismic event. The Third Uniform California Earthquake Rupture Forecast (UCERF3), released in 2015, provides an assessment of the probability of a major earthquake on various faults between 2015 to 2044. **Table 3-6** shows the results for Vernon's nearby and regional fault lines.

In addition to UCERF3 forecasts, which project the odds of a major earthquake on local and regional faults, the U.S. Geological Survey forecasts the severity of seismic shaking in

[12] California Geological Survey. 1998. "Seismic Hazard Zone Report for the Los Alamitos 7.5-Minute Quadrangle, Los Angeles and Orange Counties, California." https://filerequest.conservation.ca.gov/?q=SHZR_019_Los_Alamitos.pdf

different locations for various plausible earthquake scenarios. **Table 3-7** shows the anticipated shaking in Vernon from some of these scenarios.

Table 3-6: Earthquake Probabilities for Key Faults near Vernon (2015-2044)

Fault	Distance (Miles)*	Probability			
		6.7+ M_w	6.7+ M_w	6.7+ M_w	6.7+ M_w
Elysian Park	0.5	0.05%	<0.04%	<0.01%	Negligible
Puente Hills	0.5	0.70%	0.51%	0.08%	Negligible
Newport-Inglewood	6.5	0.52%	0.38%	0.07%	Negligible
Raymond	8	1.17%	0.76%	0.22%	<0.01%
Hollywood	8	1.46%	1.11%	0.25%	<0.01%
Whittier	10.5	0.49%	0.43%	0.25%	Negligible
Compton	15	0.81%	0.76%	0.26%	<0.01%
Palos Verdes	15.5	2.79%	2.54%	0.10%	Negligible
Sierra Madre	18	1.17%	1.12%	0.78%	0.03%
San Jose	20.5	0.31%	0.21%	0.02%	Negligible
Peralta Hills	23	0.23%	0.15%	0.06%	Negligible
San Joaquin Hills	27.5	0.40%	0.38%	0.24%	Negligible
Chino	28	0.60%	0.16%	0.07%	Negligible
Cucamonga	29.5	1.09%	0.97%	0.61%	0.03%
San Pedro	29.5	1.58%	0.75%	0.19%	Negligible
San Andreas†	37	19.51%	19.09%	17.20%	6.81%
San Jacinto	45.5	4.24%	4.23%	4.18%	2.32%

* Distance between **Vernon** Civic Center and the nearest point of the fault. All distances are approximate.
† Southern California segments only.
Note: **UCERF3 results consist of two individual models (3.1 and 3.2), each of which provides rupture probabilities for each segment of the fault. This table shows the maximum probability for a section of the fault in either model.**

The U.S. Geological Survey scenarios show that the Newport-Inglewood Fault could cause the strongest seismic shaking in Vernon, the next being the Anaheim fault or Puente Hills fault. As noted in **Table 3-6**, the likelihood of a powerful earthquake occurring along these faults within the next 25 years is exceptionally low. The Palos Verdes, San Jacinto, and San Andreas faults are capable of producing more intense earthquakes but are less likely to cause damage in Vernon due to their greater distance from the City.

Table 3-7: Selected Shaking Scenarios for Vernon

Fault	Magnitude	Distance to Epicenter (Miles)*	MMI in Vernon
Compton	7.45	4	VIII (Destructive)
Elysian	6.65	7	VIII (Destructive)-VII (Very Strong)
Puente Hills	7.08	10	VIII (Destructive)
Hollywood	6.7	11	VII (Very Strong)
Raymond	6.71	12	VII (Very Strong)
Newport-Inglewood	7.2	13	VII (Very strong) – VIII (Destructive)
Anaheim	6.4	18	VIII (Destructive)
Peralta Hills	6.6	26	VII (Very strong)
Whittier	7.0	25	VII (Very strong) – VIII (Destructive)
Chino	6.8	32	VI (Strong)–VII (Very strong)
Palos Verdes	7.4	26	VII (Very strong)
San Jacinto	7.3	59	VI (Strong)
San Andreas	7.9	57	VI (Strong)

*Distance between Vernon City Hall and the epicenter (the point on the surface above where the fault rupture began).

Liquefaction

Due to the types of soil in Vernon and the surrounding area, the City faces a substantial risk of a liquefaction event as long as the water table remains as high as it currently is. Since liquefaction events are triggered by seismic shaking, the probability of a liquefaction event depends on the likelihood of an earthquake. An earthquake could occur along the numerous local faults running through the southernmost part of Los Angeles County. More regional faults, like the San Andreas or San Jacinto, are more likely to experience a significant earthquake within the next quarter-century but may be too distant from Vernon to generate significant shaking intensity to trigger a liquefaction event.

Climate Change Considerations

Seismic Shaking

There is no *direct* link between climate change and seismic activity that could impact Vernon, so climate change is not expected to cause any changes to the frequency or intensity of seismic shaking. Some research indicates that climate change could result in "isostatic rebounds," or a sudden upward movement of the crust as a result of reduced downward weight caused by glaciers. As glaciers are known to melt when overall global temperatures increase, climate change could *indirectly* lead to increased seismicity in Southern California.

LIQUEFACTION

Climate change is anticipated to change the usual precipitation patterns in Southern California. Periods of both rain and drought are anticipated to become more intense and frequent. This means that more precipitation will likely occur during rainy periods, and droughts are expected to last longer. As a result, the groundwater aquifer beneath Vernon and Los Angeles County, as a whole, could rise during intense periods of precipitation; however, longer-lasting drought may lead to more groundwater withdrawal and could lower groundwater elevations. Therefore, depending on the circumstances, climate change could either increase or decrease the future risk of liquefaction in Vernon.

DROUGHT

DESCRIPTION

A drought is a period in which water supplies become scarce. This can occur for a variety of reasons. In California, droughts occur when precipitation is limited for an extended period. Rain arrives in California from winter storms and atmospheric rivers, channels of moist air located high in the atmosphere. When winter storms and atmospheric rivers bring less than usual moisture, a reduced total amount of precipitation falls on the state.

Winter storms are associated with the El Niño Southern Oscillation (ENSO) cycle, a regional meteorological phenomenon in the southern Pacific Ocean consisting of variations in ocean water and air temperature. These variations give rise to two distinct phases known as El Niño, the warm and wet phase, or La Niña, the dry and cold phase.[13] When the La Niña phase is active, lower than normal precipitation levels are the result.

Drought may also occur when infrastructure connecting communities to long-distance water sources is degraded or fails. This can occur due to deferred maintenance results of a natural disaster. For example, many Southern California cities would experience drought conditions should the State Water Project or Colorado Aqueduct become severed during a powerful earthquake event.

LOCATION AND EXTENT

Most of the City of Vernon is supplied water through the Vernon Water Department. There are, however, some businesses in Vernon that are supplied water by either California Water Service Company or Maywood Mutual Water Company. Since Vernon's water sources come from the Central Groundwater Basin, it is unlikely that Vernon would undergo a long-distance drought — a drought that occurs when a distant water source becomes less available. Given that most of Vernon's water comes from local groundwater sources, this type of drought event would have to be exceptional or prolonged for the City and its residents to feel the impact.

[13] "What is ENSO?" https://www.climate.gov/enso

The U.S. Drought Monitor Classification Scheme is a common scale used to measure the impact of droughts in different communities across the United States. See **Table 3-8** for a complete description of each drought event classification.

Table 3-8: U.S. Drought Monitor Classification Scheme

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

*** D0 areas are those under "drought watch" but not technically in a drought. They are potentially heading into drought conditions or recovering from drought but not yet back to normal.**
Source: US Drought Monitor. 2019. Drought Classification. https://droughtmonitor.unl.edu/AboutUSDM/AbouttheData/DroughtClassification.aspx

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Shasta Lake Reservoir seen during the 1976-1977 drought. Image from Steve Fontanini

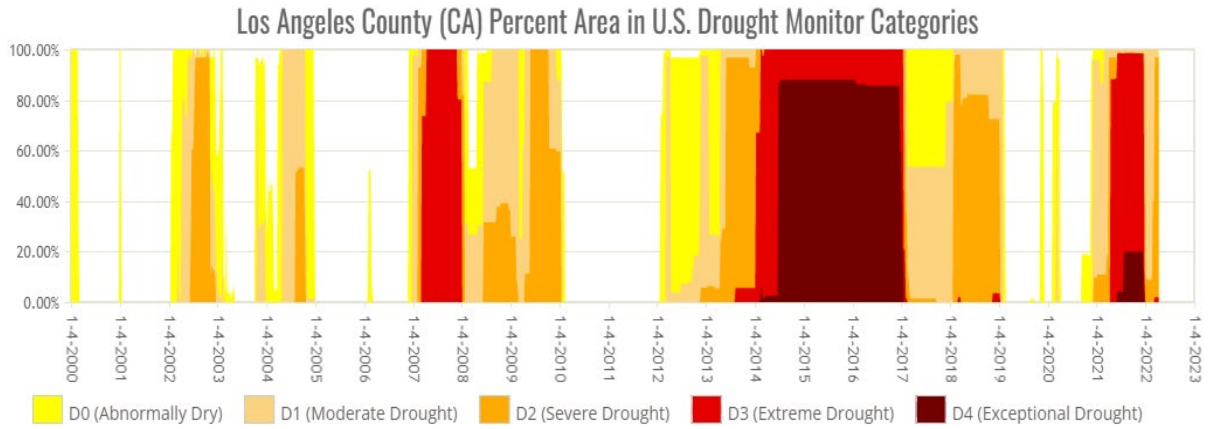
Like the rest of California, Vernon has experienced many drought events throughout its history. Each event has been different, with varying lengths, severity, and frequency. One of the earliest recorded major droughts in state history is the "Great Drought," which occurred in 1863 and 1864. This drought killed 46 percent of the cattle in the state and ultimately led to the decline of cattle ranching.[14]

The "Dustbowl Droughts" lasting from 1928 to 1935 caused great impacts on the state's agriculture. The effects of this drought were so severe that it sparked the movement to create some of California's modern water irrigation infrastructure, such as the California Aqueduct. Another drought occurred in 1976 and 1977, leading to agricultural losses estimated at nearly $1 billion. This drought led to water-saving practices still in effect today across the state. Further water conservation practices were enacted during a drought lasting from 1987 to 1993 which caused agricultural damages at an estimated $250 million each

[14] Crawford, R. June 1991. "The Great Drought: Fickle Weather in 1860s Led to Breakdown of Cattle Industry." *Los Angeles Times.* https://www.latimes.com/archives/la-xpm-1991-06-13-nc-780-story.html

year.[15] California experienced one of its most intense and recent droughts beginning in 2012 and lasting until 2017. All areas of the state were impacted, and by 2014, it was reported as the most severe drought in 1,200 years. **Figure 3-3** illustrates the severity of the drought conditions experienced over the past 20 years in Los Angeles County. By the summer of 2014, almost all of California was experiencing D2 (severe drought) conditions. Vernon, along with all of Los Angeles County and more than 75 percent of California, was reported as experiencing D4 (Exceptional Drought) conditions. By 2015, emergency water-saving mandates were enacted, requiring all jurisdictions to reduce water use by 25 percent.

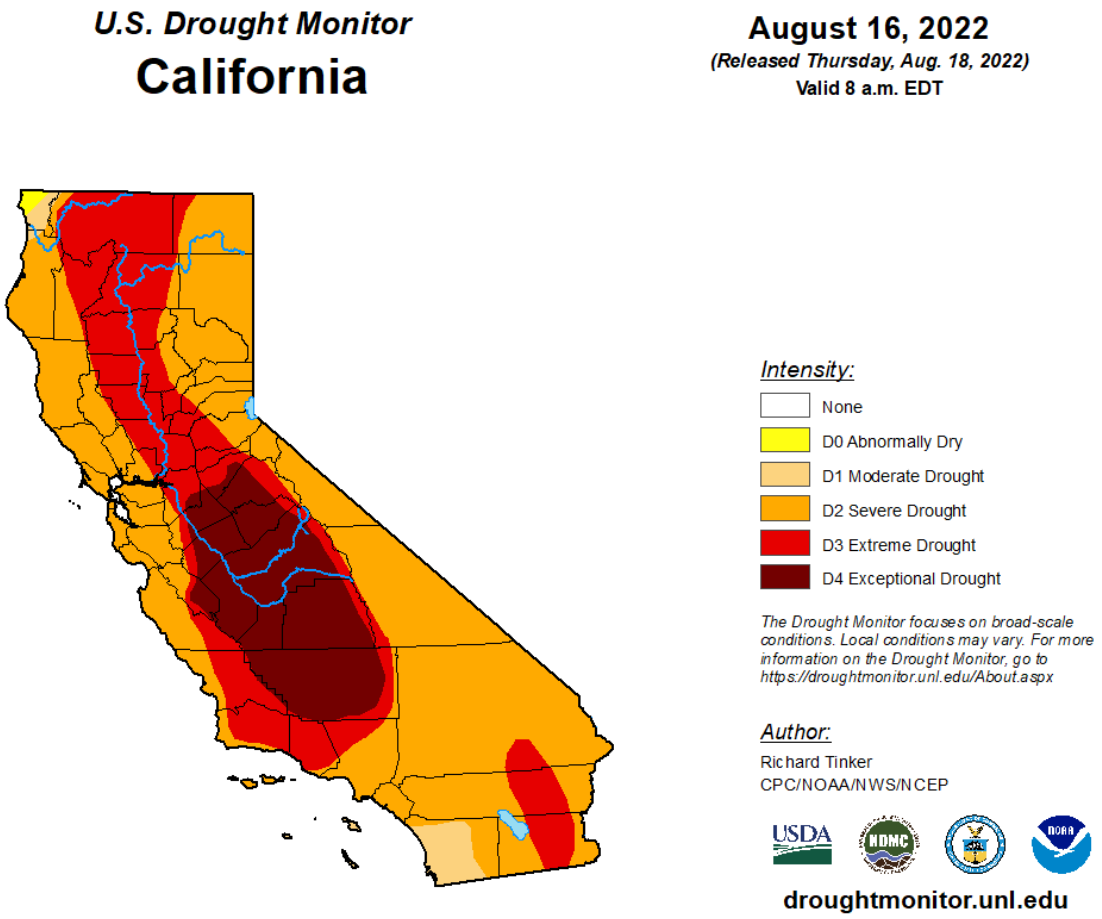
Figure 3-3: Drought Conditions in Los Angeles County (2001-2021)



In late 2016 and early 2017, successive heavy rainy seasons helped end the drought conditions in the state. The following winter, in late 2017 and early 2018, rains did not return in the same quantity, and slight drought conditions returned across California. This moderate drought was again abated in the winter season of late 2018 and early 2019 when heavy rains ended any existing drought conditions. As of April 12, 2022, almost 50% of California was experiencing at least D3 (Extreme Drought) conditions. Vernon and Los Angeles County were experiencing D2 (Severe Drought) conditions, as depicted in **Figure 3-4**, which displays statewide drought conditions as of August 16, 2022.

[15] Grad, S. and Harrison, S. April 2015. "3 crippling droughts that changed California." *Los Angeles Times*. https://www.latimes.com/local/california/la-me-california-retrospective-20150413-story.html

Figure 3-4: U.S. Drought Monitor



Risk of Future Events

Drought will continue to be a foreseeable event in the future of California, including Vernon. Since most droughts are almost entirely contingent on global weather phenomena, which vary from year to year, it is impossible to predict the frequency or severity of future drought events in Vernon. Droughts that result from infrastructure failure are equally impossible to predict since the circumstances that lead to infrastructure failure are unique to each situation.

Climate Change Considerations

Climate change is anticipated to abate drought in certain situations; however, projections suggest that future drought events could become more frequent and intense in the future. In some cases, climate change-intensified weather patterns, like ENSO, may bring more rain to California and Vernon, which would abate drought conditions. In other years, climate change may also prolong the La Niña phase of ENSO, which could lead to longer periods with no precipitation in California.

Climate change is also expected to increase the average temperature and cause more frequent and prolonged heat waves in the region. During these events, water supplies may be affected within the City. Hotter temperatures may also lead to increased surface water evaporation, leading to greater water consumption. If a drought occurs coupled with heatwave events, additional strain could be placed on City infrastructure, including the water supply.

From a regional perspective, warmer overall temperatures in California are anticipated to reduce statewide water supplies. Much of California's water comes from melted snow in the High Sierra. As the average temperature grows warmer with climate change, the precipitation that falls as snow is expected to shift towards rain. As less snow falls, the amount of melted water from the snowpack in the Sierra Nevada will decrease, reducing the water that will flow into the reservoirs and aqueducts that supply Southern California. While the City does not currently rely on water supplies from Metropolitan Water District (MWD), reductions in water availability could strain supplies for neighboring communities that do, impacting the quality and availability of water supplies within the Los Angeles County Groundwater Basin, which could affect future water supplies.

Epidemic/Pandemic

Description

There are two general classifications to describe the geographic spread of disease. An epidemic is an infectious disease that spreads beyond a localized area, reaching people throughout a large region. A pandemic is an infectious disease that spreads around the world. An infectious disease is a disorder that is caused by organisms such as bacteria, viruses, fungi, or parasites. A disease that is described as vector-borne refers to the medium of infection through a third-party organism (i.e., mosquito, ticks, or fleas) known as a vector. Both epidemic and pandemic diseases can be described as vector-borne if the infection occurs through a vector.

The two main factors that influence the spread of disease are the speed at which the pathogen is transmitted from person to person and the human behaviors, both individual and societal, which may increase the opportunity to spread the disease.

The following are some diseases and pests that could affect the population of Vernon:

- COVID – 19 is the common name used for the Novel Coronavirus Disease 2019, first identified in Wuhan, China, in December 2019. The coronavirus associated with COVID-19 is called SARS-CoV-2. Coronaviruses are a large family of viruses common in people and many different species of animals, including camels, cattle, cats, and bats. A wide range of COVID-19 symptoms have been reported – ranging from mild symptoms to severe illness that can appear 2-14 days after exposure to the virus. Symptoms reported include coughing,

shortness of breath or difficulty breathing, fever, chills, muscle pain, sore throat, and/or new loss of taste or smell.[16]

- **Influenza (the flu)** is a virus that leads to illness in humans. Symptoms of the flu include fever, cough, headache, sore throat, muscle and joint pain, or runny nose. Given that the flu virus is constantly mutating, it is exceptionally difficult to create a vaccine that protects against all strains of the virus. These variations of the flu can occasionally give rise to particularly deadly strains, such as the H1N1 strain that emerged in 2009. Currently, the flu is one of the most common diseases worldwide, leading to as many as 650,000 deaths per year.[17]
- **West Nile Virus** is a disease originally from Africa that was first reported in the U.S. in 1999. West Nile Virus is a vector-borne disease, with transmission occurring because of mosquito bites. Most people who are infected do not display symptoms or feel sick. Those who display symptoms most often experience high fever, headache, neck stiffness, tiredness, or tremors. More severe symptoms include coma and paralysis. Vulnerable populations, primarily the elderly, may die as a result of their infections. There is currently no vaccine for the virus.[18]
- **Zika Virus** is a disease originally from Uganda that began spreading globally in 2016. Zika is a vector-borne disease primarily transmitted from person to person via mosquito bites. Most infected people do not experience symptoms; they potentially include fever, headache, or muscle pain when symptoms occur. Zika rarely results in death. Researchers have discovered that Zika virus infections in pregnant women can sometimes result in microcephaly, a condition where babies are born with small heads. Babies born with microcephaly may die as a result of their physical condition.[19]

[16] Coronavirus Disease 2019 (COVID-19) https://wwwn.cdc.gov/nndss/conditions/coronavirus-disease-2019-covid-19/case-definition/2020/08/05/
[17] Hartl, G. December 2017. Up to 650,000 people die of respiratory diseases linked to seasonal flu each year. *World Health Organization*.https://www.who.int/news-room/detail/14-12-2017-up-to-650-000-people-die-of-respiratory-diseases-linked-to-seasonal-flu-each-year
[18] Center for Disease Control and Prevention. December 2018. West Nile Virus: https://www.cdc.gov/westnile/index.html
[19] Center for Disease Control and Prevention. March 2019. Zika Virus. https://www.cdc.gov/zika/about/overview.html

- **Mosquitoes** are parasitic insects that feed on the blood of mammals, including humans. They use a needle-like part of their mouth, called the proboscis, to breach the epidermis and reach the blood vessels beneath the skin. As mosquitoes withdraw the blood from their host, they can potentially transfer infectious diseases they are carrying to the host. Mosquitoes may transmit only certain diseases. The Human Immunodeficiency Virus (HIV), for example, cannot be transferred from human to human since HIV cannot survive in mosquitoes. The Zika or West Nile viruses, on the other hand, are highly transmissible infections via mosquitoes, and this is the most common form of transmission.[20]

An Asian Tiger Mosquito, which may attack during the day, bites its host. Image from San Diego County News Center.

- **Mice and rats** are small rodents that can transmit disease or be a vector for other disease-carrying organisms. The most well-known and historical example of this is the Bubonic Plague. In the 14th Century, mice and rats infested with fleas traveled to Europe from Asia. The fleas carried the Bubonic Plague in their bodies and transmitted the infection to human populations as the fleas left the rats and mice for new human hosts.[21]

Location and Extent

While any location in Vernon is susceptible to experiencing the contagious disease, locations where many people gather are more likely to facilitate the spread of disease. These include large employment centers, educational institutions, medical facilities, and shopping centers. Vernon has many large industrial buildings, which equates to large numbers of employees. These diseases are more likely to spread when large groups work together in an enclosed space.

Vector-borne diseases can only be spread where there is a link between the pest and the human population that could be infected. Areas where pests gather could pose a greater danger to humans who live nearby or visit regularly. Mosquitoes, for example, are known to congregate around pools of standing water as this is where they lay their eggs. Any pools or other bodies of standing water in Vernon likely pose an increased risk to anyone who regularly spends time near these locations of being bitten by a mosquito and potentially being infected by a mosquito-borne disease.

[20] Centers for Disease Control and Prevention. March 2016. *NIOSH: West Nile Virus.* https://www.cdc.gov/niosh/topics/outdoor/mosquito-borne/westnile.html
[21] Centers for Disease Control and Prevention. November 2018. History of Plague. https://www.cdc.gov/plague/history/index.html

Few diseases have a formal measuring scale to evaluate their severity or extent. Influenza, more commonly known as the flu, is measured by the Pandemic Influenza Phases scale established by the World Health Organization (WHO). **Table 3-9** describes the various phases of Influenza infection over time.

Table 3-9: Pandemic Influenza Phases

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

Source: **World Health Organization. 2019. WHO Pandemic Phase Descriptions and Main Actions by Phase.** https://www.who.int/influenza/resources/documents/pandemic_phase_descriptions_and_actions.pdf

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While local information on diseases and pests for Vernon is not available, Los Angeles County has been impacted by localized disease outbreaks. The following are notable recent instances of diseases and pests that have occurred within Los Angeles County:

- **H1N1 (Swine flu):** The 2009 H1N1 pandemic spread worldwide and caused deaths worldwide. Within the context of Los Angeles County, there were 238 cases requiring intensive care and 88 cases where the infection resulted in the patient's death.
- **Measles:** A 2015 localized outbreak of measles began at Disneyland in Anaheim. Patient zero was not discovered, but the most likely cause of the outbreak was a visit to the theme park by a person who was a carrier of measles. This likely leads to measles infections in other visitors who were not vaccinated against the measles virus, most of whom were minors. This outbreak led to 10 confirmed measles cases in Los Angeles County. By 2016, all cases had been successfully treated, and the outbreak was eradicated.[22]

[22] Center for Disease Control and Prevention. February 2015. Measles Outbreak – California, December 2014-Feburary 2015. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6406a5.htm

- **West Nile Virus:** The County of Los Angeles Public Health reports that the West Nile Virus first emerged in Los Angeles County in 2004, accounting for 309 total cases and 13 deaths. Then, a sudden outbreak emerged again from 2014 through 2017, with 939 reported cases and 64 fatalities. In 2018, the number of cases decreased dramatically to 47, and by 2018, the number of cases continued to fall to 29, the lowest number of West Nile Virus infections since 2011. [23]
- **Zika Virus:** In 2016, there were 30 reported cases of Zika Virus infections and 12 cases in 2017, an infection rate of 0.9% and 0.4%, respectively. All these cases resulted from residents traveling to foreign countries where the virus was active and then being diagnosed with the infection upon their return. There has never been any Zika infection that occurred within California. [24]
- **COVID-19:** In December 2019, COVID-19 was identified in Wuhan, China. As of April 2022, COVID -19 has spread throughout the globe, with over 502.8 million confirmed cases and approximately 6.2 million deaths worldwide. There have been over 80.6 million confirmed cases within the United States and over 988,000 deaths resulting from the virus. [25] Los Angeles County has reported the highest number of cases in California, with over 2.85 million confirmed cases and 31,872 deaths. [26]

Risk of Future Events

Vernon is almost certain to continue experiencing influenza-type infections in the future. As this disease has no completely effective vaccine, it is impossible to eradicate the illness from recurring in the City. Other diseases, such as measles, can only be contained as far as the general population continues receiving vaccinations against the disease. If residents, workers of, or visitors to Vernon, were to stop receiving vaccinations against preventable diseases, it could cause a resurgence of such diseases within the City.

Recent cultural trends in Southern California suggest that some members of the public are choosing not to vaccinate their children, which corroborates this scenario. While it is impossible to predict whether this anti-vaccination trend will gain traction in Vernon, there are no current indications that significant numbers of people living, working, or visiting the City are not taking the necessary precautions against the threat of preventable disease, including vaccinations.

Vector-borne diseases of concern, like the West Nile or Zika viruses, are not native to California and thus are not expected to gain significant traction in the future. As all cases of

[23] Orange County Health Care Agency. 2017. Reportable Diseases & Conditions by Year, 2013-2017. http://www.ochealthinfo.com/civicax/filebank/blobdload.aspx?BlobID=76272
[24] California Department of Public Health. 2019. What Californians Need to Know: Don't Bring Zika Home. https://www.cdph.ca.gov/Programs/CID/DCDC/pages/zika.aspx
[25] New York Times, "Corona Virus in the U.S Latest Map and Case Count" https://www.nytimes.com/interactive/2021/us/covid-cases.html
[26] New York Times, "Tracking Coronavirus in California: Latest Map and Case Count" https://www.nytimes.com/interactive/2021/us/california-covid-cases.html

Zika Virus infection have occurred among those who have traveled to countries where the risk of infection is high, it can be expected that there will always be some degree of Zika Virus infection in Vernon if its residents, workers, and visitors travel to these countries. West Nile Virus infection rates tend to remain low, but there are periods when infection rates suddenly rise due to larger mosquito populations. If mosquito control measures are in place and effectively enforced, the infection rates in Vernon are expected to remain low. If large numbers of residents or businesses do not follow proper procedures, West Nile Virus cases could likely rise.

Climate Change Considerations

Climate change generally will lead to the overall warming of the Southern California climate, which may cause insects, pests, and other vectors that carry disease to remain active for an extended part of the year. This possibility increases the threat of exposure to any infectious diseases that these pests carry. Additionally, vectors currently not active in Vernon and Southern California at large may migrate into the area due to warmer temperatures. Mosquitoes carrying West Nile Virus and Zika Virus would have an extended range. For more resources and information on the impact of climate change on vector-borne disease, read Climate Effects on Health.[27]

Flooding

Description

Flooding occurs when an area becomes inundated with more water than it can drain in a specified period. This can range from a small, confined area, such as a grassy field in a park that floods for a few hours after a rainstorm, to whole sections of a city, such as numerous streets becoming impassable with floodwaters. When floods are small, they may represent a minor inconvenience if recreational pathways and some curb cuts become flooded. These smaller instances of flooding where water collects into a pool of standing water are referred to as "ponding." On the other hand, larger flood events can hamper a city's operations. For example, when multiple streets flood simultaneously, it could prevent emergency workers from reaching victims in need of help. Flooding can also damage critical pieces of city infrastructure. For instance, unprotected electronic equipment can short-circuit if it meets water. This could lead to outages in street lighting, traffic signals, and city government computer systems. City-owned vehicles can be waterlogged and experience engine stalling if floodwaters are particularly high.

Flooding can result from multiple different causes. In Southern California, the primary cause of flooding is heavy rain that usually occurs in the winter. Most precipitation in California arrives either via atmospheric rivers or the ENSO cycle. Atmospheric rivers are channels of moist air located high in the atmosphere. The ENSO cycle is a regional meteorological phenomenon in the southern Pacific Ocean consisting of variations in ocean water and air

[27] https://www.cdc.gov/climateandhealth/effects/default.htm

temperature. These variations give rise to two distinct phases known as El Niño, the warm and wet phase, or La Niña, the dry and cold phase. When the El Niño phase is active, it can cause California to receive higher than normal precipitation levels. These higher-than-normal levels of rainfall can quickly overwhelm the capacity of certain sections of land to effectively drain the precipitation before the rainwater begins to pool. A failure in infrastructure may also cause flooding. For example, a water main or sewage pipeline that bursts could cause some degree of flooding if left uncontained for a significant period. A more serious infrastructure failure, such as the failure of dams, reservoirs, or levees, could cause extensive flooding. For more information on this type of hazard, please refer to the Dam Failure section of this chapter.

Location and Extent

The Federal Emergency Management Agency (FEMA) designates which areas in the United States are susceptible to flooding and how likely they are to experience flooding. FEMA uses a complex classification system to categorize the level of risk for each section of land. The two most well-known measures of flood event likelihood are the 100-year flood and the 500-year flood. These designations do not refer to floods that occur every 100 or 500 years but rather refer to the likelihood of a flood occurring each year. For example, a 100-year flood is a flood that has a 1 in 100, or 1 percent, chance of occurring in any given year, while a 500-year flood is a flood that has a 1 in 500, or 0.2 percent, chance of occurring in any given year. These measures of likelihood are combined with the specific geography of each locale to produce specific flood "zone" designations. **Table 3-10** shows a detailed list of all the flood zone categories used by FEMA.

FEMA also uses Base Flood Elevation (BFE) to determine the minimum depth of the floodwaters during one of these flood events. An area with a BFE of 3 feet, for example, means that area can expect to see a minimum floodwater depth of 3 feet with potentially additional depth in particularly severe flood events.

FEMA has designated all of Vernon as lying within Zone "X," meaning that the City is not in danger of a 500-year flood. Given Vernon's specific geography, however, FEMA has added additional stipulations about the level of flood risk in the City. The Los Angeles River Channel that runs through the City effectively mitigates the risk of a 100-year flood; however, it is still possible that the channel could overflow its embankments in an exceptionally powerful rainstorm. Effectively, the City is protected against the risk of all but the most exceptional flood events. **Figure 3-5** shows the areas in Vernon within FEMA-designated flood zones.

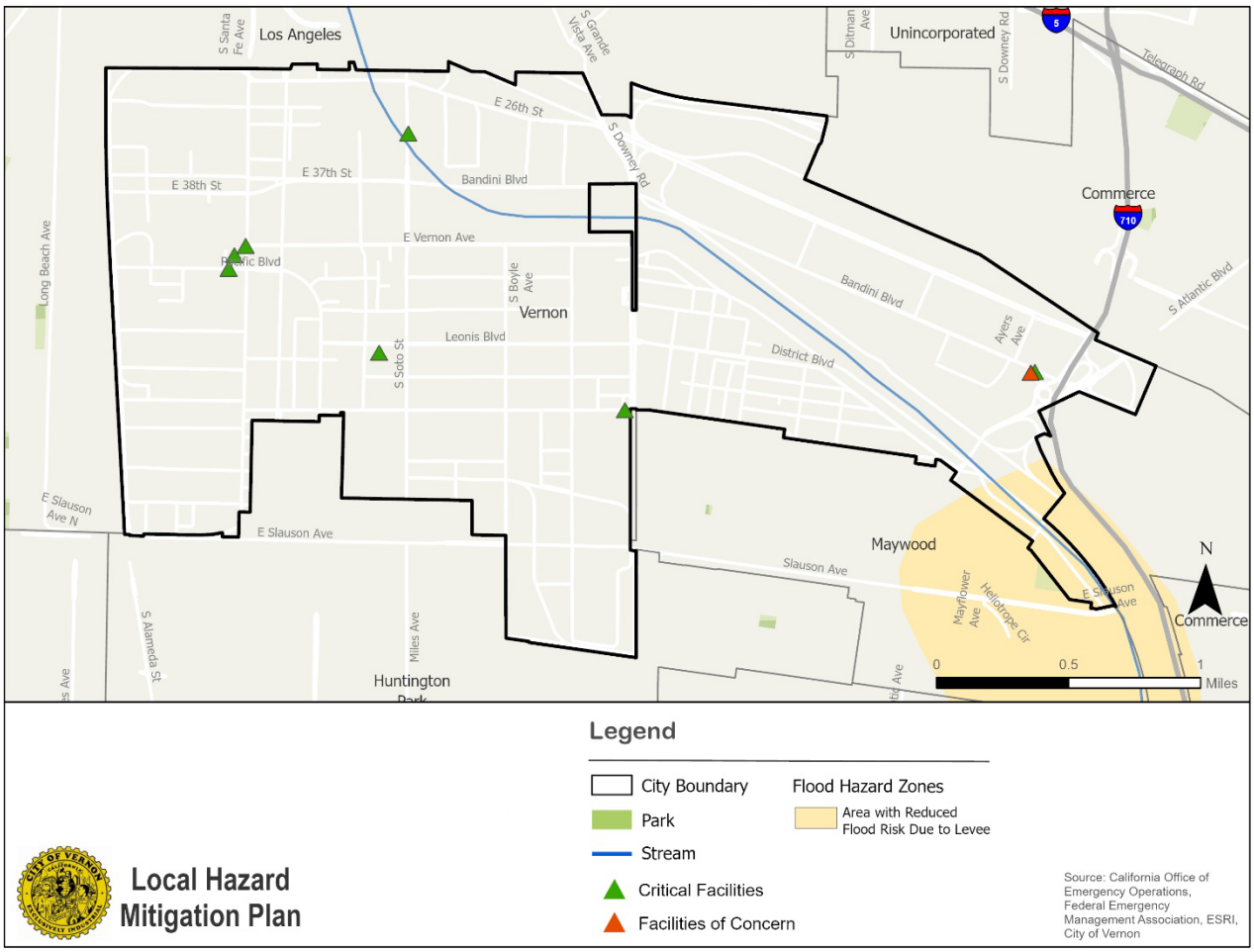
Ponding events occur on any flat surfaces where sufficient drainage is unavailable. This includes areas such as parking lots, landscaped areas or lawns, or roadways. Since ponding is so small in scale, it is impossible to predict exactly where in the City they will occur or how severe they will be.

TABLE 3-10: FEMA FLOODPLAIN ZONES

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

Source: **CFR (Code of Federal Regulations). 2016. Title 44 (Emergency Management and Assistance), Part 64 (Communities Eligible for the Sale of Insurance), Section 64.3 (Flood Insurance Maps).**

Figure 3-5: FEMA Flood Hazard Zones in Vernon



Past Events

No significant flood event has been recorded in Vernon in recent years, but flooding has occurred in similar communities in the surrounding area.

The following are some examples of significant historic flooding in the region:[28]

- **From December 1861 to January 1862**, there were 30 consecutive days of rain across Southern California from Los Angeles to San Diego. Thirty-five inches of rain fell in Los Angeles, causing mass flooding around the region's rivers. Some rivers even changed course, such as the Los Angeles River, which shifted its mouth from Venice to Long Beach. In Orange County, the Santa Ana River swelled its banks on its course through Anaheim, creating a four-foot-deep

[28] A History of Significant Weather Events in Southern California, 2017, https://www.weather.gov/media/sgx/documents/weatherhistory.pdf

layer of water that extended to the Coyote Hills in Fullerton. Twenty people were reported dead in Orange County.

- **On New Year's Eve of 1933 and New Year's Day of 1934**, an extraordinary amount of rain fell across the Southern California region. In Los Angeles, more than 7 inches fell within 24 hours, and 5 inches fell in nearby Buena Park on New Year's Day. Forty-five deaths were reported across the region.
- **From February to March of 1938**, a weakened tropical storm reached Southern California and dropped 11 inches of rain in Los Angeles and 30 inches in some mountain areas. Flood control infrastructure was overwhelmed by the surge of water, and the Los Angeles, San Gabriel, and Santa Ana Rivers flooded their banks. There were 210 people who were reported as dead or missing, 45 of whom were reported to be from Orange County.
- **In April 1988**, heavy rains led to flooding across Southern California, including Los Angeles County. In Los Angeles, 26 motorists were injured in a major collision. Uprooted and felled trees caused power outages in the region when they tore down power lines as they fell.

Risk of Future Events

Smaller instances of ponding occur at least annually or even multiple times a year in cities across Southern California during the winter when precipitation rises. During periods of drought, precipitation levels may decrease and similarly lower the likelihood of ponding. In most years, though, it is almost certain that Vernon will continue to experience this type of flood events in the future. Larger-scale flood events are rare in Vernon and will continue to be rare due to the City's protection by levee and other regional flood control infrastructure. During a particularly severe rainstorm or after a dam failure, however, it is possible that Vernon could experience some degree of large-scale flooding though the floodwaters are not anticipated to rise above one foot in depth.

Climate Change Considerations

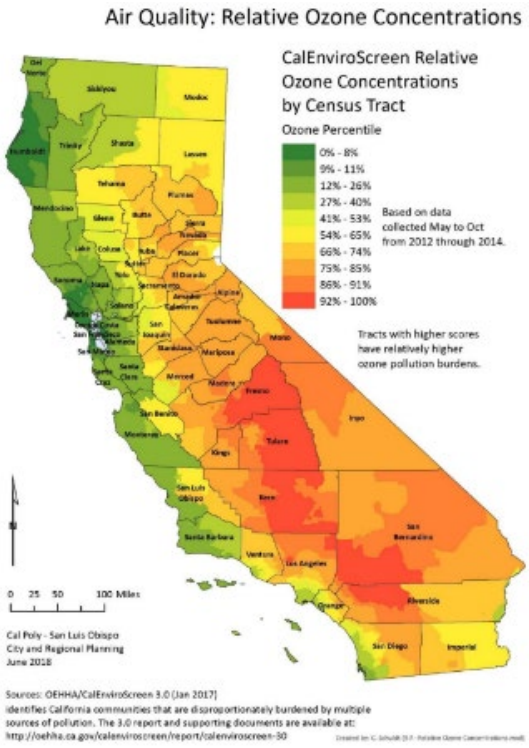
Climate change is expected to exacerbate the conditions that lead to urban flooding in Southern California and Vernon. Climate change will cause more intense local, regional, and global weather patterns, intensifying atmospheric rivers. At this time, it is unknown exactly how climate change will impact the frequency of ENSO, but it is anticipated that it will become more intense. Based on the atmospheric river and ENSO changes, precipitation in Southern California will increase in frequency and degree. This increases the likelihood of a particularly exceptional rain event in Vernon. One of these exceptional rain events could overwhelm the capacity of the region's network of dams, levees, and water courses to contain and drain all the precipitation that falls.

On the other hand, droughts are also expected to increase in length and frequency under climate change conditions. Soil dried by extensive drought periods is less able to absorb and drain water, which would likely exacerbate flood likelihood. Overall, climate change is expected to create conditions that will increase the likelihood of flooding in Vernon.

AIR POLLUTION

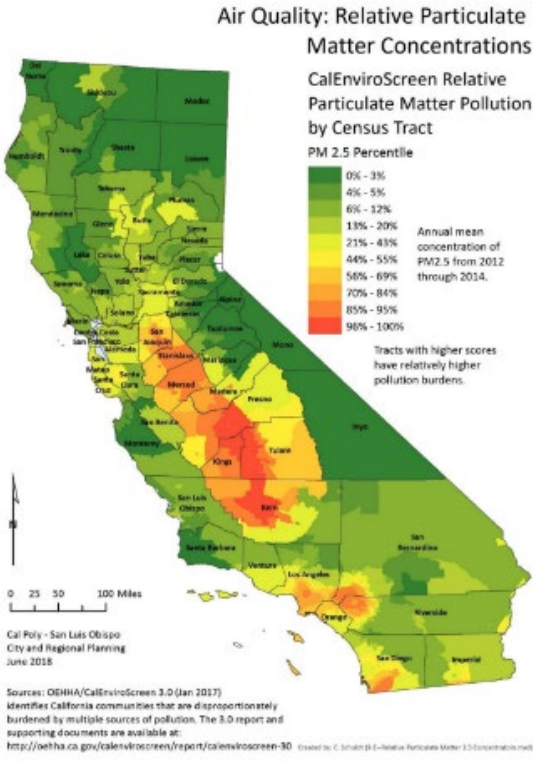
DESCRIPTION

The State of California measures ten air pollutants. These pollutants are measured separately and are compared to a healthy level determined by the State. Air is considered polluted when it does not meet the standard set by the State or Federal government. According to the South Coast Air Quality Management District's 2016 Air Quality Management Plan, in Los Angeles County, three pollutants—ozone, coarse particulate matter (PM10), and fine particulate matter (PM2.5)—violate either the State or Federal standards. Air pollution varies locally as it moves away from the source of pollution; it is more concentrated along major transportation corridors and industrial facilities.



Ozone: Ground-level ozone is most commonly known as smog. Smog is caused by a chemical reaction when sunlight interacts with nitrogen oxides and volatile organic compounds emitted from vehicles. As temperatures increase, it is anticipated that the amount of ground-level ozone will also increase if the amount of car traffic and other sources of nitrogen oxides and volatile organic compounds do not decrease.

Some main contributors to the pollutants that form ground-level ozone in Vernon are cars, the vast fleet of commercial trucks, and the various industrial processes that occur every day within the City. Ground-level ozone has been linked to health issues, such as difficulty breathing, coughing, inflamed airways, asthma attacks, and heart disease.



Particulate matter: Particulate matter is made of microscopic solids and liquids in the air that are small enough to breathe in. PM10 is particulate matter measuring 10 microns or less in diameter, which is approximately 1/7th the thickness of a human hair. PM2.5 is 2.5 microns or less in

diameter, which is approximately 1/28th the thickness of a human hair. PM10 is often made up of dust and ash, and PM2.5 results from burning fuel for cars, trucks, and industrial processes. PM2.5 is small enough to get into the human bloodstream and poses a greater risk to human health. Similar to ozone, particulate matter causes asthma and heart disease.

Location and Extent

Air pollution is higher in communities with a smaller urban forest, limited access to community parks, and higher traffic levels. Vernon, given its primarily industrial nature, has virtually no urban forest. Combining that with the high level of commercial traffic, industrial processes, and railyard shipping/transportation activity, Vernon experiences very poor air quality. The LA-Long Beach region already has some of the worst air quality in the country, ranking as the most polluted region in the United States for ozone and among the top 10 most polluted cities for year-round and short-term particle pollution. [29]

Past Events

As with the entire LA-Long Beach area, Vernon has experienced some of the poorest air quality in the United States for decades. According to the Los Angeles Air Quality Index (AQI), the air quality in Los Angeles has improved dramatically and surprisingly over the past 30 years from where it began pre-World War II. From 2017 to 2018, air pollution was reduced by approximately 10.6% and a further 11.8% from 2018-2019.[30] It should also be noted that these averages are affected by wildfire season, depending on the severity of the season, which can contribute to elevated periods in the overall air quality.

Risk of Future Events

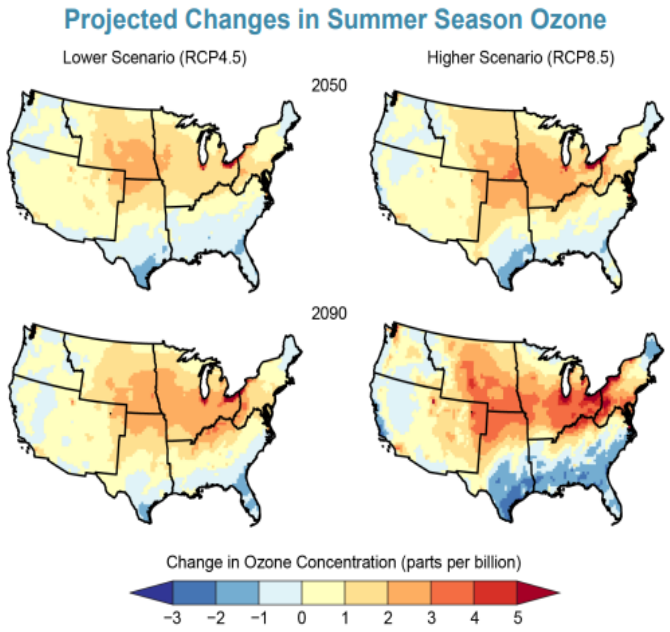
More than 100 million people in the United States live in communities where air pollution exceeds health-based air quality standards. Unless counteracting efforts to improve air quality are implemented, climate change will worsen existing air pollution levels. This worsened air pollution would increase the incidence of adverse respiratory and cardiovascular health effects, including premature death. Increased air pollution would also have other environmental consequences, including reduced visibility and damage to agricultural crops and forests.

People with existing health conditions, such as asthma and heart disease, considered part of the vulnerable population statistic, are more sensitive to air pollution. These conditions are also often caused by living near sources of air pollution in bordering communities. Additionally, people who spend more time outdoors, including young children, people who work outdoors, and people in households without cars, are often exposed to polluted air at higher rates.

[29] https://www.lung.org/research/sota/city-rankings/most-polluted-cities
[30] Air Quality and Statistics for Los Angeles

Climate Change Considerations

While air quality in the region, including Vernon, has improved somewhat in recent decades, climate change threatens to reverse the improvements made in air quality. Projected higher temperatures in the future are likely to increase the production of ground-level ozone (a respiratory irritant that is a component of smog). Ground-level ozone is associated with various negative health outcomes, including reduced lung function, pneumonia, asthma, cardiovascular-related morbidity, and premature death. [31]



Vernon already experiences some of the worst air pollution in Southern California. It will worsen due to climate change and likely have the greatest impact in summer when temperatures are higher. Longer warm seasons can mean longer pollen seasons, increasing allergies and asthma episodes. Higher temperatures associated with climate change can also lead to an increase in ozone. Although the future level of air pollution will depend, in part, on State laws mandating standards for fuel efficiency and potential electrification of cars and trucks, the current air quality in Vernon does not meet State standards.

Hazardous Materials Release

Description

Hazardous materials release refers to an incident whereby concentrations of potentially harmful 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.

Hazardous waste is any material with properties that make it dangerous or potentially harmful to human health or the environment. The threat that hazardous materials pose to human health depends on the type of material, frequency, duration of exposure, and whether chemicals are inhaled, penetrate the skin, or are ingested. Exposure to hazardous materials

[31] https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population

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

Location and Extent

Table 3-11: Reported Hazardous Materials Spill Releases in Vernon

Year	Number of Spills
2010	11
2011	9
2012	7
2013	15
2014	15
2015	14
2016	13
2017	20
2018	18
2019	12
2020	14
2021	20
Annual Average	**14**

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

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

In severe situations, Vernon may also be at risk of hazardous materials release events on a regional level. With the right prevailing wind conditions, airborne toxic material could spread to and impact various parts of the City's air basin.

Table 3-11 identifies 31 spill releases of hazardous materials in Vernon that have been reported.

Figure 3-6 identifies these locations and the associated CalEnviroScreen score. While there is no extent scale for hazardous materials release, the probability of an incident is anticipated to be occasional each year.

Past Events

Vernon has experienced 27 significant hazardous spill release events of at least 100 gallons and/or pounds of material since 2010, the latest occurring on December 30, 2021. **Table 3-12** highlights these events, illustrating that all but four (unknown cause) appear to have occurred due to accidents, infrastructure failure, or equipment malfunction.

Risk of Future Events

The majority of the significant release events within Vernon have occurred due to human error, infrastructure failure, or malfunctioning equipment. Given this, it is anticipated that future events within Vernon have a high likelihood of occurrence due to the high level of material transportation and heavy industrial and commercial activities.

Climate Change Considerations

Climate-related natural hazard events, such as an intense flood, could cause hazardous materials release associated with transportation crashes or damage to storage containers or vessels containing these substances. Severe wind events could potentially spread damaging gaseous vapors and toxic material/particulate if the wind movement is strong enough. Climate-related hazards could also exacerbate the effects and impacts of such events. For example, heavier rains could lead to more runoff from a site that is contaminated with hazardous materials.

Figure 3-6: Hazardous Materials Sites (500-foot buffer), and CalEnviroScreen Scores within Vernon

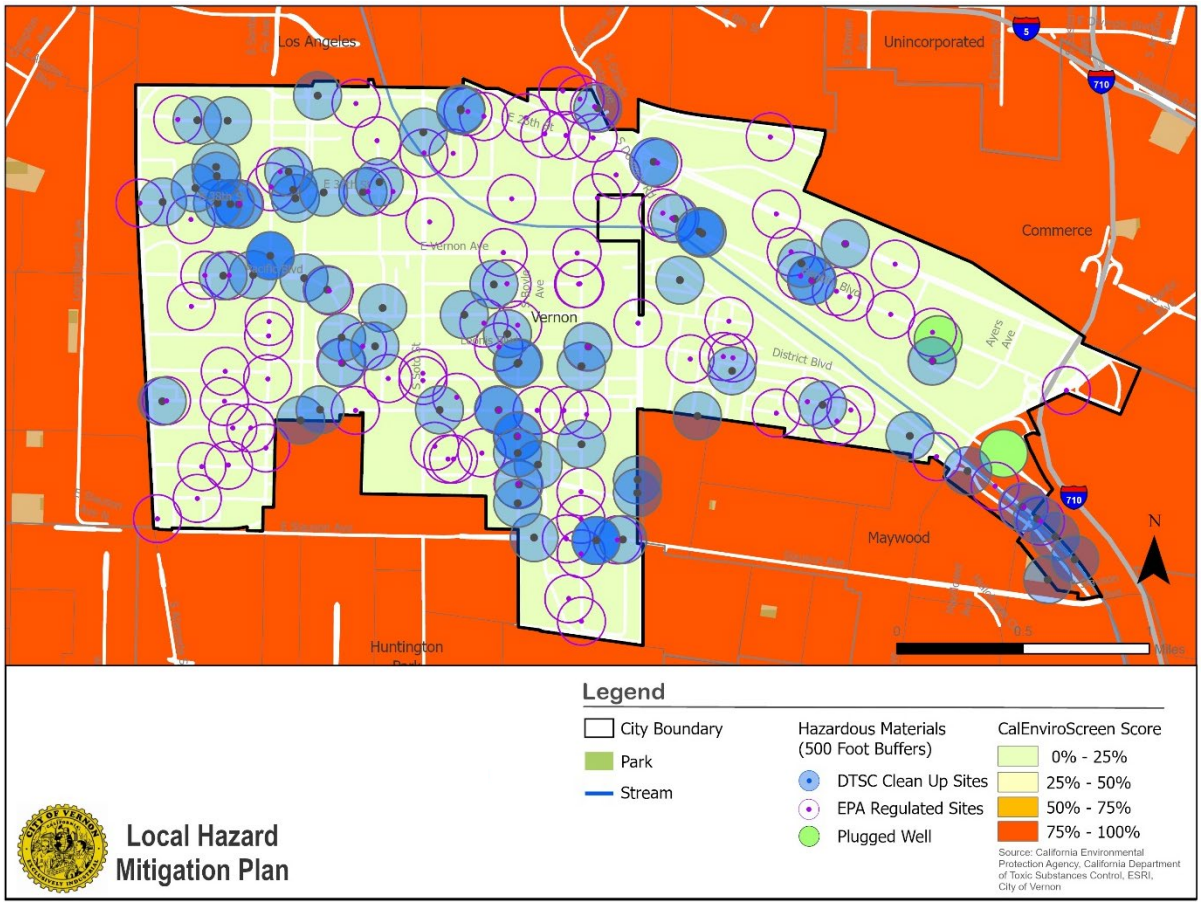


Table 3-12: Reported Hazardous Material Spills of at least 100 gal. or 100 lbs.

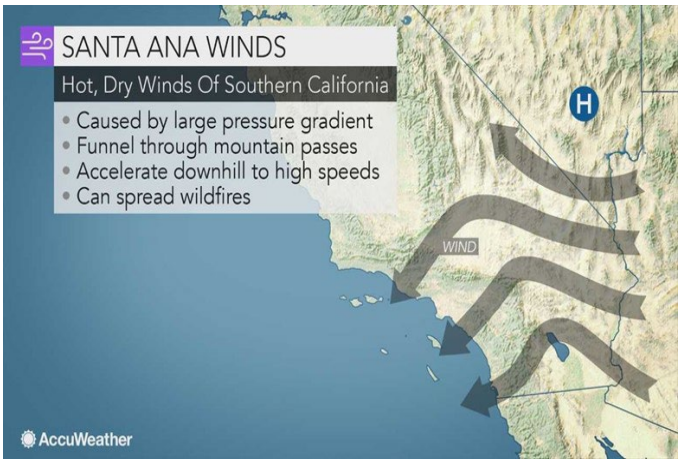
Date	Location	Gallons	Incident Type
2/12/2010	4961 52nd Pl	1,000	Chemical: Unknown cause
1/26/2011	3220 E 26th St	200	Unspecified: Equipment failure
10/8/2011	3650 E 26th St	150	Petroleum: Faulty pressure relief valve on tank car
2/15/2012	Bandini Blvd & Atlantic Blvd	100	Petroleum: Hatch on a tanker was left open
9/30/2013	2929 E 54th St	100	Non-chlorinated Water: Leaks from cooling tower
12/31/2014	LA Junction Yard	100	Petroleum: Released during fueling of a locomotive
3/2/2015	3285 E Vernon Ave	900	Petroleum: Clamp fell off the bottom of holding truck
4/14/2015	3275 E Vernon Ave	400	Unspecified: Pipeline flange malfunctioned
5/19/2015	5335 – 5119 District Blvd	1500	Sewage: Unknown cause
3/16/2016	3225 Washington St	1,000	Sewage: Manhole overflowed
8/17/2016	Bonnie Beach & 26th St	14,850	Sewage: Blockage in the county sewage line
12/25/2016	3220 E 25th St	1,000	Other: Due to an air compressor failure
12/27/2016	Bandini Blvd	100	Petroleum: Big rig was involved in a traffic accident
2/24/2017	3650 E 26th St	10,000	Asphalt flux: Tank railcar valve failure
4/27/2017	3220 E 26th St	900	Other: Underground pipe ruptured
5/17/2017	4560 – 4786 E 26th St	100	Petroleum: Semi-truck collided with concrete pole
12/4/2017	2522 37th St	1,000	Sewage: Blocked sewer line
1/23/2018	2638 Vernon Ave	100 (lbs.)	Chemical: Broken pipe in commercial building
10/26/2018	Vernon LAJ Railyard	500	Petroleum: Unknown cause
12/18/2018	1790 Industrial Way	100	Petroleum: Cars abandoned on property leaving fluid
6/18/2019	4383 Exchange Ave	100	Unspecified: Fruit processing manufacture release
6/18/2019	LA Junction Sub, 4433 Exchange Ave	100	Petroleum: Mechanical failure on BNSF locomotive
10/7/2019	3049 E Vernon Ave	100 (lbs.)	Vapor: Unknown cause
3/26/2020	3220 E 26th St	300	Chemical: Boiler blow down caused drainage clog
6/7/2021	4921 Gifford Ave	600	Chemical: Valve on a tank truck was left open
10/12/2021	LA Junction Sub, 4433 Exchange Ave	200	Petroleum: Mechanical failure on BNSF locomotive
12/30/2021	3305 East 26th	800 (lbs.)	Unspecified: Leaking pressure gauge resulted in formaldehyde found in water.

Data collected from: CalOES Spill Release Report, **https://www.caloes.ca.gov/cal-oes-divisions/fire-rescue/hazardous-materials/spill-release-reporting**

Severe Wind

Description

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



Santa Ana Wind Description

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

Location and Extent

In Southern California, the most common type of severe wind event is called the Santa Ana winds. During the fall and winter months, high pressure over Nevada and Utah forces air down from the high desert toward the ocean. As the winds descend, they heat up and increase in speed, sometimes carrying particulate matter and aggravating the respiratory health of those who have allergies.[32]

Vernon is often affected by Santa Ana winds blowing through the Santa Ana Mountain range. Santa Ana winds are a leading cause of wildfires in California.

Generally, winds are measured using the Beaufort scale, developed in 1805, categorizing wind events on a force scale from 0 to 12 using their speed and impacts. Any wind classified as force nine or above is generally considered a severe wind event. **Table 3-13** shows how the Beaufort scale classifies wind events in detail.

[32] UCSD (University of California, San Diego). 2016. "Santa Ana." http://meteora.ucsd.edu/cap/santa_ana.html

Table 3-13: Beaufort Scale

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

*Source: https://www.weather.gov/mfl/beaufort.

Past Events

There have been several strong wind events recorded in and around the city of Vernon:[33]

- **In November 1961**, Santa Ana winds exacerbated fires in Bel Air, Brentwood, and Topanga Canyon, leading to 103 injured firefighters and over 6,000 acres burned.
- **In April 1962**, strong Santa Ana winds howled throughout the region, uprooting trees, causing property damage, and interrupting customer power transmission.
- **In October 1982**, Santa Ana winds blew at 60 miles per hour, leading to a major wildfire that moved through the Santa Monica Mountains.
- **In May 1988**, strong winds hit the coast at 60 miles per hour and 45 miles per hour at LAX. Power outages, brush fires, and a hang-gliding fatality were all due to these severe winds,
- **In November 1993**, Santa Ana winds gusting to 60 miles per hour, re-starting the Topanga fire that burned from Calabasas to the ocean destroying over 100 homes.

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

- **In November 2008**, strong Santa Ana winds exacerbated and spread the Freeway Complex Fire, one of the most destructive fires in Southern California history. More than 30,000 acres were burned.
- **In late 2012 (November/December)**, an extreme windstorm struck the City, destroying power lines and infrastructure along the Los Angeles River. City staff indicated that power was interrupted for approximately a week.

Risk of Future Events

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

Climate Change Considerations

It is anticipated that the atmospheric rivers that deliver storms to Southern California may intensify because of climate change. While the average number of storms in Southern California will remain the same, storms are expected to increase in strength by 10 to 20 percent (Oskin 2014). This increase in storm intensity may also bring more intense winds to the Southern California region, including Vernon. It is unknown if climate change will affect the frequency or intensity of Santa Ana wind events.

Regarding Santa Ana winds, however, studies indicate that these events may be affected in varying ways. According to one study that examined two global climate models, there is a projected increase in future Santa Ana events. However, other studies have found that the number of Santa Ana events may decrease by about 20% in the future.[34] 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.

Dam Failure

Description

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

Location and Extent

Inundation from the following two dams could potentially result in flooding in Vernon in the event of failure:

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

- **Hansen Dam** is also located approximately 24 miles northwest of Vernon, within the City of San Fernando. In the event of dam failure, the flood wave would take more than 19 hours to reach Vernon and be around 2 feet deep.
- **Sepulveda Dam** is approximately 24 miles northwest of Vernon, located in the City of Sherman Oaks. In the event of dam failure, it would take more than 8 hours for the flood wave to reach Vernon, and the depth would be about 2 feet.

Table 3-14 identifies the Dam Safety Action Classification scale, which identifies the relative safety ratings of these facilities. Dams that could impact Vernon have been identified in bold within this table. **Figure 3-7** identifies the potential inundation areas that could impact the City of Vernon. This figure shows the areas downstream that would be inundated by a breach from a dam's reservoir. The areas that could flood in the case of a dam breach are not necessarily the same areas that could be inundated by a 100-year or 500-year flood.

Past Events

California's dam infrastructure varies in age (some are decades old, while others are more recently constructed), type, and size. In California, there have been several major catastrophic dam failure events. One of the earliest was the failure of the San Francisquito Canyon Dam. The dam experienced a structural failure because of insufficient geotechnical engineering analysis, which led to inadequate construction by the then-Los Angeles Bureau of Water Works and Supply. At midnight on March 13, 1928, the 205-foot-tall structure failed catastrophically, unleashing a 120-foot-high wave of water traveling 18 miles per hour down the San Francisquito Canyon. By 5:30 AM, the wave had traveled 54 miles from the dam site to the Pacific Ocean, killing at least 438 people, razing towns, and destroying infrastructure. It was reported that victims' bodies were recovered from the ocean as far south as the Mexican border. The disaster is considered one of the worst engineering failures in US history.[35]

Another, more recent dam failure in the region occurred at the Baldwin Hills Dam. On December 14, 1963, a structural failure in the dam caused a breach that unleashed 250 million gallons of reservoir water. Diligent work by maintenance crews detected the developing failure in the dam four hours before it breached. With the cooperation of local law enforcement, they were able to successfully evacuate and save nearly 1,500 people downstream from the reservoir. Five lives were lost, 65 homes were destroyed, and nearly $11 million worth of property damage was incurred. The Baldwin Hills Dam was not rebuilt and is now a grassy basin in Kenneth Hahn Park, which is why it is not listed in **Table 3-14**.[36]

[35] Riley, K. March 2018. 90 Years Later, The St. Francis Dam Failure Remains A Vital Safety Lesson. *Association of State Dam Safety Officials.* https://damsafety.org/article/awareness/90-years-later-st-francis-dam-failure-remains-vital-safety-lesson

[36] The Center for Land Use Interpretation. nd. *Baldwin Hills Dam Failure Site.* http://clui.org/section/baldwin-hills-dam-failure-site

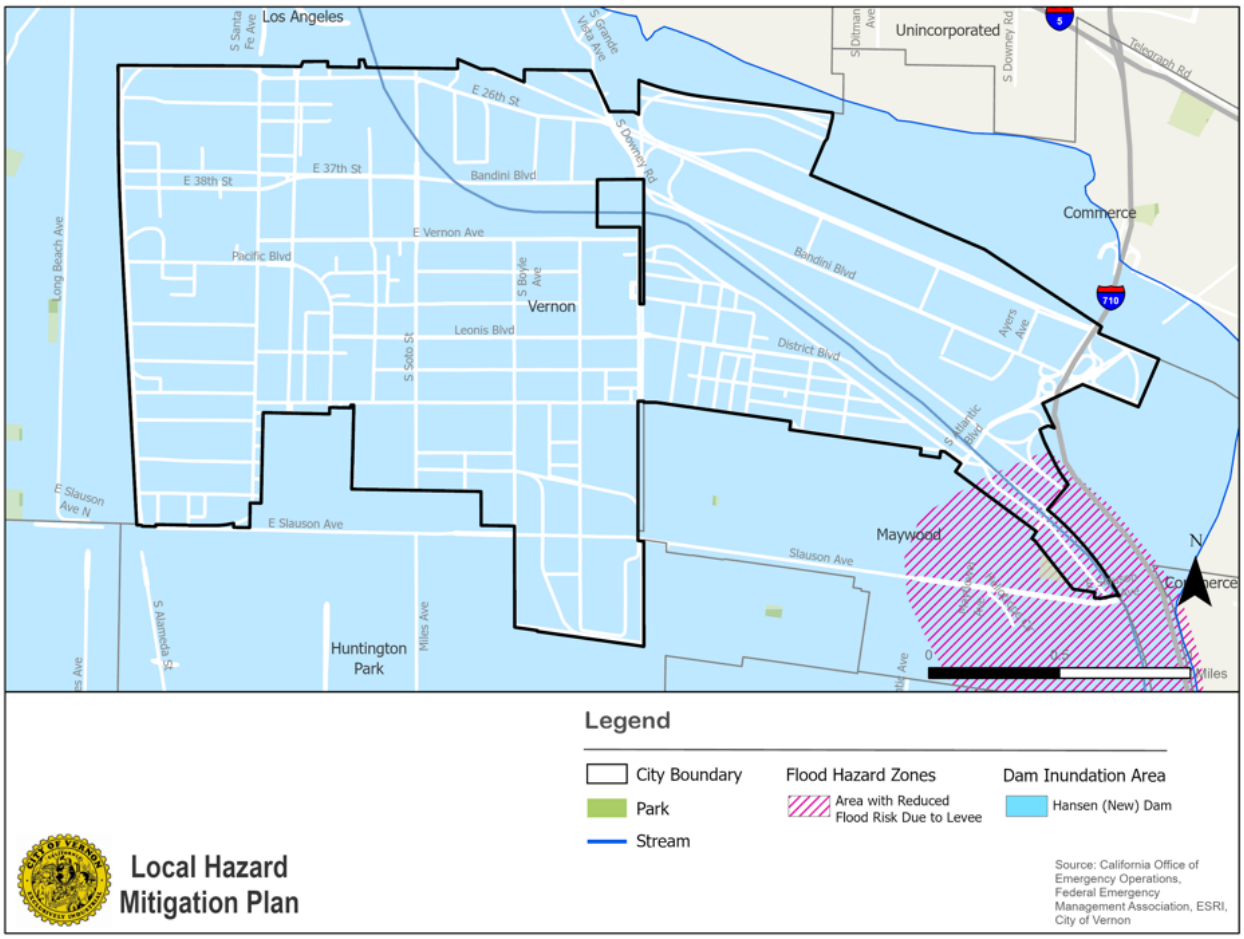
Table 3-14: Dam Safety Action Classification (DSAC) Ratings

Numeral	Rating Name	Description	Los Angeles District Dams
I	Urgent and Compelling (Unsafe)	Dams where progression toward failure is confirmed to be taking place under normal operations, and the dam is almost certain to fail under normal operations within a time frame from immediately to within a few years without intervention, or the combination of life or economic consequences with the probability of failure is extremely high.	Whittier Narrows Dam
II	Urgent (Unsafe or Potentially Unsafe)	Dams where failure could begin during normal operations or be initiated as the consequence of an event. The likelihood of failure from one of these occurrences prior to remediation is too high to assure public safety; or the combination of life or economic consequences with probability of failure is very high.	Carbon Canyon Dam, Lopez Dam, San Antonio Dam, Santa Fe Dam, Corona National Housing Dike, and Corona Sewer Treatment Dike, and Prado Dam
III	High Priority (Conditionally Unsafe)	Dams that have issues where the dam is significantly inadequate or the combination of life, economic or environmental consequences with probability of failure is moderate to high.	Brea Dam, Haines Canyon Debris Dam, **Sepulveda Dam**, Painted Rock Dam, and **Hansen Dam**
IV	Priority (Marginally Safe)	Dams are inadequate with low risk such that the combination of life, economic or environmental consequences with a probability of failure is low, and the dam may not meet all essential USACE engineering guidelines.	Alamo Dam, Fullerton Dam, Mathews Canyon Dam, Mojave Dam, Pine Canyon Dam, and Whitlow Ranch Dam
V	Normal (Adequately Safe)	Dams considered adequately safe, meeting all essential agency guidelines, and the residual risk is considered tolerable.	None

The most recent incident in California is the Oroville Dam spillway failure that occurred in February 2017. Failure of concrete in the main spillway caused a 60-foot-deep hole to develop in the lower third of the spillway during normal operations undertaken to lower the reservoir before a moderately large storm. A subsequent storm and the inability to fully use the primary spillway led to the filling of the reservoir and the use of its unlined (natural) emergency spillway for the first time ever. After two days of usage causing erosion of the unlined hillside and head cutting (erosion upstream towards the earthen dam), concerns regarding the stability of the emergency spillway caused an evacuation of nearly 200,000

people downstream, prompting both immediate repairs and a re-evaluation of this dam facility and many others throughout the State of California since.[37]

Figure 3-7: Dam Failure/Inundation Zone in Vernon



Risk of Future Events

Due to the presence of the dams near Vernon, areas of the City could be at risk of inundation in the case of significant dam failure. Some of the potential consequences of dam failure are death or injury, people displaced from their homes, damage to existing public and private buildings, damage to infrastructure, loss of services from utilities, loss of government services, and economic losses. The US Army Corps of Engineers (ACOE) evaluates and rates dams based on confirmed or unconfirmed safety issues, probability of failure, and the potential consequences. The following are the ratings for Dams that may impact Vernon:

[37] California Office of Emergency Services. 2018. *California State Hazard Mitigation Plan.* https://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/state-hazard-mitigation-plan

Hansen Dam is an earth-fill dam built by the U.S. Army Corps of Engineers and finished construction in September 1940. This dam is located within the San Fernando Valley, and like the Sepulveda Dam, it is vital for flood risk management for the larger part of Los Angeles. Hansen Dam is made up of about 1,300 acres, and the majority of the land is leased to the City of Los Angeles for recreational purposes. The Army Corps of Engineers Dam Safety Program has given the structure a DSAC III rating, which means it has a high risk of failure without remediation efforts. The dam has a high potential for failure due to erosion of the embankment.

Sepulveda Dam was constructed by the U.S. Army Corps of Engineers. This dam was finished in December 1941. Its main purpose was to provide flood protection after the 1938 Los Angeles Flood. The Sepulveda Dam is located in the Van Nuys neighborhood of the City of Los Angeles and plays an important role in flood risk management for the San Fernando Valley and parts of the Los Angeles River. This dam makes up more than 2,100 acres, with 300 acres entirely for operations of the dam and 1,500 acres loaned to the City of Los Angeles for recreational purposes. The Army Corps of Engineers Dam Safety Program has rated the dam to be a high urgency with a rating of DSAC Rating III which means that this dam has a high chance of collapsing if not re-constructed.

Climate Change Considerations

Climate change could increase the risk of a dam failure in the future. More intense rainstorms may increase the likelihood that reservoir infrastructure could become overwhelmed, including the dams that control floodwaters from inundating Vernon and the rest of Los Angeles County. Indirectly, increased climate change-induced rains may cause more erosion, which could compromise the dam's structural integrity or the foundation it sits on.

Chapter 4 – Threat and Vulnerability

The threat assessment process looks at the harm that each hazard event discussed in Chapter 3 may cause in three different areas: the physical threat to key facilities, the threat to vulnerable populations, and the threat to any other community assets.

Threat Assessment Process

The threat assessment process looks at the harm that Vernon may experience from a hazard event but does not consider its likelihood, so it gives equal consideration to hazards that are more likely (e.g., earthquakes, drought) as well as hazards that are less probable (e.g., severe wind, dam failure).

The threat assessment examines three aspects of each hazard: the physical threat to Critical Facilities (CFs) and Facilities of Concern (FOC), the social threat to vulnerable populations, and the threat to any other assets that may be affected.

Critical Facilities and Facilities of Concern

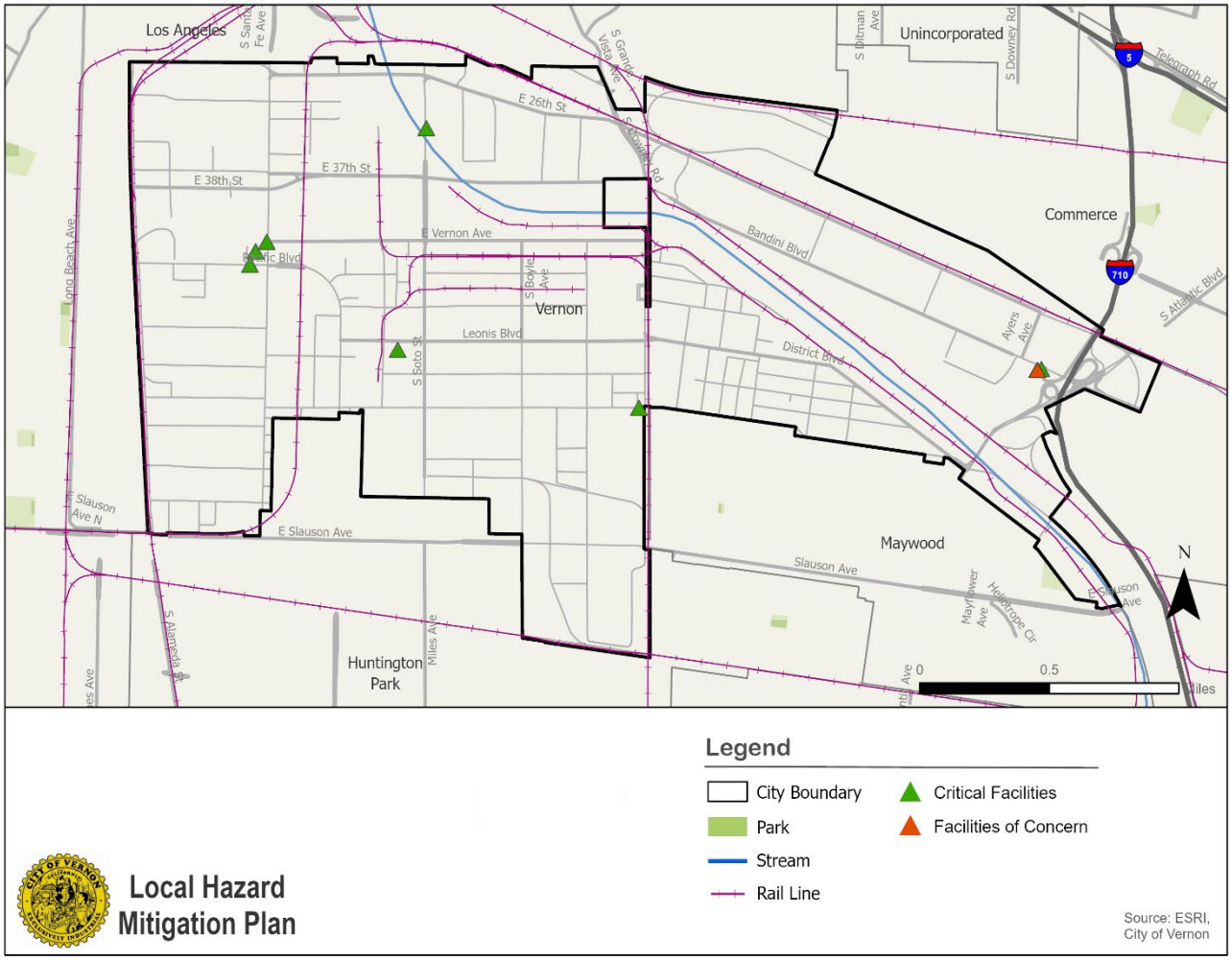
Critical facilities consist of properties and structures that play important roles in government operations and their services to the community. Examples of CFs include local government offices and yards, community centers, public safety buildings like police and fire stations, schools, and any other properties a city has deemed essential for its operations. CFs may also serve dual roles if a city designates them as public assembly points during an emergency. CFs are often owned by the City, but many are also owned and operated privately, such as some utilities and telecommunication infrastructure.

The Hazard Mitigation Planning Committee identified 26 CFs or FOC in Vernon that fall into 2 categories based on their function or characteristics. **Table 4-1** shows the number of CFs and FOC in each category, the total estimated value of the facilities in each category, and examples of the facilities in each. **Appendix D** has a complete list of the CFs and FOC. **Figure 4-1** shows the locations of CFs and FOC in Vernon that were mapped. Some facilities were not mapped due to security concerns.

Table 4-1: Critical Facilities and Facilities of Concern

Category	Number of Facilities		Examples	Potential Loss
	CRITICAL	CONCERN		
City Facilities (City Hall, Fire, Police)	7	0	Vernon Civic Center Complex Site, Fire Stations, Police Station	$96,048,295*
Infrastructure Facilities	18	2	Water Tank, Pumping Stations	$327,544,894*
Total	**25**	**2**	---	**$423,593,189***

Figure 4-1: Critical Facilities and Facilities of Concern in Vernon



* 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.

The potential loss value is the total insured value of the CFs that fall within the hazard zone. It is intended to provide a ballpark estimate of replacement cost if the property is completely or severely damaged. The actual repair costs could be smaller or larger than the provided estimate. The data was provided by the City's Property Schedule, and therefore, information for facilities not owned by the City are not shown (e.g., bridges, private buildings). In some instances, replacement cost information was not made available. Where this occurs, "N/A" has been used within the table.

Based on the available data provided by the City, there is a minimum of $423,593,189 worth of City-owned assets. The total potential loss value of all City-owned and non-City-owned assets is much higher but is not known due to data limitations. The greatest potential for loss among the City-owned assets comes from utilities infrastructure facilities. The next

category with the greatest potential for loss is the City Facilities category, including buildings like City Hall, Fire Stations, and the Vernon Police Station. To better understand the magnitude of impacts, this plan identifies representative percentages of potential impact based on the total valuation of City assets. For planning purposes, we identified different tiers of impact that could happen. It is reasonable to assume that impacts would not exceed 50% of the total asset value city-wide. The following are parameters to help understand how much a proposed investment/improvement compares to the existing assets within the City:

- 1% Impact - $4,235,932
- 5% Impact – $21,179,659
- 10% Impact – $42,359,319
- 20% Impact - $84,718,637
- 50% Impact - $211,796,595

The likelihood that all facilities are completely damaged at the same time is extremely remote. Most impacts are anticipated to be isolated to certain 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.

VULNERABLE POPULATIONS

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

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

- **Disability status:** Persons with disabilities may often have reduced mobility and experience difficulties living independently. As a result, they may have little or no ability to prepare for and mitigate hazard conditions without assistance from others.
- **Income levels:** Lower-income households are less likely to have the financial resources to implement mitigation activities on their residences. They may also struggle with having the necessary time to find and access educational resources discussing hazard mitigation strategies. Furthermore, lower-income households are less likely to be able to afford to move

to areas that are safer or less at risk of being impacted by a hazard. The national poverty limit standard for the U.S. for a four-person family is approximately an income of $26,200 or less. For Los Angeles County, the FY 2020 Low-Income Limit for a four-person family, according to Housing and Urban Development (HUD), is $64,000.

- **Seniors (individuals at least 65 years of age):** Seniors are more likely to have reduced mobility, physical and/or mental disabilities, and lower-income levels, all of which may decrease their ability to prepare for and mitigate a hazard event.

Table 4-2 shows the amounts of people in Vernon who meet at least one of the criteria for threatened, vulnerable populations. For more detailed demographic information, please refer to **Chapter 2**.

Table 4-2: Vernon Threatened-Population Metrics

Threatened Population Metric	Community-Wide Data
Population	118
Households	29
Median household income	$63,589
Renter Households	82.8%
Percentage of households with at least one person living with a disability	28.6%
Percentage of households living under the poverty limit	0.0%
Percentage of households with one member aged 65+	19.0%

Source: US Census Bureau, American Community Survey, 2017-2021 5-Year Estimates. 2021. "Table DP03: Selected Economic Characteristics in the United States." https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_DP03&prodType=table

The social threat analysis also shows the threat other populations may encounter, such as persons experiencing homelessness or persons without access to lifelines (vehicles or communication networks). Since data for these groups are not readily available, there is no definitive way to determine the amount of these persons in areas of elevated risk, so this assessment will discuss how these other threatened groups may also be affected on a general level.

Data Limitations and Notes on Vulnerability Tables

Due to data limitations, the data comparing the hazard zone population with the Citywide population comes from two separate sources. The Citywide data comes from the US Census Bureau's American Community Survey, and the hazard zone population data comes from ESRI's Business Analyst reports. As a result, there may be minor discrepancies in comparing the two data sets. The data that should be considered correct for this plan is the ACS data reported in Chapter 2.

Other Assets

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

Threat Profiles

SEISMIC HAZARDS

PHYSICAL THREAT

SEISMIC SHAKING

Many physical assets in the City are estimated to experience the same seismic shaking intensity, ranging from 55 to 75% g (shaking intensity in relation to earth's gravity). Therefore, all facilities could potentially be damaged during a significant seismic event, which would likely be extremely costly for the City. If all facilities were to be damaged at the same time during a seismic shaking event, it can be assumed that the City would incur a percentage of the maximum potential loss of its physical assets. Assuming 20% of the City's assets are impacted, this potential loss could amount to over $45 million. Underground physical assets, like pipelines or utilities, could be damaged if nearby faults ruptured below the surface. In such a scenario, natural gas and water delivery service to Vernon homes and businesses would be out of commission until repairs are completed. **Figure 4-2** identifies CFs and FOC in Vernon that are threatened by seismic shaking. **Table 4-3** identifies the potential loss to CFs and FOC from damage caused by seismic shaking within the city of Vernon.

Table 4-3: Critical Facilities and Facilities of Concern (Seismic Shaking 0.75)

Category	Number of Facilities		Potential Loss*
	Critical	Concern	
City Facilities (City Hall, Fire, Police)	7	0	$96,048,295
Infrastructure Facilities	18	2	$327,544,894
Total	**25**	**2**	**$423,593,189**

* Based on the City of Vernon insured replacement values

LIQUEFACTION

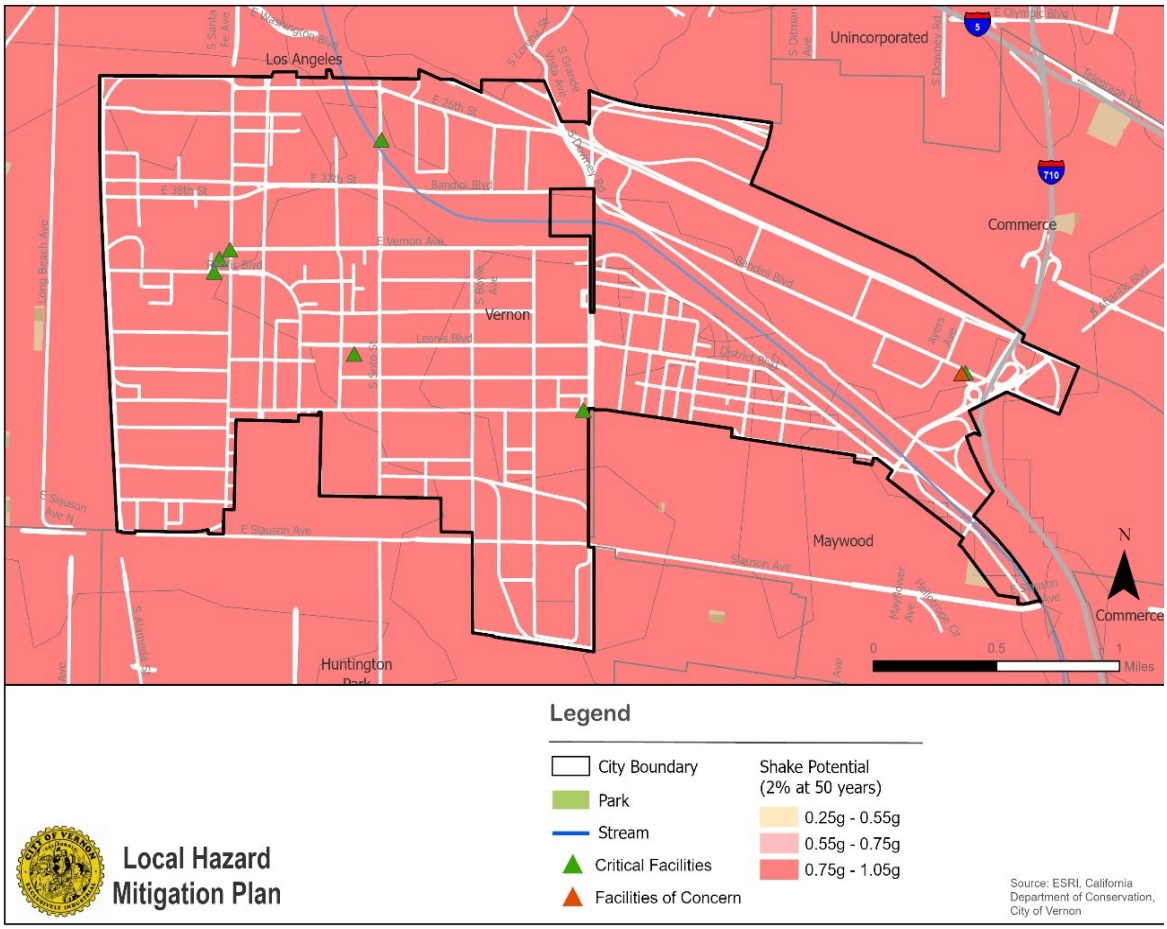
Due to the City's location and the number of active faults in the region capable of generating large earthquakes, the potential for CFs and FOC to be affected by liquefaction is a concern. **Table 4-4** identifies the CFs and FOC located within these areas, accounting for over $324 million in potential losses affecting 4 CFs and 11 FOC. **Figure 4-3** displays the liquefaction hazard zones, with the city's CFs and FOCs located within the hazard zone.

Table 4-4: Critical Facilities and Facilities of Concern (Liquefaction)

Category	Number of Facilities		Potential Loss*
	Critical	Concern	
City Facilities (City Hall, Fire, Police)	3	10	$19,739,933
Infrastructure Facilities	1	1	$304,896,900
Total	**4**	**11**	**$324,636,833**

* Based on the City of Vernon insured replacement values

Figure 4-2: Vernon Critical Facilities and Facilities of Concern Located in Seismic Shaking Zones



Social Threat

The risk of a seismic event is a danger to all groups in Vernon though some are more threatened than others.

Seismic Shaking

Seniors, pregnant women, and persons with disabilities are more threatened by seismic shaking since they may have limited mobility and may be unable to reach shelter in time. Even if these groups reach shelter in time, they may be trapped if furniture or building components have fallen around them. Renters and low-income persons are also more threatened by seismic shaking since these groups may live in homes that are not properly retrofitted to survive the stresses of a seismic event. These groups may not be able to absorb the costs associated with repairing their homes or looking for new housing should their existing housing be too damaged for occupancy. **Table 4-5** shows the populations of Vernon vulnerable to seismic shaking.

Figure 4-3: Physical Threat of Liquefaction to CFs and FOCs

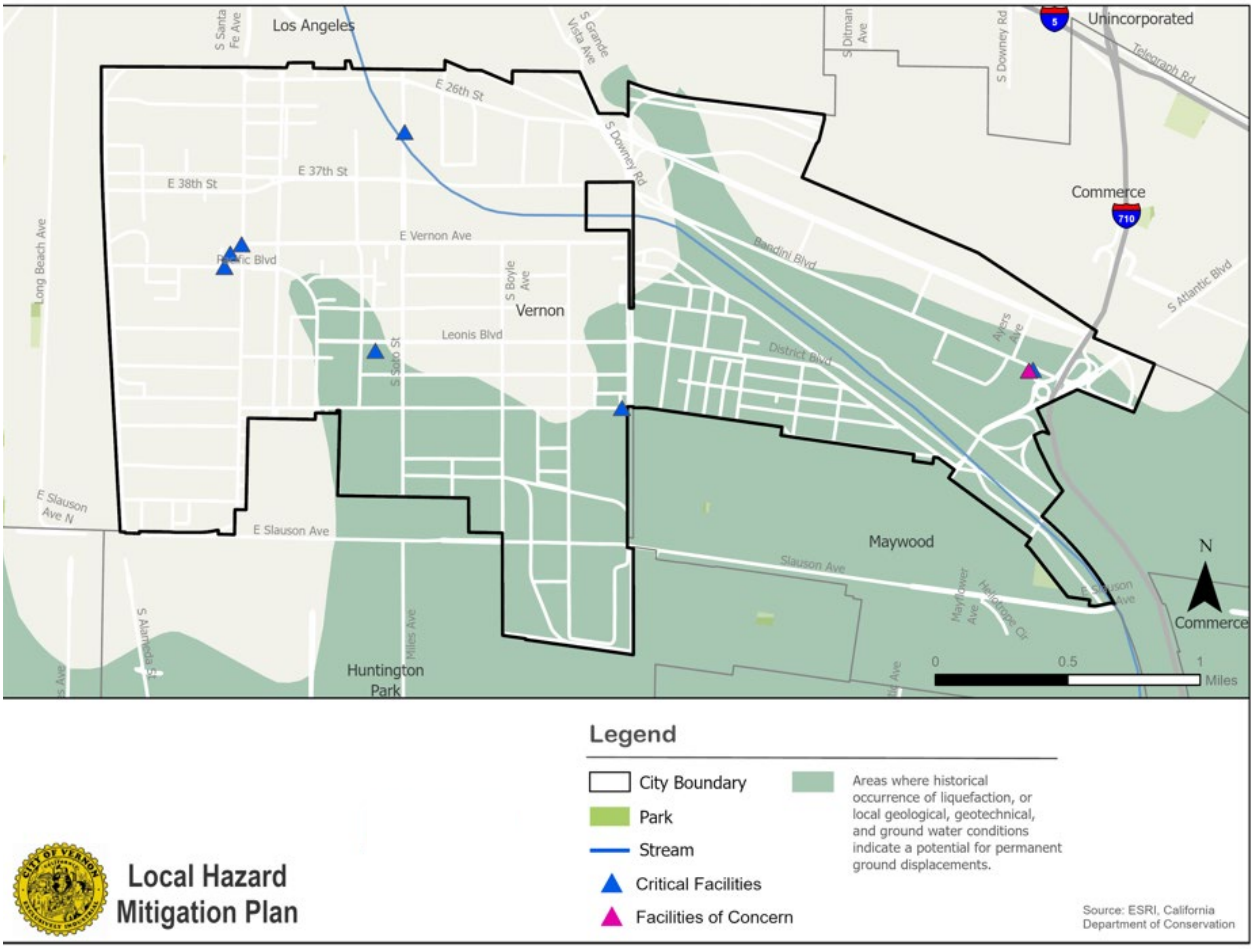


Table 4-5: Vernon Seismic Shaking Threatened-Population Metrics

Threatened Population Metric	Seismic Shake 0.75	Community-Wide Data
Population	118	118
Households	29	29
Median household income	$63,589	$63,589
Renter Households	82.8%	82.8%
Percentage of households with at least one person living with a disability	28.6%	28.6%
Percentage of households living under the poverty limit	0.0%	0.0%
Percentage of households with one member aged 65+	19.0%	19.0%

Source: US Census Bureau, American Community Survey, 2017-2021 5-Year Estimates. 2021. "Table DP03: Selected Economic Characteristics in the United States." https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_DP03&prodType=table

Liquefaction

Since a large portion of the City is located within a designated liquefaction zone, a sizeable proportion of the City's population (over 37%) faces the threat of impact due to liquefaction. Thankfully, much of the construction that has occurred over the years throughout the City has taken liquefaction into consideration. However, buildings of older construction may experience greater impact due to the lack of financial resources needed to make repairs and/or the cost associated with retrofitting older buildings.

Table 4-6 compares the populations within the liquefaction hazard zones with citywide populations. The liquefaction hazard zones cover roughly a third of the population and approximately half of the households in Vernon, which have a median household income that is approximately $3,500 higher than citywide populations. Persons living with a disability in this area are slightly higher, while households with a member aged 65+ are slightly higher than the city average.

Table 4-6: Liquefaction Hazard Zone Threatened Populations

Threatened Population Metric	Liquefaction Zones	City of Vernon
Population	44	118
Households	14	29
Median household income	$67,099	$63,589
Renter Occupied Households	85.7%	82.8%
Percentage of households with at least one person living with a disability	30.0%	28.6%
Percentage of households living under the poverty limit	0.0%	0.0%
Percentage of households with one member aged 65+	20.0%	19.0%

Source: US Census Bureau, American Community Survey, 2017-2021 5-Year Estimates. 2021. "Table DP03: Selected Economic Characteristics in the United States." https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_DP03&prodType=table

Other Threats

Seismic Shaking

As technology like early earthquake warnings systems are developed, it can be expected that utilities will take advantage of advanced warnings to shut off utilities and control potential leaks following a seismic shaking event. The goal of early warning systems is to halt the use of bridges or move workers to a safe distance away from hazardous conditions. With early warning, workers can cease their activity and take shelter until they can be safely evacuated. This would also allow services to become non-operational during the event and remain inactive until authorities are confident that it is safe to reactivate utilities and return employees to their workplaces. The length of this time would vary depending on the magnitude of the event. A significant earthquake would likely put utilities out of commission and halt any employment activity in the City for a few hours, possibly several days, given the intensity of the seismic event. The City and the region would lose economic activity that would normally occur during the period of the outage. Structures, like telephone poles or

power transmission towers that are felled by the shaking, could block roadways and prevent emergency response teams from reaching victims or evacuees who need assistance.

LIQUEFACTION

Services and mobility may be disrupted during and following an event where liquefaction occurs. Sidewalks, roadways, and pipelines may become fractured and disjointed due to the liquefying soils. Roads and sidewalks may be usable in some form, but a severe event may render them impassible until they are repaired. Broken gas and water pipelines would result in utility outages in Vernon homes and businesses. Since these are underground, the outage duration could likely be extended until the pipelines could be excavated and replaced by utility operators. Damage to power lines is possible if significant damage to poles occurs. Homes and businesses may be damaged and rendered unsafe for occupancy if they experience any leaning or structural damage resulting from liquefaction. This would impact the City's and region's economic activity.

DROUGHT

PHYSICAL THREAT

Since the primary threat from drought is reduced water supply and availability, there are no foreseeable threats to any of the physical assets in the city. Most of the city's water comes from the Central Groundwater Basin, which is classified as long-term drought-resilient (meaning it would have to be an exceptionally long drought event to affect the source) and is supplied through the Vernon Public Utilities (VPU) department. Any water delivery infrastructure that is not used or experiences reduced usage could fall into some degree of disrepair if maintenance is deferred. Lower water pressures may cause some aged water pipes to release rust particles into the water supply.

SOCIAL THREAT

Droughts are unlikely to cause serious social threats to households and businesses in Vernon; however, residents and business owners in the City may experience financial impacts associated with potential increases in water rates or due to water conservation efforts. Those with less access to financial resources, such as businesses that require high water use, low-income households or seniors, could be negatively impacted if higher water rates or additional fees are imposed during a severe drought event.

OTHER THREATS

No other threats are anticipated in Vernon resulting from drought.

EPIDEMIC/PANDEMIC

PHYSICAL THREAT

Since diseases only affect the human body, an epidemic, pandemic, or vector-borne disease could not *directly* threaten physical assets in Vernon.

SOCIAL THREAT

To some degree, diseases affect everyone in Vernon, whether the impact is a mild inconvenience or death. There is no universally applicable social threat from diseases and vectors since each disease affects the body differently. Generally, however, seniors, infants, pregnant women, and people with weakened immune defenses experience the greatest risk posed by an epidemic/pandemic. Lower-income persons, persons with disabilities, or those who live alone may experience greater vulnerability to illness since they may be unable to or experience challenges in accessing treatment.

OTHER THREATS

A major outbreak of disease could overwhelm the capacity of medical facilities in Vernon and in the surrounding area, potentially leading to greater inaccessibility of medical services and a shortage of medical personnel. A major outbreak could also affect large amounts of the City's and region's workforce, inhibiting the regional economy of Los Angeles County and Southern California. Services such as telecommunications, utilities, recreation, and commerce may become restricted or even entirely unavailable for a period. Since March 2020, the City and the rest of the world have been dealing with the COVID-19 pandemic incident that has impacted the state and many cities and counties. As a new strain and relatively unknown disease, it has been critically important to effectively communicate the risk of infection and procedures to obtain medical help effectively.

FLOODING

PHYSICAL THREAT

No physical assets within Vernon are located within the 100-year flood zone (1.0% Annual Chance of Flooding) or 500-year flood zone (0.2% Annual Chance of Flooding). Any physical assets located within areas of inadequate storm drain capacity could experience flooding and damage, but these locations would be isolated. Current mapping identifies a small location in southeast Vernon where a portion of the community is under reduced risk due to the presence of a levee (**Figure 4-4**).

SOCIAL THREAT

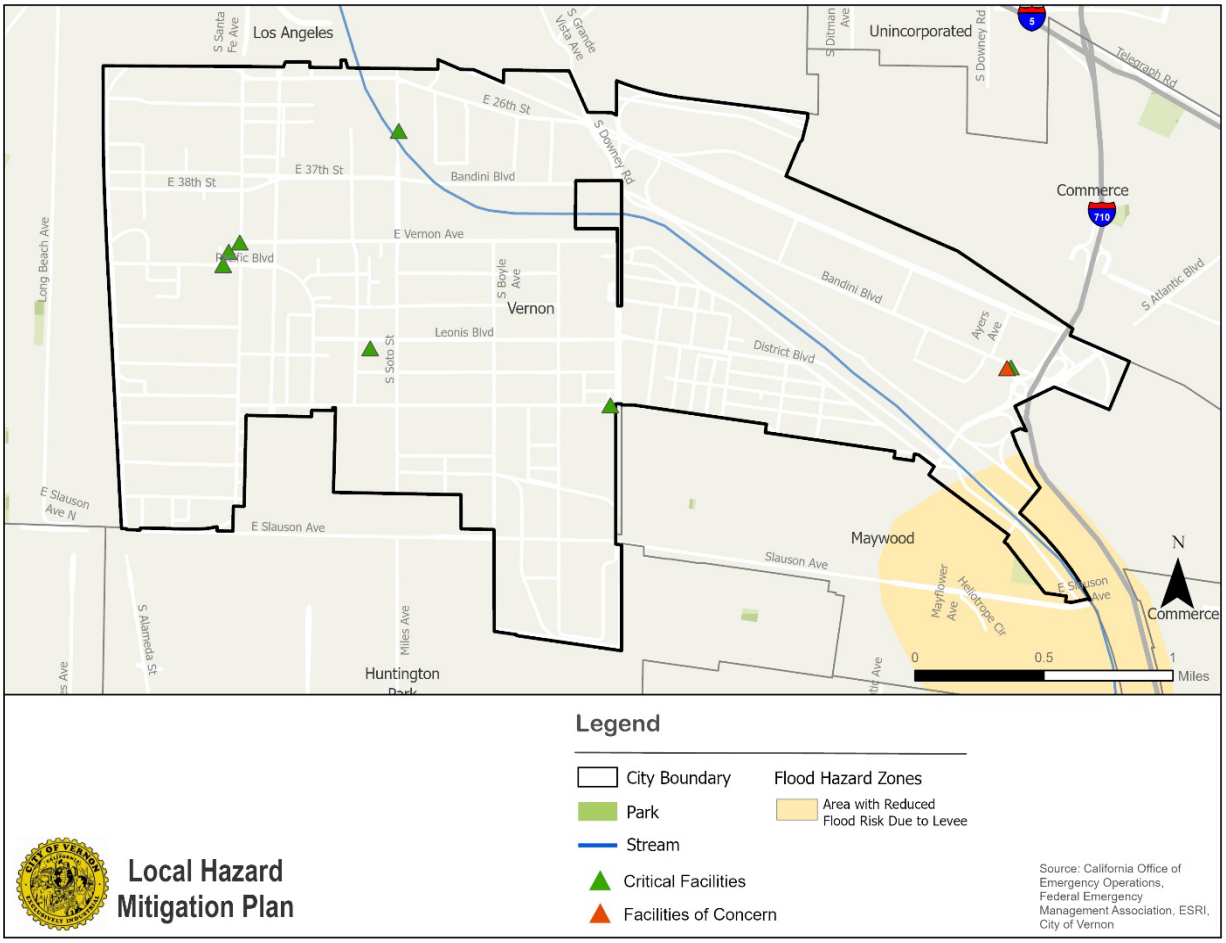
Flooding primarily affects residents living within the 100-year and 500-year flood zones. However, as previously stated, a small portion of the community is within an area of reduced flood risk due to the construction of levees. Outside of flood hazard areas, persons experiencing homelessness may be vulnerable as they can be caught outside during flood conditions with limited or no shelter. Though floodwaters in Vernon are rare, even a floodwater depth of six inches may render any makeshift structures uninhabitable. Possessions such as sleeping bags or electronic devices may be damaged or swept away by these types of events.

OTHER THREATS

Flooding may temporarily stop any type of transportation in the city. Debris carried by floodwaters can block roadways, hinder access for vehicles, and potentially affect emergency

response services. Rushing water only one foot deep is enough to carry small vehicles. A severe flood situation where the maximum anticipated flood depth of one foot is realized may prevent people who own smaller vehicles from driving to work, leading to reduced economic activity. Severe flooding that causes serious damage to homes and businesses may also reduce economic activity until repair work is completed.

Figure 4-4: FEMA Flood Zones Protected by Levees within Vernon



Air Pollution

Physical Threat

In addition to damaging the environment and human health, air pollution can harm buildings, monuments, outdoor statues, and other structures. The chemicals in air pollution eat away at materials such as sandstone, limestone, mortar, and different metals. Acid rain dissolves stone and can create cracks in buildings. The potential damage that can be caused by the effects of air pollution isn't necessarily immediate; but occurs over a longer period of

time.[38]CFs and FOC within Vernon are not currently experiencing signs of physical damage as it related to air pollution.

SOCIAL THREAT

Breathing ground-level ozone can trigger various health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ozone also can reduce lung function and inflame the lining of the lungs, with repeated exposure sometimes leading to permanently scarring of lung tissue.

Healthy people can also experience difficulty breathing when exposed to ozone pollution. Because ozone forms in hot weather, anyone who spends time outdoors in the summer may be affected, particularly children, outdoor workers, and people exercising. Some people who don't fall into these categories may also find themselves sensitive to ozone. This is discussed further in the Hazardous Materials Release profile.

OTHER THREATS

Property owners also feel the effects of air pollution. Acid rain can dissolve paint and eat away at aluminum siding, while dirt particles in the air stick to buildings and can ruin finishes and the aesthetics of a community. As with the potential physical threat to the city, this damage will generally occur over a longer period of time.

HAZARDOUS MATERIALS RELEASE

PHYSICAL THREAT

Hazardous materials can cause damage to physical assets in Vernon if they are released into the environment. Corrosive hazardous materials can damage building exteriors of CFs or FOC. Flammable hazardous materials can potentially start fires affecting properties, which can spread to neighboring properties or other parts of the community. Generally, sites closer to the origin for the release of the hazardous materials are threatened greater than those further away.

Table 4-7 shows the numbers of physical assets in Vernon threatened by a hazardous materials release within 500 feet of a site storing or using hazardous materials. There are 15 CFs and 1 FOC that are vital to City operations located within 500 feet of a site with hazardous materials. The total potential loss estimated for these locations is approximately $356.7 million.

Figure 4-5 identifies these vulnerable locations along with the CalEnviroScreen results for city census tracts**.** CalEnviroScreen is a mapping tool that helps identify California communities most affected by pollution sources and where people are often especially vulnerable to pollution's effects. An area with a high score is one that experiences a much higher pollution burden than areas with low scores. Vernon is unique, as its residential

[38]https://www.windows2universe.org/earth/Atmosphere/property.html#:~:text=The%20chemicals%20in%20air%20pollution,structures%2C%20can%20be%20very%20expensive.

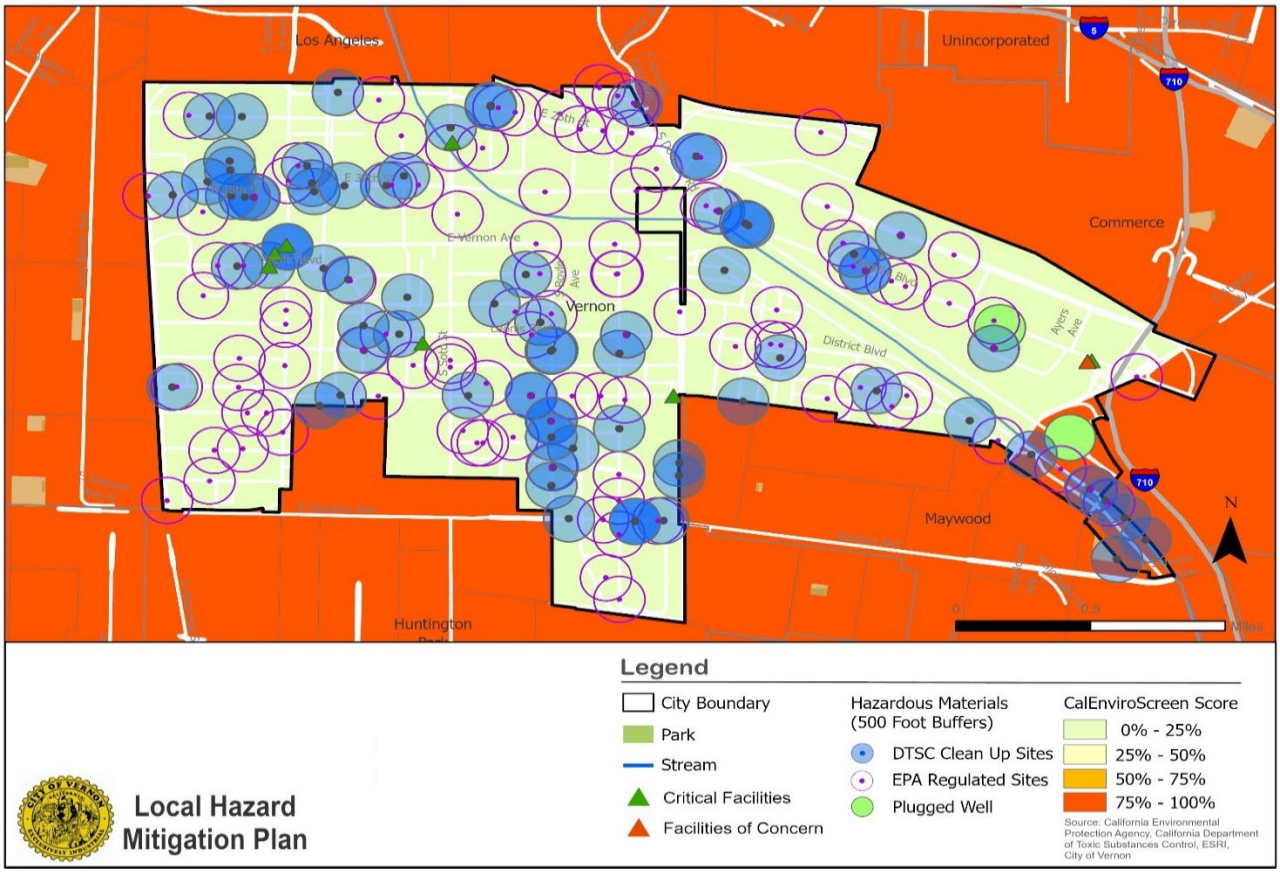
population is extremely low, but given its industrial and commercial nature, it has a high pollution score. Due to a low residential population, the CalEnviroScreen score for the City looks low, however surrounding census tracts outside of the City illustrates the degree to which populations are subjected to pollution and socioeconomic conditions affecting them.

Table 4-7: Critical Facilities and Facilities of Concern (HazMat Buffer 500 ft)

Category	Number of Facilities		Potential Loss*
	Critical	Concern	
City Facilities (City Hall, Fire, Police)	5	0	$91,308,362
Infrastructure Facilities	10	1	$265,437,971
Total	**15**	**1**	**$356,746,333**

* Based on the City of Vernon insured replacement values

Figure 4-5: Vernon CalEnviroScreen Score, and CFs and FOC within 500 feet of Hazardous Materials Site



Social Threat

The threat of a hazardous materials release event affects those closest to a source location, like industrial sites, gas stations, gas transmission lines, or sewer mains. **Table 4-8** shows the vulnerable populations living within 500 feet of a hazardous materials storage/waste site. For these locations, the median household income is approximately $11,000 greater than the city-wide average. However due to the small population size within the City and this hazard area it is difficult to make definitive conclusions about the potential vulnerability of these populations.

Table 4-8: Hazardous Materials Threatened Populations

Threatened Population Metric	500 Feet from Hazardous Materials Site	City of Vernon
Population	3	118
Households	2	29
Median household income	$75,000	$63,589
Renter Occupied Households	100.0%	82.8%
Percentage of households with at least one person living with a disability	50.0%	28.6%
Percentage of households living under the poverty limit	0.0%	0.0%
Percentage of households with one member aged 65+	0.0%	19.0%

Source: US Census Bureau, American Community Survey, 2017-2021 5-Year Estimates. 2021. "Table DP03: Selected Economic Characteristics in the United States." https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_DP03&prodType=table

Vernon residents living next to major transportation infrastructure, such as railways or major arterials, also face a greater threat of hazardous material release since vehicles transporting these materials may be involved in accidents causing release into the environment.

Vulnerable portions of the population, such as the elderly, low-income persons, or renters, may face a potentially greater risk of exposure since they may not have the financial resources or ability to retrofit their homes against infiltration by hazardous materials or the ability to move to a location that is further from the potential sources of hazardous materials release events.

Other Threats

A hazardous materials release could threaten the transportation networks through out Vernon and the region. Large portions of the local road or rail systems may be closed to keep people away from areas contaminated by a release to allow for remediation and cleanup. If a highly corrosive substance is released, it could potentially cause significant damage to the exteriors of buildings in the area or depending on the direction of prevailing winds carry hazardous particulate, fumes, and vapor into new areas that may cause harm to people and property.

Severe Wind

Physical Threat

Intense winds likely present the greatest threat to physical structures, particularly from trees or branches that fall on buildings and cause substantial damage. Older structures that have deferred maintenance or have not been retrofitted for high wind conditions may suffer greater damage than newer/updated structures. Utility lines and wooden utility poles face an elevated threat from wind, as do buildings without reinforced roofs. Vernon has experienced electrical infrastructure damage and service failure/interruption because of severe wind incidents. All facilities within the entire City are susceptible to severe wind events. While the majority of the City is industrial in nature, all buildings could be physically impacted by wind events. Facilities that have been poorly maintained or are located in close proximity to trees or power lines that could fall during a wind event would be at a higher risk to damage than others.

Social Threat

The entire City is susceptible to severe wind events; therefore, all populations within the City are susceptible to the effects of severe wind. Vulnerable populations may be especially challenged during severe wind events for several reasons. Buildings damaged during an event may become uninhabitable or expensive to repair, which could strain residents/businesses if they cannot afford to make the repairs. Damage to businesses may require clean-up and repairs, which could include temporary closure, affecting the City's economic activity. Vulnerable populations may be unable to adapt to the effects of severe wind events if power loss for an extended period of time occurs or causes residents/businesses to absorb higher costs because the wind event requires additional time, materials, or processes to live or work post-event.

Other Threats

Southern California and the City of Vernon all suffer from seasonal Santa Ana Winds and will for the foreseeable future. Extreme wind events can make other risks such as urban fires and hazardous materials release exponentially worse.

Dam Failure

Physical Threat

Various factors, such as the amount of water released, the distance between the dam failure site, and the topography of the surrounding land, all influence the extent to which physical assets in Vernon are potentially threatened. The two dams of concern to the City are owned, inspected, and operated by the U.S. Army Corps of Engineers (ACOE). Hansen Dam and Sepulveda Dam were built for flood risk management along the Los Angeles River. Inundation mapping indicates that should the Hansen Dam fail at maximum capacity, the entire City of Vernon could become inundated with water. **Table 4-9** represents the extent to which dam failure results in the potential loss of all CFs and FOC, which amount to approximately $423 million in losses.

Social Threat

Dam Failure hazards in the City would impact a variety of downstream properties. **Table 4-10** identifies the dam impacts associated with the failure of these facilities and the potential harm that could occur to downstream properties. Based on this analysis, the mapping shows that the entire population of Vernon would be at risk in the event of a failure of the Hansen Dam at full capacity.

Table 4-9: Critical Facilities and Facilities of Concern (Dam Failure)

Category	Number of Facilities		Potential Loss*
	Critical	Concern	
City Facilities (City Hall, Fire, Police)	7	0	$96,048,295
Infrastructure Facilities	18	2	$327,544,894
Total	**25**	**2**	**$423,593,189**

* Based on the City of Vernon insured replacement values

Table 4-10: Threatened Populations (Dam Failure)

Threatened Population Metric	Hansen Dam	City of Vernon
Population	118	118
Households	29	29
Median household income	$63,589	$63,589
Renter Occupied Households	82.8%	82.8%
Percentage of households with at least one person living with a disability	28.6%	28.6%
Percentage of households living under the poverty limit	0.0%	0.0%
Percentage of households with one member aged 65+	19.0%	19.0%

Source: US Census Bureau, American Community Survey, 2017-2021 5-Year Estimates. 2021. "Table DP03: Selected Economic Characteristics in the United States." https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_DP03&prodType=table

Other Threats

Dam failures are often triggered by other events (seismic shaking, intense rainstorms, etc.). There will almost certainly be service disruptions in Vernon if these events occur. Residents and workers may find that street lighting and traffic signals may be temporarily disabled if the inundation area interferes with the electronic systems that control them. Water would most likely inundate roadways and other low-lying, flat areas, such as parking lots, open spaces, and shipping/service yards. In severe scenarios, people's mobility in these areas would likely be restricted or even impossible. Any unprotected or unhoused mechanical or electronic equipment that is not properly elevated could become waterlogged and inoperable until crews can conduct repairs or replacement, if necessary.

Chapter 5 – Hazard Mitigation Strategy

Strategy Development Process

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

Use of Hazard and Threat Assessment

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

Capabilities Assessment

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

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

Capabilities Improvement/Expansion

The ability to expand current mitigation capabilities will generally be reliant upon the budgeting allocated for each department/program for that fiscal year. The level at which these programs may or may not be expanded upon, will be dependent upon the amount of

funding received. FEMA has released a series of guides over the past few years which highlight some of the ways in which jurisdictions can expand mitigation. Some strategies for increasing current mitigation capabilities may include:

1. 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.
2. Engaging parts of the community that may not be actively involved in mitigation efforts.
3. Expanding the number and types of organizations involved in mitigation planning and implementation, increasing both efficiency and bandwidth.
4. Fostering new relationships to bring underrepresented populations and partners to the hazards mitigation planning process.
5. During the annual LHMP review, the committee should look for opportunities to fund and expand/enhance the effectiveness of current mitigation actions.
6. 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.

Table 5-1 shows the capabilities assessment for Vernon. Many of these capabilities could be enhanced and improved by the strategies listed above. In some cases specific strategies have been identified for key capabilities determined to be priorities for City focus in the future.

Table 5-1: City of Vernon Capabilities Assessment

Resource	Resource Description	Connection to Mitigation (Last Updated)
Planning and Regulatory Capabilities		
Capital Asset Management	Capital projects have a major impact on the quality of City services, the community's economic vitality, and the overall quality of life. The City maintains its capital assets for capital improvement planning, capital budgeting, capital project management, capital asset maintenance, insurance, and financial reporting. All of the above are important components of the City's long-term financial sustainability and vitality, as capital assets enable the City to deliver its services to its constituents while recouping the cost of those capital assets through user fees and taxes.	Integration of this Plan into the Capital Improvement Projects (CIP) via capital asset management can assist in mitigation efforts by identifying new funding sources for future improvements. As new grant opportunities become available, the CIP may have 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.

General Plan	The General Plan contains the goals, policies, and explanatory detail about issues important to the future of Vernon. Plan policies address land use (including housing), infrastructure, public safety, resources, and noise. This General Plan addresses Vernon's continuing change, growth, and development over the next two decades and provides a public policy statement regarding the future of the City.	The General Plan serves as a framework for mitigation actions, establishing the overarching Vernon General Plan policies for mitigation activities. To provide a stronger enforcement mechanism, mitigation actions may be directly incorporated into the general plan as policies and/or implementation actions.
Comprehensive Zoning Ordinance	The Comprehensive Zoning Ordinance is included in the Municipal Code (Title 17, Zoning). The purpose of the Comprehensive zoning ordinance is to consolidate and coordinate all existing zoning regulations and provisions into one comprehensive zoning plan that designates, regulates, and restricts the use, location, and size of buildings, ancillary Structures, and land for industrial uses and other permitted purposes and that establishes performance and development standards to protect the public health, safety, and welfare. To achieve these purposes, this ordinance establishes one Zone within the City (Industrial) and various Overlay Zones of such number, shape, and area as have been deemed best suited to carry out these regulations and provide for the administration and enforcement of aid regulations. It is declared that the City Council has given due and special consideration to the City's industrial nature and to the City's continuing focus on providing a suitable location for industry and the infrastructure and services required to serve industrial activities. The City intends to continue to support the ongoing industrial character of the City while recognizing the changing industrial environment throughout the United States and globally and to respond appropriately.	Mitigation actions related to the siting, construction, and operation of new developments in Vernon may be implemented through the Zoning Code to ensure these locations address risks identified in the plan.
Vernon Municipal Code	The Building Code is part of the City's Municipal Code (Title 15, Building and Construction), including the building code and other associated standards (Residential Code, Mechanical Code, Electrical Code, etc.) that govern how new buildings are constructed. They are published by the state and are	The building code allows for buildings to be constructed properly and in compliance with building requirements and regulations in the City. Mitigation actions to construct buildings to a safer

	adopted by local communities, sometimes with amendments to make the codes more locally applicable. The Municipal Code also contains the Fire Code (Chapter 8.04, Fire Code adopted by Reference), which states that Vernon adopted the Los Angeles County Fire Code (Title 32 of the Los Angeles County Code).	standard, allowing them to better resist damage during a hazard event, could be part of future building code updates. **Opportunity for Improvement:** Updates to the City's Municipal Code would ensure future developments and redevelopments are meeting updated requirements that reduce potential hazards and address many of the potential challenges older buildings and developments face. Updated regulations can reduce future conflicts during the development process and make it easier to understand the requirements that will be placed on new developments and redevelopments proposed.
Public Works Division	The Public Works Division is responsible for maintaining and constructing the City's infrastructure, City-owned buildings, warehouse, and vehicle fleet. Comprised of more than 20 employees, the division consists of the engineering and survey sections, public works crews, and the City garage. The Public Works Division reviews, inspects, and approves all new construction within the public right-of-way and cooperates with other departments to review and process all parcel maps, lot line adjustments, lot mergers, covenants, and agreements.	Mitigation actions include the planning, designing, and managing mitigation projects for the City. This department aids the City in the identification of potential violations and creating the projects to address them
Code Enforcement	Code enforcement responsibilities are part of the Building Division Services. In addition to its regular duties, the Building Services Division also ensures that the Vernon municipal code, and all other applicable CA state codes are followed.	Mitigation activities could include the identification of violations then implementing the necessary correction to reduce vulnerability and mitigate damage.
2019 County of Los Angeles All Hazards Mitigation Plan.	Mitigation actions for Vernon that require coordination with the county may be integrated into the County of Los Angeles All Hazards Mitigation Plan. Similar mitigation actions in both the counties and Vernon's hazard mitigation plans can lead to a more	The County of Los Angeles All Hazards Mitigation Plan identifies and describes the hazard events that may occur in the unincorporated areas of Los Angeles County and

	regionally unified hazard mitigation strategy, improving effectiveness.	provides a suite of mitigation actions to help decrease the potential damage from these hazards.
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 California's people and assets. Like a local hazard mitigation plan, the State Hazard Mitigation Plan is updated every five years.	The Committee can use the State Hazard Mitigation Plan as a source of information to refine the hazard profiles and vulnerability assessments in future Vernon LHMPs.
Storm Water Program	The State Water Resources Control Board (SWRCB) is the primary agency for protecting California's beaches and rivers. The City of Vernon is a co-permittee to the Los Angeles County Municipal Stormwater Permit, which the SWRCB regulates. The Vernon Health and Environmental Control Department works with the Public Works, Water & Development Services to prevent pollution of the storm drain system, which leads directly to the Los Angeles River and eventually to local beaches. Stormwater control is often addressed as part of hazardous materials inspections and can include providing educational materials for businesses. In addition to administering stormwater permit compliance activities, the Vernon Health and Environmental Control Department offers the following stormwater services to Vernon businesses: on-site facility evaluations for pollution prevention improvements, construction, and development project evaluations, stormwater best management practice evaluations, and a storm drain stencil loan program for marking on-site storm drains.	This plan helps set current best standards and practices that aid in flood mitigation for the City and surrounding Los Angeles region.
Administrative and Political Capabilities		
City Council	The City of Vernon exists as a municipal corporation, first established on Sept. 22, 1905. Each Council Member serves a staggered five-year term, and the title of Mayor and Mayor Pro Tempore rotate based on year of election. All five members have an equal say, but the Mayor is the presiding officer at meetings and serves as the head of the City for ceremonial purposes. The City Council appoints a City Administrator to oversee daily operations, public relations,	Mitigation activities implemented by this office may include direction setting with the City Council and City Departments and prioritization of new initiatives that support mitigation activities within the City

	the legislative process, and finances. The City Administrator's Department also develops programs to benefit Vernon's business community. The City Administrator acts as chief staff adviser to the City Council, providing essential information for the Council's decision-making process.	
City Clerk	The City Clerk plays a key role in ensuring that Vernon's government is run effectively. Some of the Clerks' main responsibilities include preparing and posting agendas for legislative city meetings; certifying resolutions, ordinances, and the minutes of legislative city meetings; management of official City records; managing campaign disclosures; conducting City elections, certifying, and maintaining the legislative history of the City of Vernon; and acting as the custodian of the city seal.	Mitigation activities implemented by this office may include direction setting with the City Council and City Departments and prioritizing new initiatives that support mitigation activities within the city. Updates to City codes that mitigate future hazards would be administered through the office of the City Clerk.
Records Management	The City Clerk's Office administers the records management program for the City of Vernon. To facilitate efficient retrieval and transparency, certain City records are readily available to the public online. The records available through the Public Portal include City Council minutes, resolutions, and ordinances; Boards and Commissions minutes; Investment Portfolio Reports; Building Permits; Planning Commission records; Public Works Grading Plans; and Public Works Improvement Plans.	Mitigation support from the records management program would rely on record keeping and document support during mitigation project implementation and grant reporting.
City Administrator	Vernon's City Administration oversees the City's daily operations, public relations, information technology practices, legislative process, and finances. The City Administration Department also develops programs to benefit Vernon's business community. The Vernon City Council appoints the City Administrator, who acts as its chief staff advisor and provides essential information for the council's decision-making process.	Mitigation activities implemented by this office may include direction setting with the City Council and City departments and prioritizing new initiatives and ordinances that will support mitigation projects and activities within the city.
Finance/ Treasury	The Department of Finance is responsible for the overall financial management of the City. The department oversees the treasury function, as well as annual city budgets, risk management, capital asset management, etc. They also develop fiscal policies that ensure a financially strong and effective city government and implement financial procedures that are consistently monitored	Financial management and strategic planning functions (and personnel) within the City can assist with mitigation activities by tracking costs associated with hazard events and disasters, identifying grant funding opportunities, and

	and reviewed to maintain the City's financial integrity. The primary goals of the finance department are to provide timely and relevant information to City leaders and executives to enhance decision-making and promote the long-term financial wellbeing of the City. Mitigation actions include recommending fiscal policies to city management and implementing such policies. The department provides fiscal support to all city departments and programs to ensure that the city's fiscal affairs are effectively managed and projects receive the proper funding.	establishing financial risk calculations that can help departments budget operations and maintenance, and capital improvements. **Opportunity for Improvement:** Incorporation of the criteria and decision making frameworks from this plan into the financial decision making frameworks for the City may help ensure that future decisions take into consideration hazard mitigation planning and the funding that can support future implementation.
California Governor's Office of Emergency Services	The California Governor's Office of Emergency Services (Cal OES) is the state agency responsible for reducing hazards in the state through mitigation activities, conducting emergency planning, supporting emergency response and recovery activities, and acting as a liaison between local and federal agencies on emergency-related issues. Cal OES guides hazard mitigation planning activities, shares best practices, and distributes funding opportunities.	The Committee can work with Cal OES to obtain funding to implement LHMP mitigation strategies and to receive guidance on future updates.
Federal Emergency Management Agency	The Federal Emergency Management Agency (FEMA) is the federal agency responsible for hazard mitigation, emergency preparedness, and emergency response and recovery activities. It guides state and local governments on hazard mitigation activities, including best practices and compliance with federal requirements.	FEMA also provides funding for hazard mitigation actions through grant programs.
Human Resources	The Vernon Human Resources Department is responsible for benefits administration, workers' compensation, employee/labor relations, classification, recruitment and selection, training, and development. The department supports the various departments in hiring and retaining talented people who are self-motivated and strive to deliver a high quality of service.	This department can support mitigation activities by identifying staffing needs and shortfalls and developing plans and agreements with other jurisdictions/agencies to meet future needs.

Health and Environmental Control	One of only four cities in California with its own health department, Vernon is focused on protecting the environment and ensuring the health and safety of its residents, workers, visitors, and neighboring communities. The Vernon Health and Environmental Control Department (HECD) provides comprehensive and efficient services to accomplish this goal, tailoring its operations to regulate and meet the needs of the City's large industrial sector. HECD provides Vernon businesses and residents with multiple programs to ensure that they operate as local and state regulations require. In addition, they also offer numerous programs that oversee the community's basic needs as a whole	Mitigation actions implemented by this department can assist in the dissemination of hazard awareness information, provide insight into the unique conditions hazards may impose to the various elements within the community, and create programs intended to increase overall life quality in the city.
Building Division	The Building Division is responsible for enforcing and administering City, State, and Federal Building and Safety Code regulations. This division provides services including plan checking, inspections of all new construction and renovated structures, capital improvement projects, additions, and remodeling, including all major heating, ventilation, and air conditioning units, electrical, plumbing, and structural systems. The Building division differs from most cities in that the City retains individual inspectors specifically trained to enforce specific branches of the construction industry, including building, electrical, mechanical, and plumbing. The City contracts for structural review. Given the specialized knowledge of each inspector and the ability to freely communicate regarding specific projects, it permits the City to expedite plan check review and handle specific issues unique to an industrial environment efficiently.	Mitigation activities for this department come in the form of inspections of new and established constructions, identifying potential hazards, implementing the necessary retrofits to comply with established policies, and Provide emergency response and damage assessment during and after disaster events. **Opportunity for Improvement:** The incorporation of the latest building codes and requirements into the Building Division practices and protocols can help to identify problems earlier in the development review process.
Planning Division	The Planning division oversees development in the City, with responsibilities that include maintaining Vernon's General Plan and administering the City's Zoning Ordinance, conditional use permits, parcel map, and California Environmental Quality Act (CEQA) applications.	Mitigation actions implemented by the planning department would be successfully integrating the LHMP, general plan safety element, and zoning code. Department staff would also implement the plans focusing on projects that reduce residents' and businesses' risks associated with natural and human-caused hazards.

Engineering Section	The Engineering Section is responsible for administering city contracts and designing public improvements, such as roadways, storm drains, sewers, traffic signals, and City-owned buildings. This section also maintains plans for city construction projects and prepares legal descriptions for street dedications.	Mitigation actions include maintaining and managing mitigation infrastructure and assets for the City. This Section aids the City in the identification of potential mitigation shortfalls and creates the projects to address them.
County of Los Angeles Fire Department	The Los Angeles County Fire Department is responsible for protecting the lives and property of 4 million residents living in 1.23 million housing units in 60 cities and all unincorporated areas of Los Angeles County, including Vernon. As of October 21, 2020, the City of Vernon transitioned all fire protection, paramedic, and incidental services to the Consolidated Fire Protection District of Los Angeles County.	The fire department aids in the mitigation planning process and implementation of mitigation actions and strategies, in addition to their everyday emergency response duties.
Vernon Police Department	The Vernon Police Department provides a full range of policing services to a unique community comprised primarily of businesses and industry. The Vernon Police Department Patrol Division is the largest unit in the Police Department. The Patrol Division also utilizes a Bicycle Patrol Team, and a D.A.R.E. Program for the local Vernon Elementary School. Vernon Police Department (VPD) responds to emergency calls in less than four minutes. Vernon police officers are specially trained and outfitted with the latest technology to investigate offenses unique to an industrial community. Using mobile computer terminals in their patrol cars, officers can query criminal databases from the field and connect seamlessly with the Department's advanced communications center, which is fully integrated with its records management and E911 systems. With its specialized units, the VPD maintains an effective community policing strategy.	As emergency preparedness is part of the department's responsibilities, the Vernon Police Department can also widely implement other mitigation actions through coordination with other departments and agencies.
Animal Control	Animal Control: The Southeast Area Animal Control Authority (SEAACA) is the primary agency responsible for animal control in the City of Vernon. SEAACA responds to reports of stray or injured animals through its contract with the City, which is administered by the Vernon Health Department. With the presence	Mitigation actions include helping to relocate, transport, locate, and treat large and small animals/livestock in the event of a hazard such as an urban fire or seismic event. The department can also

	of meat processing plants within the city, the potential for livestock to escape exists.	keep the public safe from frightened animals and prevent property damage or loss during hazard events.
Greater Los Angeles County Vector Control District	The Greater Los Angeles County Vector Control District (GLACVCD) is a public health agency that is enabled and empowered as a result of legislation incorporated in the California State Health and Safety Code to provide ongoing mosquito and vector control for its residents. The District has evolved over time and now provides mosquito, midge, and black fly control services to nearly six million residents in 36 cities and unincorporated portions of Los Angeles County, totaling an area over 1000 square miles.	Mitigation actions include controlling the spread of vector borne illnesses and diseases. The department can also offer expertise in policy creation to aid in controlling disease and pests.
Green Vernon Commission	Vernon has announced forward-looking initiatives to achieve its goal of becoming a leader in environmentally responsible energy generation and environmentally sustainable city management. Vernon is committed to stimulating green development within the City while expanding the City's capacity to sustain and grow the 1,800 businesses that support approximately 40,000 jobs in the region. Vernon purchased 30,000 acres of property in Kern County to develop significant wind and solar-generated electricity to advance the renewable component of its energy resources and assist other utilities in meeting their renewables objectives. The City has undertaken efforts to expand its renewable energy resource, and in 2017 added the Antelope DSR Solar Project, the Astoria II Solar Project, and the Puente Hills Landfill Gas to Energy Project, to help meet its renewable portfolio standard (RPS) mandate issued by California. The City is looking for additional opportunities to expand its renewable energy sources.	Mitigation activities can include opportunities to reduce the impact Vernon has on the environment. Assist in policy creation that aids in the reduction of the use of hazardous materials in the City.
Vernon Chamber of Commerce	The Vernon Chamber of Commerce is a business membership organization that exists to meet the needs of its business community and promote the economic climate of the City of Vernon. Incorporated in 1951, the Vernon Chamber is a non-profit 501(c)(6) with primary funding sources from voluntary dues from its members. The Chamber serves as an advocate for business and provides business resources and tools to its members to help their	The Chamber is the voice of the working population and offers a unique perspective on everyday function in the City and can aid in the appropriate planning for hazard mitigation.

	businesses grow and thrive. The Chamber dedicates its programs to fostering growth and continued enterprise for its members and Vernon businesses by fulfilling the following core objectives: • Representing the interests of business with the government • Creating strong businesses through economic development programs • Actively promoting and supporting the existence of an exclusively industrial business community • Political action through legislative advocacy • Providing networking opportunities Due to Vernon's unique industrial nature, enormous workforce, and small residential population, the Chamber of Commerce is a large part of the planning and development of Vernon.	
Technical Capabilities		
Cal-Adapt	Cal-Adapt is an online tool that provides detailed projections for future climate-related conditions in California, including factors such as temperature, precipitation, and sea-level rise. These projections can help inform future hazard events and explain how hazard conditions are expected to change. The City can use Cal-Adapt to monitor anticipated changes in future climate conditions and adjust mitigation actions accordingly.	The City can use Cal-Adapt to monitor anticipated changes in future climate conditions and adjust mitigation actions accordingly.
California Department of Transportation	The California Department of Transportation (Caltrans) is the state agency with jurisdiction over designated highways, including Interstate Routes 10, 110 and 710. Mitigation measures related to ensuring the resiliency of state-designated routes will be implemented through coordination with Caltrans	Mitigation measures related to ensuring the resiliency of state-designated routes will be implemented through coordination with Caltrans.
Vernon Public Utilities (VPU)	The City of Vernon Public Utilities Department (VPU) serves as an essential resource to the City's business community, providing dependable, high-quality utility services at very competitive rates. VPU offers water, electricity, natural gas, and fiber optic services to Vernon-based businesses, often at a cost savings compared to neighboring utility providers. The City-owned water, electric, natural gas, and fiber optic distribution systems have a strong, established history of reliability, capable of	This resource provides electricity to customers from multiple renewable energy projects across the western United States. As the city has grown, this service has responded by developing new water systems to meet the future needs of Vernon.

	efficiently and successfully serving the needs of the City's unique business community. Some Vernon businesses are supplied water by California Water Service Company and others by Maywood Mutual Water Company. As the City's primary water provider, VPU can effectively manage and monitor water use and ensure adequate water supplies during severe drought times.	
Natural Gas Division	The Natural Gas Division of the City of Vernon's Public Utilities Department serves as the primary provider of natural gas to the City. The Vernon-owned natural gas distribution system is comprised of a six-inch in diameter pipeline and is located under every street in the City. It serves approximately 125 service laterals that provide gas service to Vernon gas customers. In addition, Vernon operates a 10-inch steel high-pressure gas transmission pipeline. The pipeline is seven miles long and delivers natural gas to the MGS Power Plant from the two distribution regulator stations. The transmission line is located at least five feet below the street and is coated to prevent corrosion.	Mitigation actions that address the resiliency of natural gas infrastructure and services in Vernon will be implemented through coordination with Natural Gas Division
Southern California Gas Company	The Southern California Gas Company (SoCalGas) is a supplemental natural gas provider for Vernon and owns portions of the natural gas infrastructure within the community. It provides natural gas services for clients to whom VPU does not provide service.	Mitigation actions that address the resiliency of natural gas infrastructure and services in Vernon will be implemented through coordination with SoCalGas.
Fiscal Capabilities		
Annual City Budget	The City's fiscal year begins on July 1st and ends on June 30th of the following year. The City Administrator submits a proposed budget to City Council for the ensuing fiscal year. After receiving the proposed budget, City Council holds a public hearing after public notices are made available to the public by the City Clerk. Once the proposed budget is adopted by resolution on or before June 30th by the affirmative vote of a majority of the City Council, it becomes the final budget which operates as an appropriation of funds for the purposes set forth in the budget. This budget is	This budget is a key location where future mitigation projects can be identified from a funding perspective. **Opportunity for Improvement:** Incorporation of the potential projects and funding mechanisms from this plan may assist the City during annual budgeting allowing for easier prioritization of projects and

	a key location where future mitigation projects can be identified from a funding perspective.	priorities for City investment.
Education and Outreach Capabilities		
Social Media	The City currently uses Twitter, Facebook, Instagram, and YouTube as part of its online/social media presence. These resources can be used to assist in outreach and engagement on hazard mitigation planning and implementation in the future.	This can aid in mitigation activities by promoting the various mitigation projects and programs by becoming a source of information and direction during emergencies and evacuations. **Opportunity for Improvement:** Updates to the City's social media strategies and forms of communication may support further penetration of the messaging and information sharing regarding the LHMP and the value it provides to residents and businesses.

Hazard Mitigation Strategies and Actions

Hazard Mitigation Goals

The goals identified in Chapter 1 help develop policies to protect community members, ecosystems, and other important assets from hazard events. These goals were developed to ensure consistency with the City's General Plan Safety Element, which plays an important role in risk reduction within Vernon. These goals informed the development of mitigation actions and act as checkpoints to help City staff determine implementation progress.

Evaluation of Potential Hazard Mitigation Actions

Based on the hazard profiles, threat assessment, and capabilities assessment; the community survey results; discussions among Committee members; and existing best practices, the Committee prepared a set of potential mitigation actions. Next, the Committee evaluated these potential actions using the below FEMA criteria.

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

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

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

The Committee also chose to review and revise the potential hazard mitigation actions using a third set of criteria (**Table 5-2**), known as STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental). The Committee did not formally assess every potential mitigation action under all STAPLE/E criteria but used the criteria to guide and inform the discussion. The Committee also discussed how the criteria might be used to evaluate future grant applications submitted to receive funding for LHMP implementation.

Table 5-2: STAPLE/E Criteria

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

PRIORITIZATION

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

COST ESTIMATES

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

- Low cost ($): $50,000 or less
- Medium cost ($$): $50,001 to $499,999
- High cost ($$$): Greater than $500,000

Based on the criteria and evaluation processes used during Plan development, the Committee prepared a prioritized list of mitigation actions to improve Vernon's resilience to hazard events. **Table 5-3** lists the mitigation actions, prioritization of each action, and other details related to implementation. In addition to mitigation actions and strategies, several preparedness activities were identified and denoted with the letter "P."

2004 MITIGATION ACTION PROGRESS

A review of the mitigation actions from the 2004 Vernon Natural Hazards Mitigation Plan (NHMP) has identified where the City has integrated these strategies into standard procedures and practices. For those actions that were not successfully implemented and remain relevant to the City, this Plan update incorporates these actions into the current mitigation action table, as displayed in **Table 5-3 (shaded in blue)**. For actions that were eliminated, refer to **Appendix E**. In addition, **Table 5-3** lists the mitigation actions, prioritization of each action, and other details related to implementation, including potential FEMA funding sources such as:

Building Resilient Infrastructure and Communities (BRIC): A competitive FEMA grant program to support states, local communities, tribes and territories.

Flood Mitigation Assistance Program (FMA): A competitive grant program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program.

Hazard Mitigation Grant Program (HMGP): Provides funding to state, local, tribal and territorial governments so they can rebuild in a way that reduces, or mitigates, future

disaster losses in their communities. This grant funding is available after a presidentially declared disaster.

Other Grants: Other grants may include State of California grants associated with climate change, water infrastructure, homeland security, transportation, or other funding sources that periodically become available. The list below provides some common sources:

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

TIMELINES

In addition the timeframes identified in Table 5-3 may indicate a particular year to initiate the implementation of the action or in some instances use the terms “Ongoing” or “Annually”. For actions that use these terms, it is intended to identify that the action may add to existing capabilities and not have a particular start or end date or occur on a periodic basis. This is typically used for actions that include new policies, tasks, or standard operating procedures intended to mitigate future risks.

National Flood Insurance Program

Vernon does not currently participate in the National Flood Insurance Program (NFIP). Congress created the NFIP in 1968 to provide flood insurance at subsidized rates to homeowners who live in flood-prone areas. Individual communities have the option to participate in the NFIP. Property owners who live in nonparticipating communities with flood-prone areas cannot buy flood insurance through the program. Additionally, nonparticipating communities with mapped flood plains cannot receive federal grants or loans for development activities in flood-prone areas and cannot receive federal disaster assistance to repair flood-damaged buildings in mapped flood plains.

Table 5-3: Mitigation Actions

(Mitigation Actions from 2004 Vernon NHMP are highlighted in blue.)

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
Preparedness Activities						
P1	Conduct regular emergency preparedness drills and training exercises for City staff.	General Fund, Homeland Security Grants	Police Department	$	Annually	N/A
P2	Continue agreements with the school district to ensure school facilities act as evacuation sites during major emergencies.	General Fund, Homeland Security Grants	Police Department	$	Ongoing	N/A
P3	Work with local businesses and organizations to conduct regular workplace emergency preparedness drills.	General Fund, Homeland Security Grants	Police Department	$	2023	N/A
P4	Expand participation in the Vernon Community Emergency Response Team (CERT) program for residents and businesses.	General Fund, Homeland Security Grants	LA County Fire	$	2024	N/A
P5	Ensure that community evacuation plans include provisions for community members who do not have access to private vehicles or are otherwise unable to drive.	General Fund, Homeland Security Grants	Police Department	$	2024	N/A
P6	Continue to ensure effective emergency notifications through multiple media formats, in at least English and Spanish, about pending, imminent, or ongoing emergency events. Ensure that information is accessible to persons with disabilities and functional needs.	General Fund, Homeland Security Grants	Administration	$	2023	N/A
P7	Maintain at least one emergency power-generating station in all critical facilities in the City.	General Fund, Homeland Security Grants	Public Works, VPU	$$$	2024	N/A
P8	Update the Vernon Emergency Operations Plan to identify critical facilities' sheltering needs, backup power, and communications locations.	General Fund, Homeland Security Grants	Police Department	$$	2024	N/A

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
P9	Continuously update response procedures for first responder departments to properly address new hazard events as they emerge.	General Fund, Homeland Security Grants	Police Department, All Departments	$	2024	N/A
P10	Establish a new Emergency Operations/Communications Center that includes redundant backups in voice and data communications.	General Fund, Homeland Security Grants	Police Department	$$$	2027	N/A
P11	Develop a debris management plan for various hazards within the City.	General Fund, Homeland Security Grants	Public Works	$$	2025	N/A
P12	Develop a Preliminary Damage Assessment (PDA) process for future hazard events.	General Fund, Homeland Security Grants	Public Works, VPU	$	2025	N/A
P13	Increase the number of staff within the City who have CalOES Safety Assessment Program (SAP) credentials.	General Fund, Homeland Security Grants	All Departments	$	2024	N/A
	Multiple Hazards					
1.01	Explore the feasibility of connecting critical facilities to a microgrid power-supply network. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$$	2023-2027	Medium
1.02	Install energy-efficient equipment to increase the longevity of backup generator fuel supplies. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$	2023-2027	Medium
1.03	Conduct routine updates to Facility Conditions Assessments for City-owned infrastructure, buildings, lift stations, and other utilities and coordinate with other agencies to ensure inspections of other important infrastructure. (Hazards addressed: All)	General Fund, Other Grants	Public Works, VPU	$$	Annually	Medium

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
1.04	Repair, as feasible, all major deficiencies discovered by inspections to prevent collapse, failure, or damage in the event of a natural disaster. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works, VPU	$$$	2024-Ongoing	Medium
1.05	Coordinate with public and private utility operators to harden infrastructure and create redundant system connections between VPU and outside agencies/organizations. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$$	2025-2027	Medium
1.06	Install and harden emergency backup power at City facilities, prioritizing installations for facilities that serve critical functions. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2023-2025	High
1.07	Conduct a feasibility assessment of the installation of solar and battery backup systems at key critical facilities within the City. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2028	Low
1.08	Work closely to increase awareness of hazard events and resiliency opportunities among socially vulnerable community members, including the homeless.(Hazards addressed: All)	General Fund, Other Grants	City Administration, Police Department	$$	2023	Low
1.09	Avoid building new City-owned key facilities in mapped hazard areas. If no feasible sites outside of mapped areas exist, ensure that such facilities are hardened against hazards beyond any minimum building requirements/ mitigation standards. (Hazards addressed: All)	General Fund	Planning, Public Works	$	2023	Low
1.10	Closely monitor changes in the boundaries of mapped hazard areas resulting from land-use changes or climate change and adopt new mitigation actions or revise existing ones to ensure continued	General Fund	Planning, Public Works	$	Annually	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
	resiliency. (Hazards addressed: All)					
1.11	Integrate policy direction and other information from this Plan into other City documents, including the General Plan, Emergency Operations Plan, and Capital Improvements Program. (Hazards addressed: All)	General Fund	All Departments	$	2023-2024	High
1.12	Monitor funding sources for hazard mitigation activities. (Hazards addressed: All)	General Fund	All Departments	$	Annually	Medium
1.13	Investigate the feasibility of an all-hazards warning/announcement system to be activated in Vernon prior to or during hazard events. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	City Administration, Police Department	$$	2024	High
1.14	Encourage major employers and other key stakeholders to develop their own individual emergency operations and evacuations procedures to respond to potential hazards. (Hazards Addressed: All)	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Police Department, City Administration, LA County Fire	$$	2023	Medium
	Seismic Hazards					
2.01	Encourage the installation of resilient (seismically appropriate) piping for new or replacement pipelines in close coordination with outside utility providers.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2022-2026	Medium
2.02	Assess seismically vulnerable conditions for any city-owned buildings constructed prior to 1980.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$	2024	High
2.03	Conduct an educational campaign and incentives to encourage the use of reinforced chimneys, anchored rooftop-mounted equipment, window film, and other preventative measures to reduce damage to private buildings.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$	2028	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
2.04	To the extent feasible, construct all new and significantly retrofitted City-owned facilities to remain operational in the event of a major earthquake.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$$	2024	High
2.05	Retrofit key critical facilities with seismically rated window film treatments that ensure glass windows do not shatter during a strong seismic event.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$$	2028	Low
2.06	Install seismic gas shut-off valves on City buildings to prevent the flow of gas into buildings during a seismic event.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$	2023-2026	Medium
	Drought					
3.01	Coordinate closely with Vernon Public Utilities (VPU), MWD, California Water Service (CWS), and Maywood Mutual Water Company (MMWC) on water use and water conservation efforts throughout the City.	General Fund, Enterprise Fund, Other Grants	VPU	$	Annually	High
3.02	Periodically update "Chapter 13.20 Water Conservation, Sections 13.20.030- 13.20.070" of the Vernon Municipal Code of Ordinances to reflect the latest advances in best practices in consumption, landscape design, and irrigation that reduce water use within the City.	General Fund	VPU	$	2023, 2026, 2029	High
3.03	Work with VPU, CWS, and MMWC to develop a focused water leak pilot program to eliminate leaky water mains, sprinklers, and other water fixtures, focusing on areas of the City with the greatest water demand.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$	2028	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
3.04	Support indoor and outdoor water efficiency through community-wide education and rebate programs and continue to maintain these programs and other restrictions on water use in the absence of drought.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$	2025	Low
	Epidemic/Pandemic					
4.01	Assess and institute necessary upgrades to critical facilities to allow for usage during a pandemic, including adequate ventilation and physical barriers.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Health and Environmental Control Department, Public Works	$$$	2028	Low
4.02	Institute necessary structural improvements to evacuation centers/sheltering locations to allow for proper ventilation, space for staff, and structural barriers to be used during pandemic and hazard events.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Health and Environmental Control Department, Public Works	$$$	2028	Low
4.03	Coordinate with surrounding jurisdictions, local health care providers, businesses, schools, the Vernon Health Department, the Los Angeles County Health Care Agency, the California Department of Public Health, and the Centers for Disease Control to inform community members about current public health trends or issues, free and low-cost healthcare options, treatments, and where to find local healthcare facilities.	General Fund, Other Grants	Health and Environmental Control Department	$	Annually	High
4.04	Cooperate with the Vernon Health and Environmental Control Department, Greater Los Angeles County Vector Control District to inform community members on best practices for mosquito management and abatement.	General Fund, Other Grants	Health and Environmental Control Department	$	Annually	Low
4.05	Participate in exercises conducted by the LA County Operational Area and/or DMAC surrounding diseases and pest issues.	General Fund, Other Grants	Health and Environmental Control Department	$	2024	Medium

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
Flooding/ Dam Inundation						
5.01	Coordinate with dam owners/operators, state, and federal agencies to collectively identify threats to the City and the region and identify ways to retrofit/strengthen the dams under their control.	General Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works	$	Annually	Low
5.02	Identify potential flood improvements that reduce inundation from both storm flows and potential dam inundation effects.	General Fund, Enterprise Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works	$$	2027	High
5.03	Investigate the use of permeable paving and landscaped swales for new construction and replacement of City-owned hardscaped areas.	General Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works	$	2028	Low
5.04	Conduct frequent cleanings of storm drain intakes, especially before and during the rainy season.	General Fund, Other Grants	Public Works	$$	Annually	Medium
5.05	Track areas where ponding frequently occurs during heavy rainfall and install new drains or upgrade existing ones to reduce ponding of water.	General Fund, Other Grants	Public Works	$$$	2025	Low
Air Pollution						
6.01	Use the latest version of the CalEnviroScreen mapping tool to aid in the reduction of pollutant exposures to improve community health.	General Fund, Other Grants	Public Works	$	2023	Low
6.02	Prepare and adopt an Environmental Justice Element for the City of Vernon General Plan.	General Fund, Other Grants	Public Works, Health and Environmental Control	$$	2025	Low
6.03	Create and implement a limited idling program throughout the City, especially for large trucks.	General Fund, Other Grants	Public Works, Health and Environmental Control	$$	2028	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
6.04	Conduct a feasibility study to explore the possibility of incentivizing and encouraging local businesses to convert their fleets to include both electric and hybrid vehicles.	General Fund, Other Grants	Public Works, VPU	$$	2027	High
6.05	Conduct a feasibility study for noxious odors and other air quality issues associated with industrial uses within the City that have operated for many decades. Identify potential mitigation strategies to reduce odor concerns and complaints through a partnership with businesses in the City.	General Fund, Other Grants	Health and Environmental Control	$$$	2027	Low
	Hazardous Materials					
7.01	Discourage new, sensitive land uses, including schools, parks, childcare centers, adult and senior assisted living facilities, and community centers, from being established near identified hazardous material facilities. Discourage or prohibit new hazardous material facilities from locating near sensitive land uses.	General Fund	Health and Environmental Control	$	Ongoing	Low
7.02	Pursue full alignment of the General Plan with policies and actions outlined in state and regional plans such as the California Accidental Release Prevention (CalARP) Program and the County of Los Angeles Fire Department, Health Hazardous Materials Division.	General Fund, Other Grants	Health and Environmental Control	$	2024	Medium
7.03	Continuously inspect businesses and other properties storing hazardous materials and create an inventory of storage locations that require updates, maintenance, or renovation. Expand upon the current city-maintained inventory for hazardous material sites within the city and share updates and findings between City departments and divisions.	General Fund, Other Grants	Health and Environmental Control	$	Annually	High
7.04	Continue to work with solid waste service contractors to educate residents and businesses on the safe disposal of small quantities of hazardous materials.	General Fund, Other Grants	Health and Environmental Control	$	Ongoing	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
7.05	Partner with surrounding cities to develop a multi-jurisdictional hazardous materials abatement plan addressing the proper closure and remediation of any sites currently or formerly storing or disposing of hazardous materials.	General Fund, Other Grants	Health and Environmental Control	$	2025	Low
	Severe Wind					
8.01	Notify residents through public service announcements a couple of days in advance of a severe weather event. Focus on media methods that target vulnerable populations, such as the elderly, sick, lower-income, or persons with limited mobility, to better ensure they have adequate time to prepare.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	City Administration	$	Start in 2023	Low
8.02	Coordinate with VPU and any other utility providers to identify and strengthen or replace utility structures that may be old, damaged, or otherwise vulnerable to high winds. Support efforts to underground power lines where feasible.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2023	High
8.03	Conduct outreach to residents and businesses prior to severe wind/weather events on proper tree maintenance and identification of potentially hazardous trees.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	City Administration	$	Start in 2023	Low

*** Relative Cost Categories:**

$ Less than $50,000

$$ $50,001 to $499,999

$$$ Greater than $500,000

Notes: Mitigation Actions from 2004 Vernon NHMP are highlighted in blue.

Chapter 6 – Plan Maintenance

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

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

Coordinating Body

The HMPC will remain responsible for maintaining and updating the Plan, including evaluating the Plan's effectiveness as needed. Members of the HMPC will also coordinate the Plan's implementation through their respective positions. **Table 1-1** contains a list of current members. In future years, staff and representatives (either current Committee members or other individuals) from the following City Departments should be included in maintenance and update activities:

- City Administration
- City Clerk
- Public Works
- Vernon Public Utilities
- Health and Environmental Control
- Vernon Police Department
- LA County Fire Department
- Finance/Treasury
- Human Resources and Risk Management

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

Plan Implementation

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

The key City Plans that should incorporate content from this LHMP include:

- **Vernon General Plan Safety Element** – this element should incorporate relevant mapping and analysis in the Safety Element to ensure the goals and policies of this plan are reinforced throughout future developments and projects proposed within the City.
- **Vernon Emergency Operations Plan** – The EOP focuses on the effective preparedness and response to hazard events that occur within the City. Incorporating relevant content from this plan into the EOP ensures consistency regarding the hazards addressed in both plans.
- **Vernon Capital Improvements Program** – The CIP identifies key infrastructure investments throughout the City that may include hazard mitigation elements. Incorporating this plan into the CIP may assist with enhancing infrastructure investment through additional funding and/or modification of improvements to include hazard mitigation elements.

This integration of the LHMP into the Vernon General Plan also allows the City to comply with AB 2140 requirements, as identified in Chapter 1 of this plan.

Future integration of the LHMP into other plans and processes should focus on the following:

- Updates to existing plans and documents should always refer to the LHMP for any relevant information (risk assessment, maps, tables) that can be incorporated into the new document.
- Identification of hazard conditions addressed in the LHMP should be referenced in plans prepared by the City to reduce inconsistencies and minimize redundancy.
- Proposed projects/investments made by the City should identify relevant mitigation actions that may apply to future construction funding
- Changes to policies, rules, and regulations that involve hazard mitigation should reference the LHMP, ensuring greater connection regarding the reason behind the modification.

Integration into other plans and processes should be an ongoing process undertaken by all departments and be regularly monitored as part of the annual maintenance process (see below).

Plan Maintenance Process

The City's plan maintenance process will rely on the Vernon Mitigation Implementation Handbook, located in **Appendix F**. The handbook is intended to function as a stand-alone document that gives a concise and accessible guide to jurisdiction staff for implementing and maintaining the Plan. A key component of the handbook is the specific mechanisms that the jurisdiction can use to integrate this plan into other City planning mechanisms.

Plan Monitoring and Evaluation

When members of the Committee 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 **2023-2024** fiscal calendar year. To the extent possible, Committee meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding and staffing needs for mitigation actions are considered.

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

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

Plan Updates

The information in this Plan, including the hazard profiles, threat assessments, and mitigation actions, is based on the best available information, practices, technology, and methods available to the City and HMPC when this Plan was prepared. As factors change, including technologies, community demographics and characteristics, best practices, and

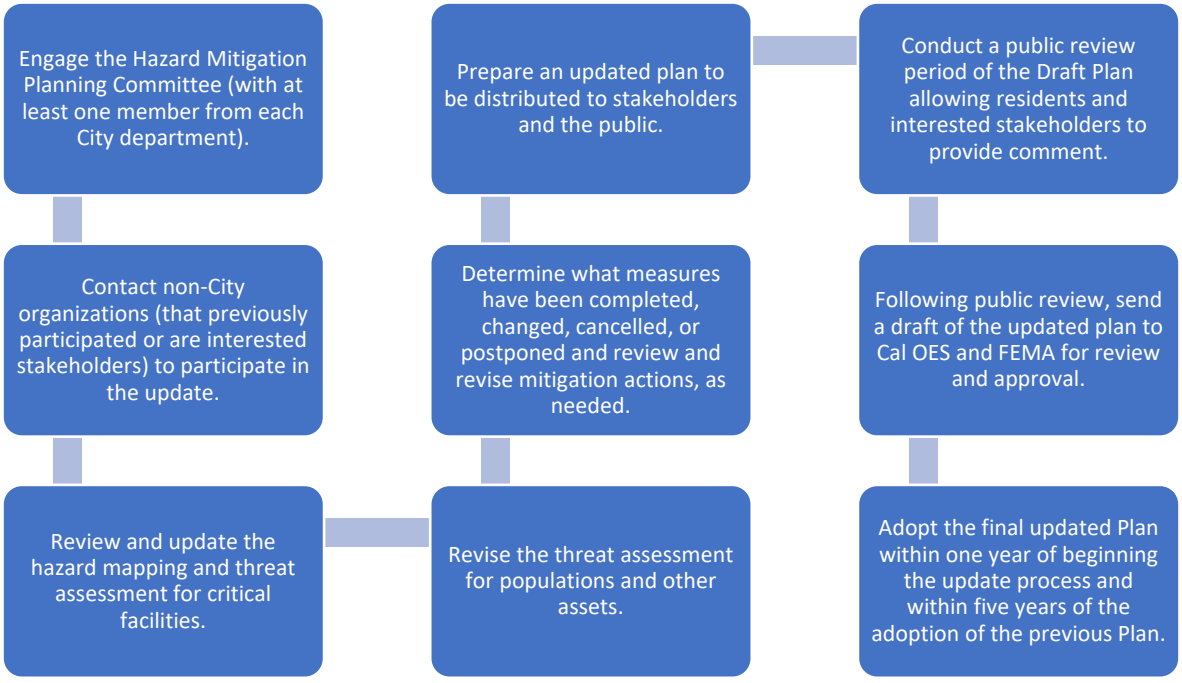
hazard conditions, it is necessary to update the Plan so that it remains relevant. Additionally, Title 44, Section 201.6(d)(3) of the Code of Federal Regulations requires that LHMPs be reviewed, revised, and resubmitted for approval every five years to remain eligible for federal benefits.

Update Method and Schedule

The update process should begin no later than four years after this Plan is adopted, allowing a year for the update process before the Plan expires. 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 Vernon or an area that includes part or the entire city
- A hazard event that results in one or more fatalities in Vernon

The update process will add new and updated methods, demographic data, community information, hazard data and events, considerations for threat assessments, mitigation actions, and other information, as necessary. This helps keep the Plan relevant and current. The Committee will determine the best process for updating the Plan, which should include the following steps:



Update Adoption

The Vernon City Council is responsible for adopting this Plan and all future updates. As previously mentioned, adoption should occur every five years. The City should begin the update process at least one year prior to expiration to ensure the plan remains active. If the City has a grant application that relies on the LHMP, an update to the plan should occur no later than 18 months before expiration. Adoption should occur after FEMA notifies the City

that the Plan is Approved Pending Adoption. Once the City Council adopts the Plan following its approval by FEMA, the adopted plan should be transmitted to FEMA.

Continued Public Involvement

The City will continue to keep members of the public informed about the Committee's actions to review and update the LHMP. The Committee will develop a revised community engagement strategy that reflects the City's updated needs and capabilities. The updated strategy should include a tentative schedule and plan for public meetings, recommendations for the use of the City website and social media accounts, and content for public outreach documentation. The Committee will also distribute annual progress reports via the City's "Trending Topics" webpage and a dedicated LHMP webpage (if available), which will provide Vernon community members a description of any actions taken by the City and ways that residents and businesses can help further the City's goals. These updates are anticipated to occur after the annual HMPC meeting conducted by the City.

Point of Contact

Vernon's Hazard Mitigation Planning Committee leader is the primary point of contact for this Plan and future updates. At the time of writing, the HMPC leader is Lisa Pope, City Clerk, available at LPope@cityofvernon.org | (323) 583-8811 Ext 897.

APPENDIX A – HMPC MEETING MATERIALS

City of Vernon
2021-22 Local Hazard Mitigation Plan Update
HMPC Meeting #1 Agenda:

1. City of Vernon Project Overview (10 minutes)
2. Local Hazard Mitigation Plan Overview (10 minutes)
3. Project Goals and Expectations (10 minutes)
4. Hazard Mitigation Planning Team Roster (10 minutes)
5. Communication Protocols (5 minutes)
6. Break (5 minutes)
7. 2023 City of Vernon LHMP (15 minutes)
8. Data Needs (Critical Facilities List, vulnerable populations, recent/past hazards, GIS) (10 minutes)
9. Community Engagement and Outreach Strategy (10 minutes)
10. Hazard Identification/Prioritization (20 minutes)
11. Next Steps and To-Do List (5 minutes)

Next Steps

Hazard Mitigation Planning Process	**June 2021 - March 2022**
Community Outreach	July 2021 - Ongoing
Administrative Draft LHMP	Winter 2021
Public Review Draft LHMP Document	Spring 2022
Cal OES/FEMA Review Draft Document	Spring 2022

To-Do List

Location: Zoom/ In Person
Date: February 22, 2022
Time: 10:00 – 12:00 PM

City of Vernon
Local Hazard Mitigation Plan Update
HMPC Meeting #2 Agenda:

1. **Introductions (5 Minutes)**
2. **Review of Project Goals (10 Minutes)**
3. **Review of Critical Facilities (5 Minutes)**
4. **Review of Hazard Prioritization (5 Minutes)**
5. **Review of Hazard Profiles/Mapping Discussion/Threat Assessment (75 Minutes)**
6. **Introduction to Mitigation Strategies (5 Minutes)**
7. **Recap of Mitigation Strategies/Actions (5 minutes)**
8. **Next Steps (5 Minutes)**

HMPC Meeting #3 – Mitigation Action Review/Prioritization	**TBD**
Community Outreach	December 2021 - Ongoing
Administrative Draft LHMP	Spring 2022
Public Review Draft LHMP Document	Spring 2022
Cal OES/FEMA Review Draft Document	Summer 2022

Location: Zoom/ In Person

Date: March2, 2022

Time: 3:00 –5:00 PM

City of Vernon
Local Hazard Mitigation Plan Update
HMPC Meeting #3 Agenda:

1. **Overview of Mitigation Strategies**
2. **Discussion of Relative Cost Estimates**
3. **Discussion of STAPLE/E Criteria**
4. **Review of Discussion of Draft Mitigation Strategies**
5. **Next Steps**

Typical Mitigation Categories

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

Relative Cost Categories:

$	**Less than $XXX**
$$	**$XXX to $YYY**
$$$	**Greater than $YYY**

Table 1: STAPLE/E Criteria	
Issue	**Criteria**
Social	• Is the action socially acceptable to Vernon community members? • Would the action treat some individuals unfairly? • Is there a reasonable chance of the action causing a social disruption?
Technical	• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the effects of the hazard? • Will the action create new hazards or make existing hazards worse? • Is the action the most useful approach for Vernon to take, given the City's goals and community members?
Administrative	• Does the City have the administrative capabilities to implement the action? • Are there existing City staff who can lead and coordinate the measure's implementation, or can the City reasonably hire new staff for this role? • Does the City have enough staff, funding, technical support, and other resources to carry out implementation? • Are there administrative barriers to implementing the action?
Political	• Is the action politically acceptable to City officials and other relevant jurisdictions and political entities? • Do community members support the action?
Legal	• Does the City have the legal authority to implement and enforce the action? • Are there potential legal barriers or consequences that could hinder or prevent the implementation of the action? • Is there a reasonable chance that implementation of the action would expose the City to legal liabilities? • Could the action reasonably face other legal challenges?
Economic	• What are the monetary costs of the action, and do the costs exceed the economic benefits? • What are the start-up and maintenance costs of the action, including administrative costs? • Has the funding for action implementation been secured, or is a potential funding source available? • How will funding the action affect the City's financial capabilities? • Could the implementation of the action reasonably burden the Vernon economy or tax base? • Could there reasonably be other budgetary and revenue impacts to the City?
Environmental	• What are the potential environmental impacts of the action? • Will the action require environmental regulatory approvals? • Will the action comply with all applicable federal, state, regional, and local environmental regulations? • Will the action reasonably affect any endangered, threatened, or otherwise sensitive species of concern?

Next Steps

Community Outreach	**July 2021 - Ongoing**
Administrative Draft LHMP	March 2022
Public Review Draft LHMP Document	Spring 2022
Cal OES/FEMA Review Draft Document	Spring 2022

To-Do List

APPENDIX B – OUTREACH AND ENGAGEMENT MATERIALS

Local Hazard Mitigation Plan

Local Hazard Mitigation Plan

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

Why have an LHMP?

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

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

What is in our LHMP?

The City of Vernon LHMP includes four main sections:

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

What hazards will our LHMP help protect against?

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

- Seismic Hazards
- Drought
- Epidemic/Pandemic
- Flooding
- Air Pollution
- Haz Mat Release
- Severe Wind
- Dam Failure

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

How is our LHMP being prepared?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from City Departments and supported by key stakeholders, and technical consultants. Together, these participants form the project team responsible for guiding the overall development of our LHMP.

When will our LHMP be done?

The project team plans to release a first draft of the Vernon LHMP for public review in Spring 2022. After members of the public provide comments and feedback, the City will revise the plan and send it to the California Office of Emergency Services and FEMA for review and approval. Once approved by these agencies, the Vernon City Council will adopt the final LHMP. We hope to have the plan ready for adoption in Summer 2022, but it may be later depending on how long state and federal review takes.

How can I get involved?

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

- The City will public engagement opportunities to share information about our LHMP and obtain community feedback.
- The City will release an online survey to members of the public in the Winter of 2021, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take our survey when it comes out, and encourage your friends and family to do the same.
- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document, either at in-person meetings or in writing.
- Encourage members of the Vernon City Council to adopt the plan and begin implementing it.
- Reach out to the project team manager Lisa Pope, LPope@ci.vernon.ca.us for more ways to stay involved.

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

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

2022 City of Vernon Hazard Mitigation Plan Survey

10 responses

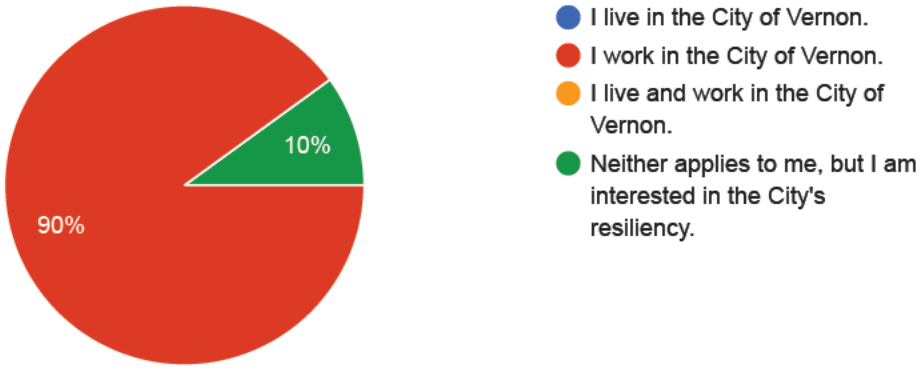
Publish analytics

Hazard Awareness

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

Copy

10 responses



2. What is the ZIP code of your home?

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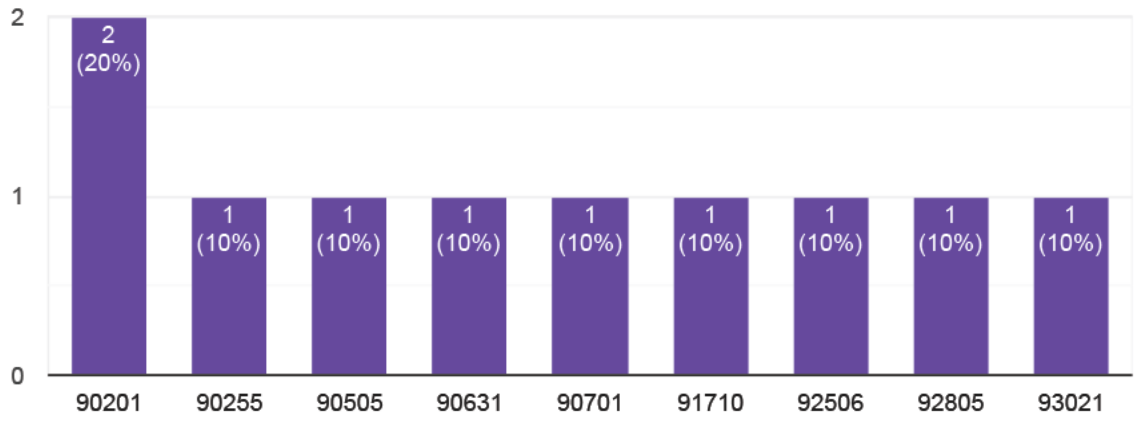
10 responses



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

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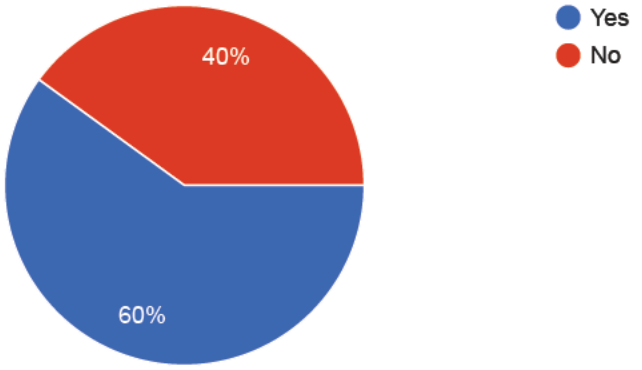
10 responses



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).

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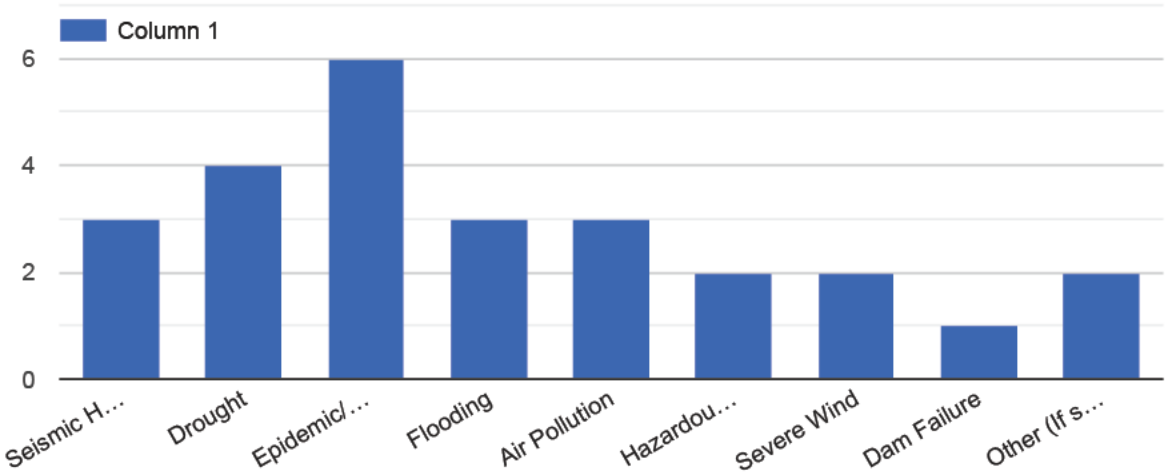


If you selected "Other" above, please list any additional hazards that have previously impacted your neighborhood or home.

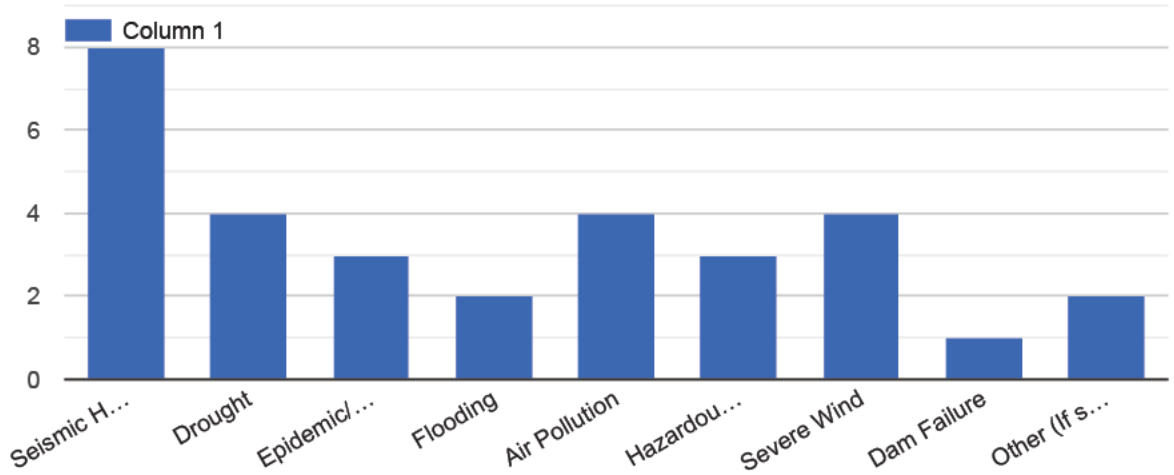
2 responses

N/A

Wildfire

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



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

2 responses

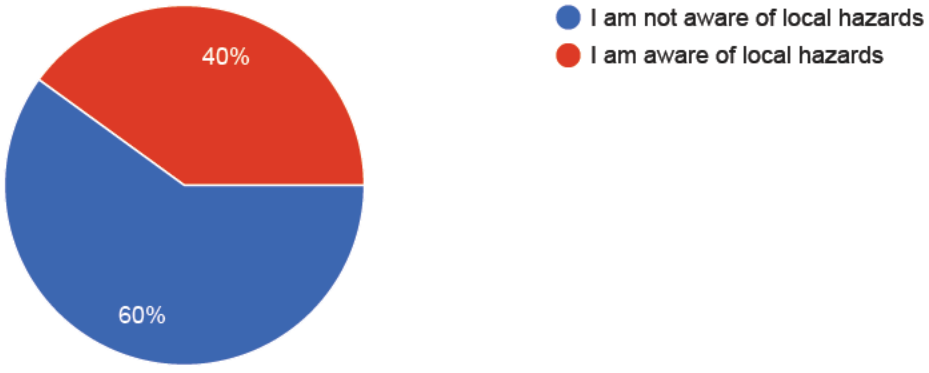
N/A

Fire

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

Copy

10 responses



If you indicated “I am aware of local hazards” above, please provide as much detail as possible, including the location and type of hazard.

4 responses

industrial pollution

Air Pollution

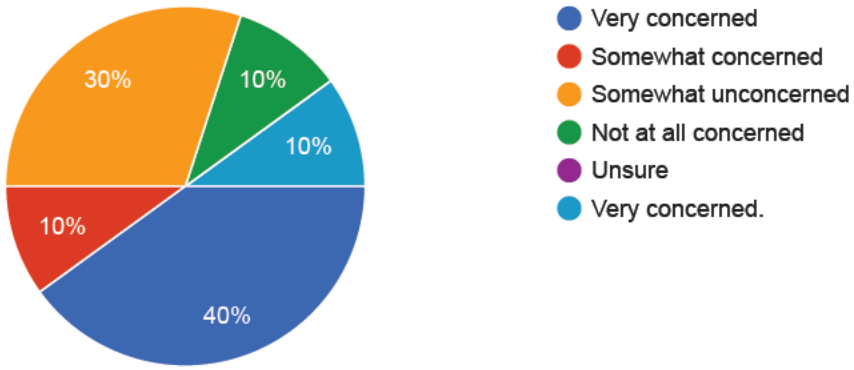
Recently re-read identified hazards relative to my resident zip code

Abandoned railroad tracks harbor rodents, are fire hazards due to uncontrolled vegetation growth, become dumping sites, etc.

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

Copy

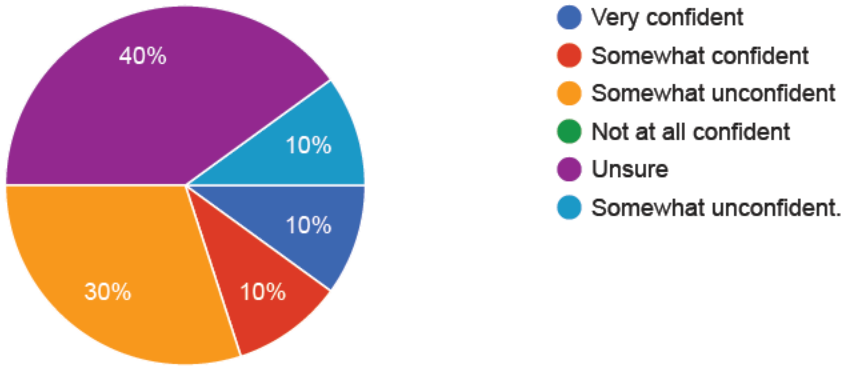
10 responses



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

Copy

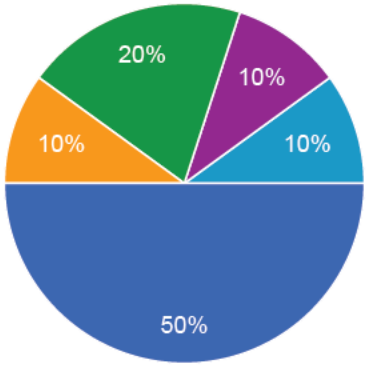
10 responses



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

Copy

10 responses

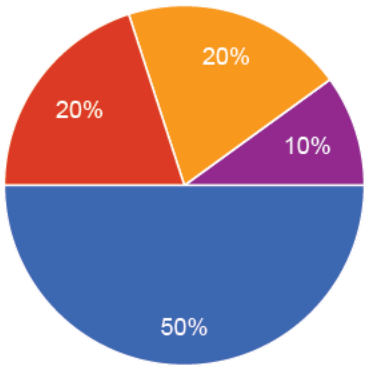


- It already is
- Within the next five years
- In five to twenty years
- Not for at least another twenty years
- Never, or not in my lifetime
- It already is.

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

Copy

10 responses

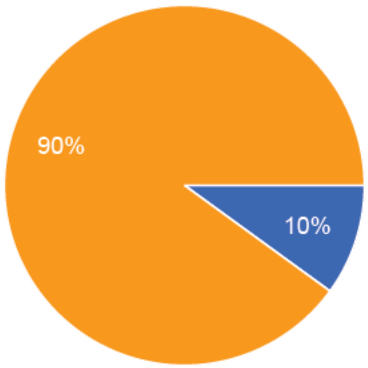


- Yes, my insurance coverage should be adequate.
- No, I don't believe my insurance coverage would be adequate for a major disaster.
- Unsure
- I do not have an insurance policy.
- Not applicable, I rent my current residence.

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

Copy

10 responses

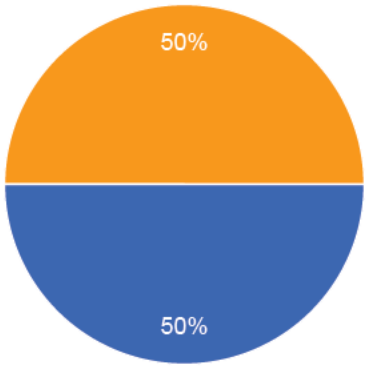


- Yes
- No
- Not applicable; I own my residence.

12. Do you have flood insurance for your home?

Copy

10 responses

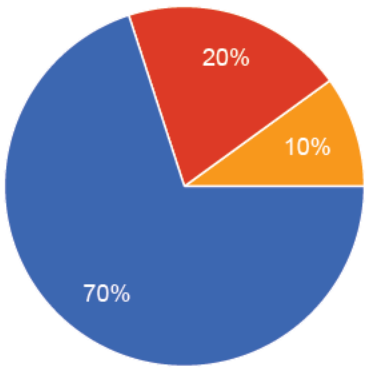


- Yes, I own my home and have flood insurance.
- Yes, I rent my home and have flood insurance.
- No, but I am interested in reviewing flood insurance options (http://www.floodsmart.gov/floodsmart/).

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

Copy

10 responses



- Yes
- No
- Not applicable; I rent my residence.

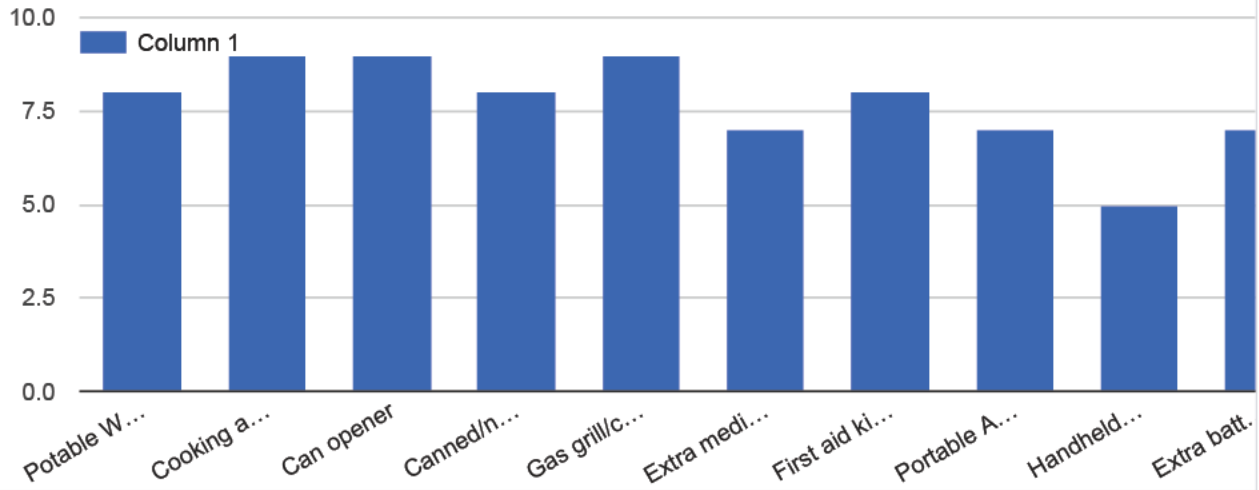
If not, do you plan to?

0 responses

No responses yet for this question.

14. 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



What else do you have in your emergency kit?

5 responses

solar panel chargers

Nothing

Lots that the government shouldnt worry about.

Generator

knife, compass, gas guage, tape, tool kit, bungee chords, other

For more information on emergency kits, visit: https://www.ready.gov/kit

15. Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, memory impairments)?

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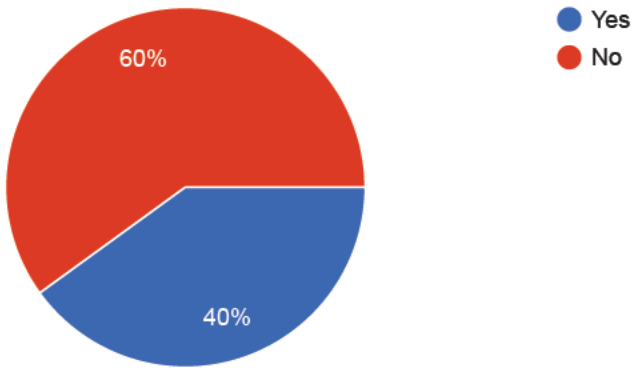
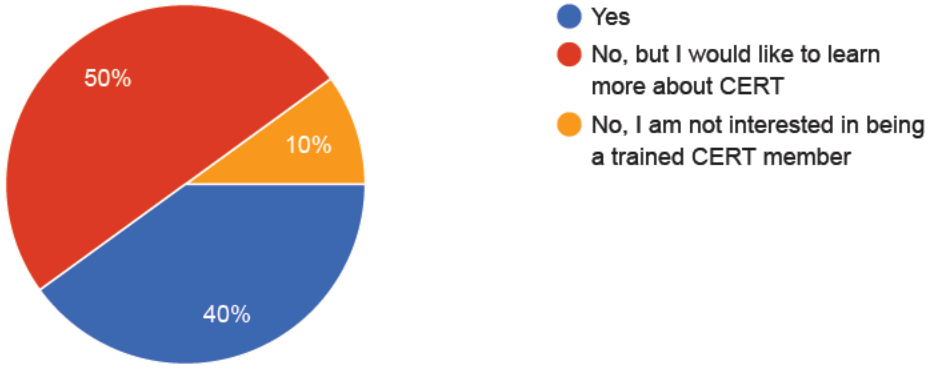
10 responses



16. Are you a trained member of your Community Emergency Response Team (CERT)?

Copy

10 responses

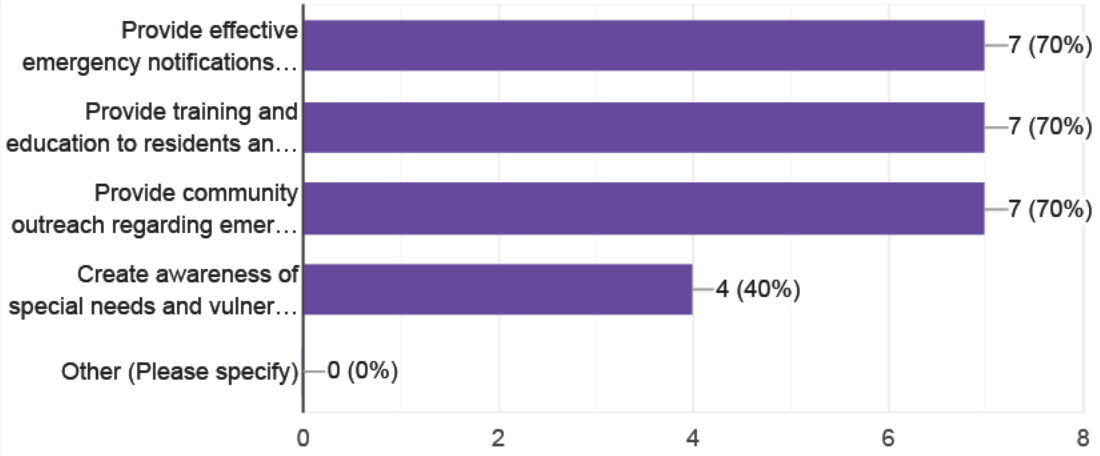


For more information about CERT, please visit:
https://vernoncacert.samariteam.com/

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

Copy

10 responses



If you answered "Other" above, please specify below.

0 responses

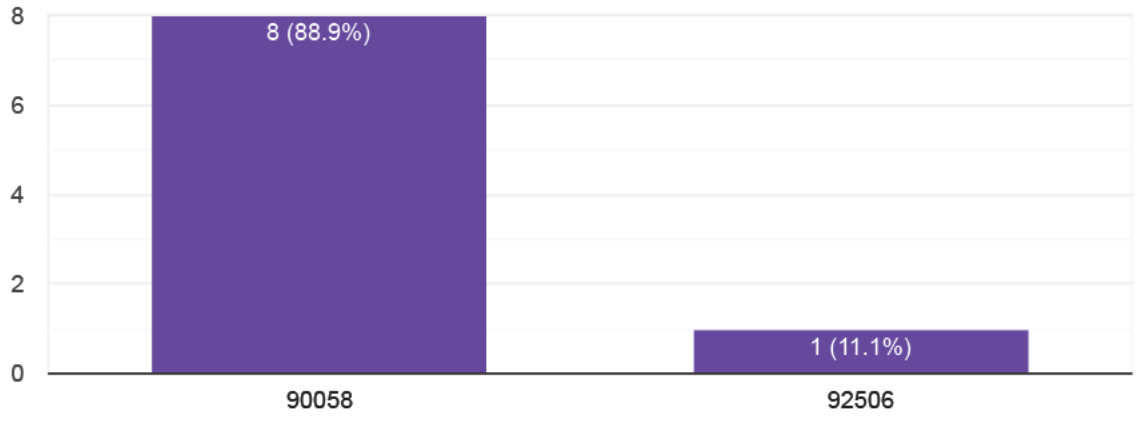
No responses yet for this question.

If you do NOT work in the City if Vernon please skip to section 3, question 21

18. What is the ZIP code of your workplace?

Copy

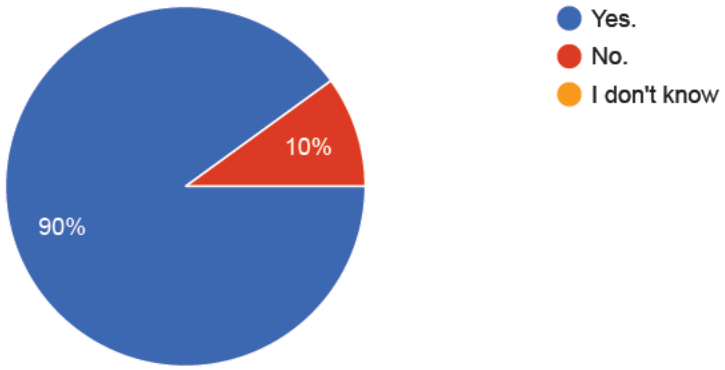
9 responses



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

Copy

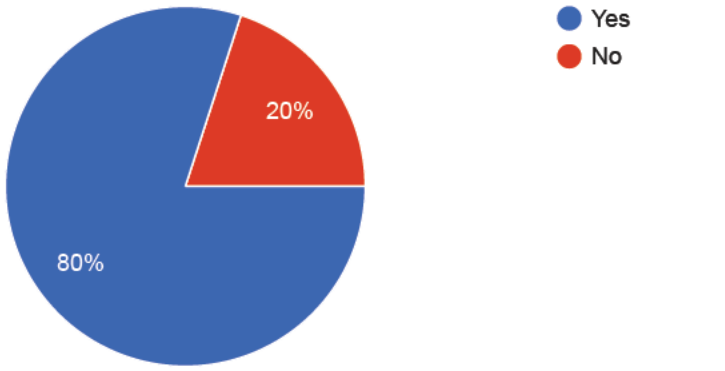
10 responses



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

Copy

10 responses

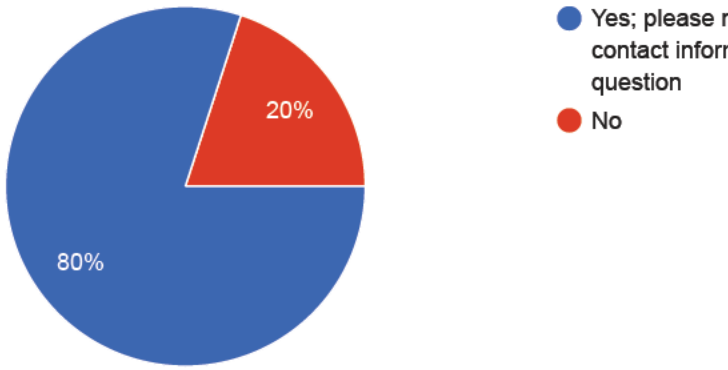


Recommendations and Future Participation

21. Would you like to be contacted when the Draft 2022 Vernon Hazard Mitigation Plan is available for review?

Copy

10 responses



If you would like to be notified of future opportunities to participate in hazard mitigation and resiliency planning, please provide your name and e-mail address. If you do not have an e-mail address, please provide your mailing address. This information will be kept confidential.

5 responses

[redacted]

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

2 responses

Energy / Water drought concerns / able to clean water sufficiently

Vernon needs to be ready for extended power outages, gas price increases and water for business and residents to continue to operate. This should be one of the number 1 planning items for Vernon.

APPENDIX C – Resolution of Adoption

U.S. Department of Homeland Security
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

March 9, 2023

Lisa Pope
City Clerk
City of Vernon
4305 Santa Fe Ave
Vernon, CA 90058

Dear Lisa Pope:

The Federal Emergency Management Agency (FEMA) has completed its review of the *2022 City of Vernon Local Hazard Mitigation Plan* and has determined that this plan is eligible for final approval pending its adoption by the City of Vernon.

FEMA recently updated the Local Mitigation Planning Policy Guide which will take effect on April 19, 2023. **In order for your plan to be approved under the 2011** Local Mitigation Plan Review Guide **under which it was reviewed, formal adoption documentation must be submitted to FEMA Region 9 prior to April 19, 2023.** If formal adoption documentation is received between April 19, 2023, and March 1, 2024, the plan must be re-reviewed for adherence to the new 2023 policy guidance and sections of the plan may need to be revised.

If you have any questions regarding the planning or review processes, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

Digitally signed by ALISON KEARNS
Date: 2023.03.09 19:32:01 -08'00'

Alison Kearns
Planning and Implementation Branch Chief
Mitigation Division
FEMA Region 9

Enclosure (1)
City of Vernon Plan Review Tool, dated March 9, 2023

cc: Ron Miller, Mitigation Quality Assurance Division Chief, California Governor's Office of Emergency Services
Blythe Denton, Hazard Mitigation Grants Division Chief, California Governor's Office of Emergency Services
Victoria LaMar-Haas, Hazard Mitigation Planning Chief, California Governor's Office of Emergency Services

APPENDIX D – LIST OF KEY FACILITIES

Critical Facility	Facility of Concern	Asset Name	Asset Type Category
X		Vernon Civic Center Complex Site	City Facilities (City Hall, Fire, Police),
X		Ybarra Substation Site	Infrastructure Facilities
X		Fire Station 3 Site	City Facilities (City Hall, Fire, Police)
X		Fire Station 1 Site	City Facilities (City Hall, Fire, Police)
X		Booster Plant 3 Site	Infrastructure Facilities
X		Well 20 Site	Infrastructure Facilities
X		Well 19 Site	Infrastructure Facilities
X		Well 18 Site	Infrastructure Facilities
X		McCormick Substation	Infrastructure Facilities
X		Substation Control Building	Infrastructure Facilities
X		Vernon Substation	Infrastructure Facilities
X		Fire Station #2	City Facilities (City Hall, Fire, Police)
X		Fire Station #4	City Facilities (City Hall, Fire, Police)
X		Natural Gas Regulator Station	Infrastructure Facilities
X		Bee jay Substation	Infrastructure Facilities
X		Kinetic Substation	Infrastructure Facilities
X		Leonis Substation	Infrastructure Facilities
X		Matheson Tri Gas Substation	Infrastructure Facilities
X		Will Substation	Infrastructure Facilities
X		Well 21	Infrastructure Facilities
X		VPU Control Center/Diesel Plant	Infrastructure Facilities
	X	Document Storage	Infrastructure Facilities
	X	DeWitt Building(Austin Trucking, Inc)	Infrastructure Facilities
X		Petrelli Building (VPU)	City Facilities (City Hall, Fire, Police)
X		Malburg Generation Station	Infrastructure Facilities
X		O.E. Clark Building	City Facilities (City Hall, Fire, Police)
		House & Garage	Other Facilities
		House & Garage #16	Other Facilities
		House & Garage #17	Other Facilities
		House & Garage #18	Other Facilities
		House & Garage #19	Other Facilities
		House & Garage #20	Other Facilities
		House & Garage #1	Other Facilities
		House & Garage #2	Other Facilities
		House & Garage #3	Other Facilities

	House & Garage #4	Other Facilities
	House & Garage #5	Other Facilities
	House & Garage #6	Other Facilities
	House & Garage #7	Other Facilities
	House & Garage #8	Other Facilities
	House & Garage #9	Other Facilities
	House & Garage #10	Other Facilities
	House & Garage #11	Other Facilities
	House & Garage #12	Other Facilities
	8-Unit Apartment Site	Other Facilities
	8-Unit Apt	Other Facilities
	Garage Building #1	Other Facilities
	Garage Building #2	Other Facilities
	Mobile Assets	Other Facilities

APPENDIX E – HAZARD MITIGATION IMPLEMENTATION HANDBOOK

City of Vernon

Local Hazard Mitigation Plan Implementation Handbook

2023

What Is This Handbook?

The Local Hazard Mitigation Plan (LHMP) for the City of Vernon 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 as to what to do 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 Vernon 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
- Vernon is undergoing its budgeting process
- Vernon is holding its annual meeting of the Hazard Mitigation Planning Team
- Vernon 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 leader of the Hazard Mitigation Planning Committee (HMPC) is the one responsible for maintaining this Handbook. At the time of writing, the current HMPC leader is Lisa Pope from the Vernon City Clerk’s office. The HMPC may delegate this responsibility to someone else should they so choose.

What to do when a disaster has been proclaimed or declared

Disasters may be proclaimed or declared by the Vernon 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 Vernon City Council

If the Vernon 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 Vernon.
- ☐ Discuss local assistance opportunities with the California Office of Emergency Services (Cal OES) representatives.
- ☐ 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 Vernon 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 Vernon, 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 Vernon or an area that includes part or all of Vernon, take the following steps:

- ☐ Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of Vernon.
- ☐ 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 Vernon 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 Vernon, 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 Vernon or any area that includes part or all of Vernon, take the following steps:

- ☐ Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of Vernon.
- ☐ Collaborate with Cal OES and FEMA representatives to assess the event's damage.
- ☐ Determine if Vernon 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. Vernon may be eligible for funding because of the federal disaster declaration, although not all activities may meet the program's requirements. If Vernon is eligible, work with FEMA to apply for this funding.
- ☐ **Chapter 6** of the Vernon 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 Vernon, 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) 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 new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program.

The BRIC program 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 was adopted within the past five years. When applying to this program, review the list of hazard mitigation actions in **Attachment 4** to see which projects may be eligible. Planning efforts for communities that lack a valid hazard mitigation plan may be eligible for funding if the effort would create a valid hazard mitigation plan. All BRIC grant applications are processed through the State. To learn more, 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/pre-disaster-mitigation-grant-program.

TAKE THE FOLLOWING STEPS TO APPLY FOR BRIC FUNDING:

- ☐ Confirm that the program is currently accepting funding applications. Check with Cal OES representatives or consult the BRIC program's Cal OES webpage. At the time of writing, this webpage is available at http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation.
- ☐ Identify the actions from the hazard mitigation strategy (see **Attachment 4**) that call on the City to pursue funding or list grants as a potential funding source. Confirm that the actions are consistent with the requirements of the BRIC grant.
- ☐ Coordinate with Cal OES representatives to compile and submit materials for the grant application.

Vernon is going through the budgeting process

Vernon's budget process is an ideal opportunity to secure funding for hazard mitigation actions and ensure that hazard mitigation efforts are incorporated into the City's fiscal priorities. Vernon operates on an annual budget cycle from July 1 to June 30. During this process, City staff should take the following steps to incorporate hazard mitigation into Vernon's annual budget:

- ☐ Include hazard mitigation activities into Vernon'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 list of CIP are being planned, designed, and constructed to minimize the threat from hazard events.
- ☐ Identify opportunities to identify state-alone hazard mitigation actions through the annual budget process. Include appropriate items from **Attachment 4** in the budget as stand-alone line items, particularly items that the Hazard Mitigation Planning Committee (Planning Team) considered a high priority.
- ☐ Set aside staff to conduct hazard mitigation activities, including time to participate in Planning Team meetings and time to 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.

Vernon 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, and provides a forum to discuss the hazards in Vernon 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 LHMP, the following individuals were part of the Planning Team:

Vernon Hazard Mitigation Planning Committee

Name	Title	Department
Lisa Pope (Primary POC)	City Clerk	City Clerk
Deborah Harrington	Interim Deputy City Clerk	City Clerk
Abraham Alemu	General Manager	Vernon Public Utilities
Daniel Wall	Director	Public Works and Development Services (Public Works Division)
Fredrick Agyin	Director	Health & Environmental Control
Michael A. Earl	Director of Human Resources	Human Resources and Risk Management
Scott Williams	Director / City Treasurer	Finance/ Treasury
Robert Sousa	Chief of Police	Vernon Police Dept.
Brandon Gray	Captain	Vernon Police Dept.
Al Yanagisawa	Fire Captain or Fire Marshal or Designee	Fire Department (LA County Fire)
Frank Forman	Battalion Chief	Fire Department (LA County Fire)
Lily Hernandez	Executive Assistant to City Administrator	Administration
Angela Kimmey	Deputy City Administrator	Administration
Lisa Umeda	Utilities Compliance Administrator	Vernon Public Utilities

Jessica Balandran	Utilities Compliance Analyst	Administration
Aaron Pfannenstiel	LHMP Project Manager	Atlas Planning Solutions
Suzanne Murray	LHMP QA/QC	Atlas Planning Solutions
Crystal Stueve	LHMP Planner	Atlas Planning Solutions
Robert Jackson	LHMP Planner	Atlas Planning Solutions

In advance of Planning Team meetings, consider using **Attachment 1** to maintain an accurate list of recent disaster events that have occurred in and around Vernon 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 to review the actions in the hazard mitigation strategy **(Attachment 4)** and ensure that they are implemented as intended.

Vernon is updating its policy and regulatory documents

If Vernon 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 Vernon 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 Vernon or if a disaster leads to a loss of life in Vernon (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 any changes in hazard events, regulations, best practices, or other items should be incorporated into an updated LHMP.
- ☐ Decide if there is a need for a technical consultant to assist with the LHMP update and conduct consultant selection activities if needed. If a consultant is desired, the selection process should begin a few months before the update gets underway.
- ☐ Create and implement a community engagement strategy 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 Vernon. 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 Vernon.
- ☐ Develop mitigation actions to improve the status of hazard mitigation activities in Vernon by addressing any issues not covered by the existing LHMP.
- ☐ 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 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 revisions as needed.
- ☐ Submit the plan to the Vernon City Council for adoption.

The Safety Element of the General Plan

The Safety Element is a required component of Vernon'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 of the California Government Code. 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 community descriptions, 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 Vernon's General Plan. Section 65583 of the California Government Code requires a Housing Element to analyze and plan for new residential growth in a community, including residential growth for households with an annual income below the area median. Similar to an LHMP, state regulations require that the Housing Elements be updated regularly to remain current and valid.

The Housing Element is not required to contain any information or policies 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 a number of requirements for the Safety Element of the General Plan. Some of these requirements are triggered by updates to the Housing Element. Check to see if there are any new requirements of this nature. Note that the requirement is linked to the date of adoption of the new Housing Element, not the date the update process begins.
- ☐ Because the LHMP is incorporated into the Safety Element, any amendments or revisions to the Safety Element triggered by the Housing Element update may be made directly in the LHMP. Requirements triggered by the Housing Element are unlikely to require a full rewrite of the LHMP, but the process should 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 Vernon Municipal Code

Vernon's Municipal Code contains a set of standards that guide land uses and development in the community. These standards include where different types of buildings and land use activities may be located, how these structures must be built, and how they must be operated or maintained. The Municipal Code may include requirements that structures (particularly new structures or those undergoing substantial renovations) incorporate hazard-resistant features, be located outside the most hazard-prone areas, or take other steps to reduce hazard vulnerability.

All communities in California are required to adopt the minimum state Building Standard Code (BSC), which includes some hazard mitigation requirements for new or significantly renovated structures. The BSC is generally updated every three years, with supplemental code updates halfway into each update cycle. Title 15, "Building and Construction," of Vernon's Municipal Code, contains building regulations and incorporates the BSC. Other sections of the Code adopt additional standards as desired by the City that adapt the BSC to Vernon's local context.

With the exception of the minimum standards in the BSC, Vernon 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 consistent with the LHMP.

Include Hazard-Related Requirements in Applicable Sections of the Vernon Code of Ordinances

- ☐ If the BSC is being updated, evaluate the hazard-related requirements of all sections in the new BSC. Identify any areas where it may be feasible to add or revise standards to help reduce the threat from hazard events. Ensure that these standards are

consistent with the LHMP. Consider whether standards should be applied to all structures, or to specific types of structures, or 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 assets to an excessive risk of harm. Where feasible, use the requirements to strengthen community resiliency to hazard events. Ensure that these standards are consistent with the LHMP. Consider possible standards such as overlay zones that strengthen zoning requirements in hazard-prone areas, landscaping and grading requirements that buffer development from hazards, siting and design standards that make structures more resilient, and other strategies as appropriate.

Attachment 1: Disaster Information Table

Use this table to fill out the information about any disaster events that have occurred in Vernon or nearby and have affected the community. Include the date and location of the disaster event, the damages associated with the event, and any information about disaster proclamations or declarations resulting from the event.

Date	Location	Damages *	Declaration Details †

* Includes number and type of injuries, number of deaths, and cost of physical damage
† If the disaster was proclaimed or declared by the local, state, and/or federal government

Attachment 2: 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 Vernon or nearby in a way that affected the community?
- Identify events that caused loss of life or significant injury to Vernon community members, significant property damage in Vernon, or widespread disruption to Vernon.
- 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, Los Angeles 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 that relates to hazard mitigation activities?

3.3. Are there opportunities for the City to improve coordination with local, state, and federal jurisdictions and agencies?

ITEM 4: BUDGETARY PLANNING

4.1. What are the financial needs for Vernon 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? How can the City obtain these funds if sufficient funding is unavailable?

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 if so.

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?

There is no content on this page.

Table 5-3: Mitigation Actions

(Mitigation Actions from 2004 Vernon NHMP are highlighted in blue.)

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
Preparedness Activities						
P1	Conduct regular emergency preparedness drills and training exercises for City staff.	General Fund, Homeland Security Grants	Police Department	$	Annually	N/A
P2	Continue agreements with the school district to ensure school facilities act as evacuation sites during major emergencies.	General Fund, Homeland Security Grants	Police Department	$	Ongoing	N/A
P3	Work with local businesses and organizations to conduct regular workplace emergency preparedness drills.	General Fund, Homeland Security Grants	Police Department	$	2023	N/A
P4	Expand participation in the Vernon Community Emergency Response Team (CERT) program for residents and businesses.	General Fund, Homeland Security Grants	LA County Fire	$	2024	N/A
P5	Ensure that community evacuation plans include provisions for community members who do not have access to private vehicles or are otherwise unable to drive.	General Fund, Homeland Security Grants	Police Department	$	2024	N/A
P6	Continue to ensure effective emergency notifications through multiple media formats, in at least English and Spanish, about pending, imminent, or ongoing emergency events. Ensure that information is accessible to persons with disabilities and functional needs.	General Fund, Homeland Security Grants	Administration	$	2023	N/A
P7	Maintain at least one emergency power-generating station in all critical facilities in the City.	General Fund, Homeland Security Grants	Public Works, VPU	$$$	2024	N/A
P8	Update the Vernon Emergency Operations Plan to identify critical facilities' sheltering needs, backup power, and communications locations.	General Fund, Homeland Security Grants	Police Department	$$	2024	N/A

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
P9	Continuously update response procedures for first responder departments to properly address new hazard events as they emerge.	General Fund, Homeland Security Grants	Police Department, All Departments	$	2024	N/A
P10	Establish a new Emergency Operations/Communications Center that includes redundant backups in voice and data communications.	General Fund, Homeland Security Grants	Police Department	$$$	2027	N/A
P11	Develop a debris management plan for various hazards within the City.	General Fund, Homeland Security Grants	Public Works	$$	2025	N/A
P12	Develop a Preliminary Damage Assessment (PDA) process for future hazard events.	General Fund, Homeland Security Grants	Public Works, VPU	$	2025	N/A
P13	Increase the number of staff within the City who have CalOES Safety Assessment Program (SAP) credentials.	General Fund, Homeland Security Grants	All Departments	$	2024	N/A
Multiple Hazards						
1.01	Explore the feasibility of connecting critical facilities to a microgrid power-supply network. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$$	2023-2027	Medium
1.02	Install energy-efficient equipment to increase the longevity of backup generator fuel supplies. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$	2023-2027	Medium
1.03	Conduct routine updates to Facility Conditions Assessments for City-owned infrastructure, buildings, lift stations, and other utilities and coordinate with other agencies to ensure inspections of other important infrastructure. (Hazards addressed: All)	General Fund, Other Grants	Public Works, VPU	$$	Annually	Medium

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
1.04	Repair, as feasible, all major deficiencies discovered by inspections to prevent collapse, failure, or damage in the event of a natural disaster. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works, VPU	$$$	2024-Ongoing	Medium
1.05	Coordinate with public and private utility operators to harden infrastructure and create redundant system connections between VPU and outside agencies/organizations. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$$	2025-2027	Medium
1.06	Install and harden emergency backup power at City facilities, prioritizing installations for facilities that serve critical functions. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2023-2025	High
1.07	Conduct a feasibility assessment of the installation of solar and battery backup systems at key critical facilities within the City. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2028	Low
1.08	Work closely to increase awareness of hazard events and resiliency opportunities among socially vulnerable community members, including the homeless.(Hazards addressed: All)	General Fund, Other Grants	City Administration, Police Department	$$	2023	Low
1.09	Avoid building new City-owned key facilities in mapped hazard areas. If no feasible sites outside of mapped areas exist, ensure that such facilities are hardened against hazards beyond any minimum building requirements/ mitigation standards. (Hazards addressed: All)	General Fund	Planning, Public Works	$	2023	Low
1.10	Closely monitor changes in the boundaries of mapped hazard areas resulting from land-use changes or climate change and adopt new mitigation actions or revise existing ones to ensure continued	General Fund	Planning, Public Works	$	Annually	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
	resiliency. (Hazards addressed: All)					
1.11	Integrate policy direction and other information from this Plan into other City documents, including the General Plan, Emergency Operations Plan, and Capital Improvements Program. (Hazards addressed: All)	General Fund	All Departments	$	2023-2024	High
1.12	Monitor funding sources for hazard mitigation activities. (Hazards addressed: All)	General Fund	All Departments	$	Annually	Medium
1.13	Investigate the feasibility of an all-hazards warning/announcement system to be activated in Vernon prior to or during hazard events. (Hazards addressed: All)	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	City Administration, Police Department	$$	2024	High
1.14	Encourage major employers and other key stakeholders to develop their own individual emergency operations and evacuations procedures to respond to potential hazards. (Hazards Addressed: All)	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Police Department, City Administration, LA County Fire	$$	2023	Medium
	Seismic Hazards					
2.01	Encourage the installation of resilient (seismically appropriate) piping for new or replacement pipelines in close coordination with outside utility providers.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2022-2026	Medium
2.02	Assess seismically vulnerable conditions for any city-owned buildings constructed prior to 1980.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$	2024	High
2.03	Conduct an educational campaign and incentives to encourage the use of reinforced chimneys, anchored rooftop-mounted equipment, window film, and other preventative measures to reduce damage to private buildings.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$	2028	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
2.04	To the extent feasible, construct all new and significantly retrofitted City-owned facilities to remain operational in the event of a major earthquake.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works, VPU	$$$	2024	High
2.05	Retrofit key critical facilities with seismically rated window film treatments that ensure glass windows do not shatter during a strong seismic event.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$$	2028	Low
2.06	Install seismic gas shut-off valves on City buildings to prevent the flow of gas into buildings during a seismic event.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Public Works	$	2023-2026	Medium
	Drought					
3.01	Coordinate closely with Vernon Public Utilities (VPU), MWD, California Water Service (CWS), and Maywood Mutual Water Company (MMWC) on water use and water conservation efforts throughout the City.	General Fund, Enterprise Fund, Other Grants	VPU	$	Annually	High
3.02	Periodically update "Chapter 13.20 Water Conservation, Sections 13.20.030- 13.20.070" of the Vernon Municipal Code of Ordinances to reflect the latest advances in best practices in consumption, landscape design, and irrigation that reduce water use within the City.	General Fund	VPU	$	2023, 2026, 2029	High
3.03	Work with VPU, CWS, and MMWC to develop a focused water leak pilot program to eliminate leaky water mains, sprinklers, and other water fixtures, focusing on areas of the City with the greatest water demand.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$	2028	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
3.04	Support indoor and outdoor water efficiency through community-wide education and rebate programs and continue to maintain these programs and other restrictions on water use in the absence of drought.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$	2025	Low
	Epidemic/Pandemic					
4.01	Assess and institute necessary upgrades to critical facilities to allow for usage during a pandemic, including adequate ventilation and physical barriers.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	Health and Environmental Control Department, Public Works	$$$	2028	Low
4.02	Institute necessary structural improvements to evacuation centers/sheltering locations to allow for proper ventilation, space for staff, and structural barriers to be used during pandemic and hazard events.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	Health and Environmental Control Department, Public Works	$$$	2028	Low
4.03	Coordinate with surrounding jurisdictions, local health care providers, businesses, schools, the Vernon Health Department, the Los Angeles County Health Care Agency, the California Department of Public Health, and the Centers for Disease Control to inform community members about current public health trends or issues, free and low-cost healthcare options, treatments, and where to find local healthcare facilities.	General Fund, Other Grants	Health and Environmental Control Department	$	Annually	High
4.04	Cooperate with the Vernon Health and Environmental Control Department, Greater Los Angeles County Vector Control District to inform community members on best practices for mosquito management and abatement.	General Fund, Other Grants	Health and Environmental Control Department	$	Annually	Low
4.05	Participate in exercises conducted by the LA County Operational Area and/or DMAC surrounding diseases and pest issues.	General Fund, Other Grants	Health and Environmental Control Department	$	2024	Medium

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
Flooding/ Dam Inundation						
5.01	Coordinate with dam owners/operators, state, and federal agencies to collectively identify threats to the City and the region and identify ways to retrofit/strengthen the dams under their control.	General Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works	$	Annually	Low
5.02	Identify potential flood improvements that reduce inundation from both storm flows and potential dam inundation effects.	General Fund, Enterprise Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works	$$	2027	High
5.03	Investigate the use of permeable paving and landscaped swales for new construction and replacement of City-owned hardscaped areas.	General Fund, FEMA Grants (BRIC, FMA, HMGP), Other Grants	Public Works	$	2028	Low
5.04	Conduct frequent cleanings of storm drain intakes, especially before and during the rainy season.	General Fund, Other Grants	Public Works	$$	Annually	Medium
5.05	Track areas where ponding frequently occurs during heavy rainfall and install new drains or upgrade existing ones to reduce ponding of water.	General Fund, Other Grants	Public Works	$$$	2025	Low
Air Pollution						
6.01	Use the latest version of the CalEnviroScreen mapping tool to aid in the reduction of pollutant exposures to improve community health.	General Fund, Other Grants	Public Works	$	2023	Low
6.02	Prepare and adopt an Environmental Justice Element for the City of Vernon General Plan.	General Fund, Other Grants	Public Works, Health and Environmental Control	$$	2025	Low
6.03	Create and implement a limited idling program throughout the City, especially for large trucks.	General Fund, Other Grants	Public Works, Health and Environmental Control	$$	2028	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
6.04	Conduct a feasibility study to explore the possibility of incentivizing and encouraging local businesses to convert their fleets to include both electric and hybrid vehicles.	General Fund, Other Grants	Public Works, VPU	$$	2027	High
6.05	Conduct a feasibility study for noxious odors and other air quality issues associated with industrial uses within the City that have operated for many decades. Identify potential mitigation strategies to reduce odor concerns and complaints through a partnership with businesses in the City.	General Fund, Other Grants	Health and Environmental Control	$$$	2027	Low
	Hazardous Materials					
7.01	Discourage new, sensitive land uses, including schools, parks, childcare centers, adult and senior assisted living facilities, and community centers, from being established near identified hazardous material facilities. Discourage or prohibit new hazardous material facilities from locating near sensitive land uses.	General Fund	Health and Environmental Control	$	Ongoing	Low
7.02	Pursue full alignment of the General Plan with policies and actions outlined in state and regional plans such as the California Accidental Release Prevention (CalARP) Program and the County of Los Angeles Fire Department, Health Hazardous Materials Division.	General Fund, Other Grants	Health and Environmental Control	$	2024	Medium
7.03	Continuously inspect businesses and other properties storing hazardous materials and create an inventory of storage locations that require updates, maintenance, or renovation. Expand upon the current city-maintained inventory for hazardous material sites within the city and share updates and findings between City departments and divisions.	General Fund, Other Grants	Health and Environmental Control	$	Annually	High
7.04	Continue to work with solid waste service contractors to educate residents and businesses on the safe disposal of small quantities of hazardous materials.	General Fund, Other Grants	Health and Environmental Control	$	Ongoing	Low

	Mitigation Action	Potential Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
7.05	Partner with surrounding cities to develop a multi-jurisdictional hazardous materials abatement plan addressing the proper closure and remediation of any sites currently or formerly storing or disposing of hazardous materials.	General Fund, Other Grants	Health and Environmental Control	$	2025	Low
Severe Wind						
8.01	Notify residents through public service announcements a couple of days in advance of a severe weather event. Focus on media methods that target vulnerable populations, such as the elderly, sick, lower-income, or persons with limited mobility, to better ensure they have adequate time to prepare.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	City Administration	$	Start in 2023	Low
8.02	Coordinate with VPU and any other utility providers to identify and strengthen or replace utility structures that may be old, damaged, or otherwise vulnerable to high winds. Support efforts to underground power lines where feasible.	General Fund, Enterprise Fund, FEMA Grants (BRIC, HMGP), Other Grants	VPU	$$$	2023	High
8.03	Conduct outreach to residents and businesses prior to severe wind/weather events on proper tree maintenance and identification of potentially hazardous trees.	General Fund, FEMA Grants (BRIC, HMGP), Other Grants	City Administration	$	Start in 2023	Low

*** Relative Cost Categories:**

$ Less than $50,000

$$ $50,001 to $499,999

$$$ Greater than $500,000

Notes: Mitigation Actions from 2004 Vernon NHMP are highlighted in blue.