



May 2026

# City of Pasadena Water and Power 2025 Urban Water Management Plan

**Public Review Draft**



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**City of Pasadena  
Water and Power  
2025 Urban Water  
Management Plan  
PUBLIC REVIEW DRAFT**

May 2026

Prepared for  
**Pasadena Water and Power**  
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## List of Acronyms

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Act	California Urban Water Management Planning Act
AF	Acre-Feet
AFY	Acre-Feet per Year
AWWA	American Water Works Association
CCOP	Cyclic Cost-Offset Program
CII	Commercial, Industrial and Institutional
City	City of Pasadena
CRA	Colorado River Aqueduct
CWC	California Water Code
DOF	Department of Finance
DMM	Demand management measure
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
eAR	Electronic Annual Report to the Drinking Water Program
GPCD	Gallons per capita per day
gpm	Gallons per minute
HCF	Hundred cubic feet
IRP	Integrated Water Resources Plan
kWh	Kilowatt-hours
L2	Laundry-to-Landscape
MG	Million gallons
MSL	Mean sea level
MWD	The Metropolitan Water District of Southern California
PWP	Pasadena Water and Power
RBMB	Raymond Basin Management Board
SB 79	California Senate Bill 79
SBX7-7	Senate Bill 7 of Special Extended Session 7
SCAG	Southern California Association of Governments
SWP	State Water Project
SWRCB	State Water Resources Control Board
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
VOCs	Volatile organic compounds
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSDM	Water Surplus and Drought Management
WSRP	Water Sources Resource Plan
WTP	Water Treatment Plant

## **Section 1: Introduction and Lay Description**

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### **1.1 Overview**

This document presents the 2025 Urban Water Management Plan (UWMP) for Pasadena Water and Power (PWP) water service area, which includes the City of Pasadena (City), and portions of neighboring areas of unincorporated Los Angeles County.

### **1.2 Purpose**

California Water Code (CWC), Sections 10610 through 10656 requires that every urban water supplier that provides water to more than 3,000 customers or supplies more than 3,000 acre-feet of water annually shall prepare and adopt an urban water management plan every five years. The UWMP is a planning tool to help guide the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a Section which “describes the opportunities for exchanges or water transfers on a short-term or long-term basis.” (California Urban Water Management Planning Act, Article 2, Section 10630(d).) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

Water management in California is not a matter of certainty and planning projections may change in response to a number of factors. From this perspective, it is appropriate to look at the UWMP as a general planning framework, not a specific action plan, nor an exact blueprint for supply and demand management. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these “framework” questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands.

The Urban Water Management Planning Act (Act) requires preparation of a plan that:

- Accomplishes water supply planning over a 20-year period in five-year increments. (PWP is progressing beyond the requirements of the Act by developing a plan which spans 25 years.)
- Demonstrates water supply reliability in normal, single dry, and multiple dry years.
- Demonstrates conservation and efficient use of urban water supplies.

Detailed information on what must be included in these plans can be found in CWC sections 10610 through 10657.

It is the intent of PWP to deliver safe and reliable water supplies to its customers, even during dry periods. Based on conservative water supply and demand assumptions over the twenty-five years in combination with conservation of non-essential demand during normal water years, the UWMP documents PWP's ability to achieve this goal.

### **1.2.1 Relationship to Other Planning Efforts**

Numerous local and regional planning documents were referenced in preparation of this UWMP, including previous UWMPs, the 2020 Water System and Resources Plan (WSRP), the City General Plan, Southern California Association of Governments (SCAG) population projections, and other planning documents to effectively integrate water supply planning and land-use planning.

Additionally, concurrent with the 2025 UWMP update, PWP's Water Shortage Contingency Plan (WSCP) was also updated consistent with CWC Section 10632 and Section 10635. The 2025 WSCP outlines PWP's action plan for a drought or catastrophic water supply shortage and specifies opportunities to reduce demand and augment supplies under such conditions. The WSCP was adopted as a stand-alone document and is summarized in this Plan, in Section 8, and is also included as an attachment in Appendix E.

### **1.3 Lay Description/Fundamental Findings of the UWMP**

This section summarizes the fundamental determinations made in this UWMP and addresses CWC 10630.5, cited below:

*"Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan."*

*Cal. Water Code § 10630.5*

PWP has diverse sources of water to meet its water demands: local groundwater from the Raymond Basin, stream water from Arroyo Seco and Eaton Canyon which recharges the groundwater in the Raymond Basin, and imported water from The Metropolitan Water District of Southern California (MWD).

Raymond Basin was the first groundwater basin adjudicated in California; this occurred in December 1944 with the purpose of alleviating overdraft of the basin. PWP holds the largest groundwater rights in the Raymond Basin. On average, groundwater produced from the Raymond Basin makes up about one third to one half of PWP’s total supplies and water from MWD makes up the remaining amount. A minor amount of water is delivered to PWP from interconnections with neighboring agencies; typically used when a PWP customer can be more efficiently served by a neighboring agency.

PWP is one of the founding members of MWD. MWD currently has 26 member agencies. Imported water delivered to PWP at five interconnections is treated at MWD’s Weymouth Water Treatment Plant (Weymouth) in La Verne, which can receive water from both Northern California through the State Water Project (SWP) and the Colorado River through the Colorado River Aqueduct (CRA). Under certain conditions, during outages at Weymouth, PWP can receive some treated water from MWD’s Jensen Water Treatment Plant. Sufficient connection capacity exists in the MWD system to meet total existing and projected PWP demands.

PWP continuously evaluates opportunities to diversify its supplies while also focusing on sustaining and maximizing use of its existing local water resources. See Section 6 for details on water supplies.

Based on the analyses conducted in this UWMP, PWP anticipates sufficient water supplies to meet its projected demands through 2050, in all hydrologic year types (normal, single-dry, and multiple dry years). Supply and demand projections are summarized in Table 1-1, Table 1-2, and Table 1-3. In general, imported water supplies from MWD would be purchased in volumes needed to meet the difference between demands and local supplies. See section 7 for details on water service reliability.

**Table 1-1: Normal Year Supply and Demand Projections (AFY)**

	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Groundwater – Raymond Basin	11,130	11,130	11,130	11,130	11,130
Water from MWD	16,146	15,842	15,312	14,973	15,039
Water from other sources	100	100	100	100	100
<b>Supply Totals</b>	<b>27,376</b>	<b>27,072</b>	<b>26,542</b>	<b>26,203</b>	<b>26,269</b>
<b>Demand Totals</b>	<b>27,376</b>	<b>27,072</b>	<b>26,542</b>	<b>26,203</b>	<b>26,269</b>

**Notes:**

MWD has determined it has supply capabilities sufficient to meet projected water demands.

**Table 1-2: Single-Dry Year Supply and Demand Projections (AFY)**

	2030	2035	2040	2045	2050
Groundwater – Raymond Basin	9,533	9,533	9,533	9,533	9,533
Water from MWD	19,933	19,604	19,032	18,666	18,738
Water from other sources	100	100	100	100	100
<b>Supply Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
<b>Demand Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>

**Notes:**

MWD has determined it has supply capabilities sufficient to meet water demands under a single dry year condition and period of drought lasting five consecutive water years.

**Table 1-3: Multiple Dry Year Supply and Demand Projections (AFY)**

	2030	2035	2040	2045	2050	
1 <sup>st</sup> Year	Groundwater – Raymond Basin	9,789	9,789	9,789	9,789	
	Water from MWD	19,677	19,348	18,776	18,410	
	Water from other sources	100	100	100	100	
	<b>Supply Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
	<b>Demand Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
2 <sup>nd</sup> Year	Groundwater – Raymond Basin	9,789	9,789	9,789	9,789	
	Water from MWD	21,314	22,050	22,044	22,017	
	Water from other sources	100	100	100	100	
	<b>Supply Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
	<b>Demand Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
3 <sup>rd</sup> Year	Groundwater – Raymond Basin	9,789	9,789	9,789	9,789	
	Water from MWD	21,314	22,050	22,044	22,017	
	Water from other sources	100	100	100	100	
	<b>Supply Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
	<b>Demand Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
4 <sup>th</sup> Year	Groundwater – Raymond Basin	9,789	9,789	9,789	9,789	
	Water from MWD	21,314	22,050	22,044	22,017	
	Water from other sources	100	100	100	100	
	<b>Supply Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
	<b>Demand Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
5 <sup>th</sup> Year	Groundwater – Raymond Basin	9,789	9,789	9,789	9,789	
	Water from MWD	21,314	22,050	22,044	22,017	
	Water from other sources	100	100	100	100	
	<b>Supply Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
	<b>Demand Totals</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>

**Notes:**

MWD has determined it has supply capabilities sufficient to meet water demands under a single dry year condition and period of drought lasting five consecutive water years.

Details on these fundamental findings are presented in this 2025 UWMP.

## Section 2: Urban Water Management Plan Preparation

### 2.1 Basis for Preparing the Plan

In accordance with the CWC, PWP has prepared this UWMP as it supplies over 26,000 AFY to more than 38,000 service connections. The 2025 UWMP shall be updated and submitted to the California Department of Water Resources (DWR) by July 1, 2026. A summary of the PWP system is provided in Table 2-1.

**Table 2-1: Public Water System Covered by this Plan**  
[DWR Table 2-1]

Public Water System Number	Public Water System Name	# of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
CA 1910124	Pasadena Water and Power	38,637	26,401

A water supplier may report on a fiscal-year or calendar-year basis but must clearly state in its UWMP the type of year that is used for reporting. The type of year should remain consistent throughout the Plan. DWR prefers that agencies report on a calendar year basis in order to ensure UWMP data is consistent with data submitted in other reports to the State. This UWMP provides data consistent with a calendar year, in acre-feet, as summarized in Table 2-2.

**Table 2-2: Supplier Identification**  
[DWR Table 2-3]

<p><b>Type of Supplier</b></p> <p><input type="checkbox"/> Supplier is a wholesaler supplier</p> <p><input checked="" type="checkbox"/> Supplier is a retail supplier</p>
<p><b>Fiscal or Calendar Year</b></p> <p><input checked="" type="checkbox"/> UWMP Tables are in calendar years</p> <p><input type="checkbox"/> UWMP Tables are in fiscal years</p>
<p><b>Units of Measure Used in this UWMP</b></p> <p>Unit: Acre-Foot (AF)</p>

#### 2.1.1 Organization of Document

This UWMP is organized as follows:

- Section 1: Introduction and Lay Description
- Section 2: Urban Water Management Plan Preparation

- Section 3: System Description
- Section 4: Water Use Characterization
- Section 5: SBX7-7 Baseline, Targets, and Compliance
- Section 6: Water Supply Characterization
- Section 7: Water Service Reliability and Drought Risk Assessment
- Section 8: Water Shortage Contingency Plan (Summary)
- Section 9: Demand Management Measures
- References
- Appendices

A checklist documenting compliance of this Plan with the Act requirements is provided in Appendix A. Urban water suppliers are required to report and submit UWMP data in standardized tables developed by DWR (Submittal Tables). The DWR Submittal Tables prepared for this UWMP are included in Appendix B.

## **2.2 Coordination and Outreach**

Coordination and outreach are required during preparation of the UWMP, as established in the following CWC excerpts:

- 10620(d)(3) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.
- 10621(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.
- 10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon...After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

## 2.2.1 Plan Preparation

The City began preparation of this Plan in October 2025. A notice regarding intent to update the UWMP and other notices were sent to relevant local agencies in January 2026 more than 60 days prior to the public hearing. Table 2-3 summarizes coordination and notification during development of this UWMP. Copies of notices are provided in Appendix C.

**Table 2-3: Coordination and Notification for Plan Preparation** [To be updated between public draft and final]

	Sent Notice of Intent to Update	Received Copy of Draft	Commented on Draft	Contacted for Assistance	Sent Notice of Public Hearing
City of Alhambra	✓				
City of Arcadia	✓				
City of Glendale	✓				
City of Sierra Madre	✓				
City of South Pasadena	✓				
Foothill Municipal Water District	✓				
Huntington Library and Art Gallery	✓				
Kinneloa Irrigation District	✓				
La Cañada Irrigation District	✓				
Las Flores Water Company	✓				
Lincoln Avenue Water Company	✓				
Los Angeles County Public Works	✓				
Los Angeles County Sanitation Districts	✓				
Metropolitan Water District of Southern California (Wholesaler)	✓				
Pasadena Cemetery Association	✓				
Raymon Basin Management Board	✓				
Rubio Cañon Land and Water Association	✓				
San Gabriel County Water District	✓				

	Sent Notice of Intent to Update	Received Copy of Draft	Commented on Draft	Contacted for Assistance	Sent Notice of Public Hearing
Southern California Association of Governments	✓				
Sunny Slope Water Company	✓				
Valley Water Company	✓				

Local groundwater supplies require coordination with the Raymond Basin Management Board. PWP is a member agency of MWD and must coordinate its imported water demands with that agency. The City’s wastewater collection and treatment is provided by the Los Angeles County Sanitation Districts. Finally, since PWP provides water service to several adjacent areas outside of the City’s boundaries, it must coordinate with those communities as well.

### 2.2.2 Public Outreach

Pursuant to CWC 10621(b), PWP provided notice prior to its public hearing to adopt the UWMP and the draft UWMP was made available for public review prior to the public hearing via the PWP website. A Notice of public hearing will be published in local newspapers, pursuant to Section 6066 of the Government Code. Copies of the public outreach materials will be included in Appendix C.

Table 2-4 presents a timeline for public participation during the development of the UWMP.

**Table 2-4: Public Participation Timeline** [To be updated between public draft and final]

Milestone	Date	Public Participation Task
Public Draft UWMP	TBD	Draft UWMP released for public review
Public Hearing	June 8, 2026	Review contents of Draft UWMP and take comments during City Council meeting

### 2.2.3 Plan Adoption

The Pasadena Water and Power 2025 Urban Water Management Plan will be adopted by the Pasadena City Council at a noticed public hearing held on June 8, 2026. This UWMP includes all information necessary to meet the requirements of Water Conservation Act of 2009 (Wat. Code, §§ 10608.12-10608.64) and the Urban Water Management Planning Act (Wat. Code, §§ 10610-10656). The adoption resolution will be provided in the Final UWMP as Appendix D.

#### **2.2.4 Plan Availability**

The Final UWMP will be submitted electronically to DWR within 30 days of adoption, and by July 1, 2026.

Final copies of the UWMP will also be provided to the California State Library and County of Los Angeles within 30 days of adoption.

In addition, the plans will be available to the public via PWP's website:  
<https://pwp.cityofpasadena.net/uwmp/>

## **Section 3: System Description**

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### **3.1 General Description**

The City of Pasadena is located at the base of the San Gabriel Mountains in Los Angeles County. The City encompasses approximately 23 square miles with notable scenic, cultural and academic landmarks that include the Arroyo Seco and Eaton Canyon, Rose Bowl Stadium, California Institute of Technology, Art Center College of Design, and NASA's Jet Propulsion Laboratory.

The City is situated between the Arroyo Seco to the west and Eaton Wash to the east and overlies the Raymond Groundwater Basin. This combination of surface and groundwater resources provided the basis for Pasadena's establishment and early development. In 1912, the City purchased and consolidated three private water companies, forming an independent Water Department. One of the founding members of MWD in 1941, Pasadena became the first member agency to receive imported water from MWD. In 1967, the water and power departments were merged to form the Pasadena Department of Water and Power.

PWP is a public agency managed as a department of the City, providing water and electricity service to the community. PWP's water service area encompasses approximately 26 square miles, including the City of Pasadena and portions of the unincorporated areas of Altadena, East Pasadena, and San Gabriel. Approximately 15% of PWP's service population is located outside the City's legal boundary. According to the California Department of Finance in 2025, the PWP service area population was approximately 165,500.

PWP's water system consists of over 500 miles of pipelines, 12 active wells, 22 booster stations, 30 pressure reducing stations, two treatment facilities, interconnections with other agencies, including five with MWD, and storage reservoirs with a total capacity of approximately 105 million gallons. The distribution system is divided into 23 pressure zones; 10 are gravity-fed by reservoirs, two are hydro-pneumatic zones, and 11 zones are fed from a higher-pressure zone using one or more pressure reducing stations. Additional details on PWP's water system can be found in the 2020 Pasadena Water System and Resources Plan (Woodard & Curran 2020).

### **3.2 Land Use**

Current land use in the PWP service area is predominantly single family residential, multi-family residential, mixed, and commercial, industrial and institutional (Figure 3-2). High-density residential, commercial and mixed land uses are concentrated along major corridors, such as Fair Oaks Avenue and Washington Boulevard, and in Special Districts such as Central Pasadena, East Colorado and South Fair Oaks.

Pasadena is considered largely built out. According to the 2015 City of Pasadena General Plan, most recently amended in 2022, future growth will occur through urban infill, which means increasing the number of residential units or mixed-use units per acre, typically by replacing single-story structures with multi-story structures (City of Pasadena 2022a). Additionally, based

on the City's Guiding Principles which account for extensive community input, higher density development will be directed away from residential neighborhoods and into the Central District, Transit Villages, and Neighborhood Villages (Pasadena 2026a).

Factors that may impact land use in the future include the following:

- California Senate Bill 79 (SB 79): SB 79, signed into law in October 2025, creates less restrictive state zoning codes with the intent to allow for higher-density housing to be built near major public transportation stops. The purpose is to increase housing supply, with denser, taller buildings and encourage transit use. The new height and density standards will apply by July 1, 2026.
- SR-710 Stub Project: The State Route (SR) 710 northern interchange was constructed in the early 1970s and resulted in the displacement of thousands of residents as well as division of a residential community from an active central business district. In 2022, the portion of SR 710 that is contained within the City of Pasadena was relinquished to the City, which eliminates the possibility of a future 710 North freeway connection. The City, with support of *The Reconnecting Communities 710 Advisory Group*, is now in the final phases of designing redevelopment plans for the relinquished area. The area spans approximately 50 acres in the southwestern portion of the City whose redevelopment will focus on restoring community connectivity with pedestrian-friendly spaces and may include new affordable housing (City of Pasadena 2025, 2026b, 2026c).

**Figure 3-1: PWP Water Service Area Boundary**

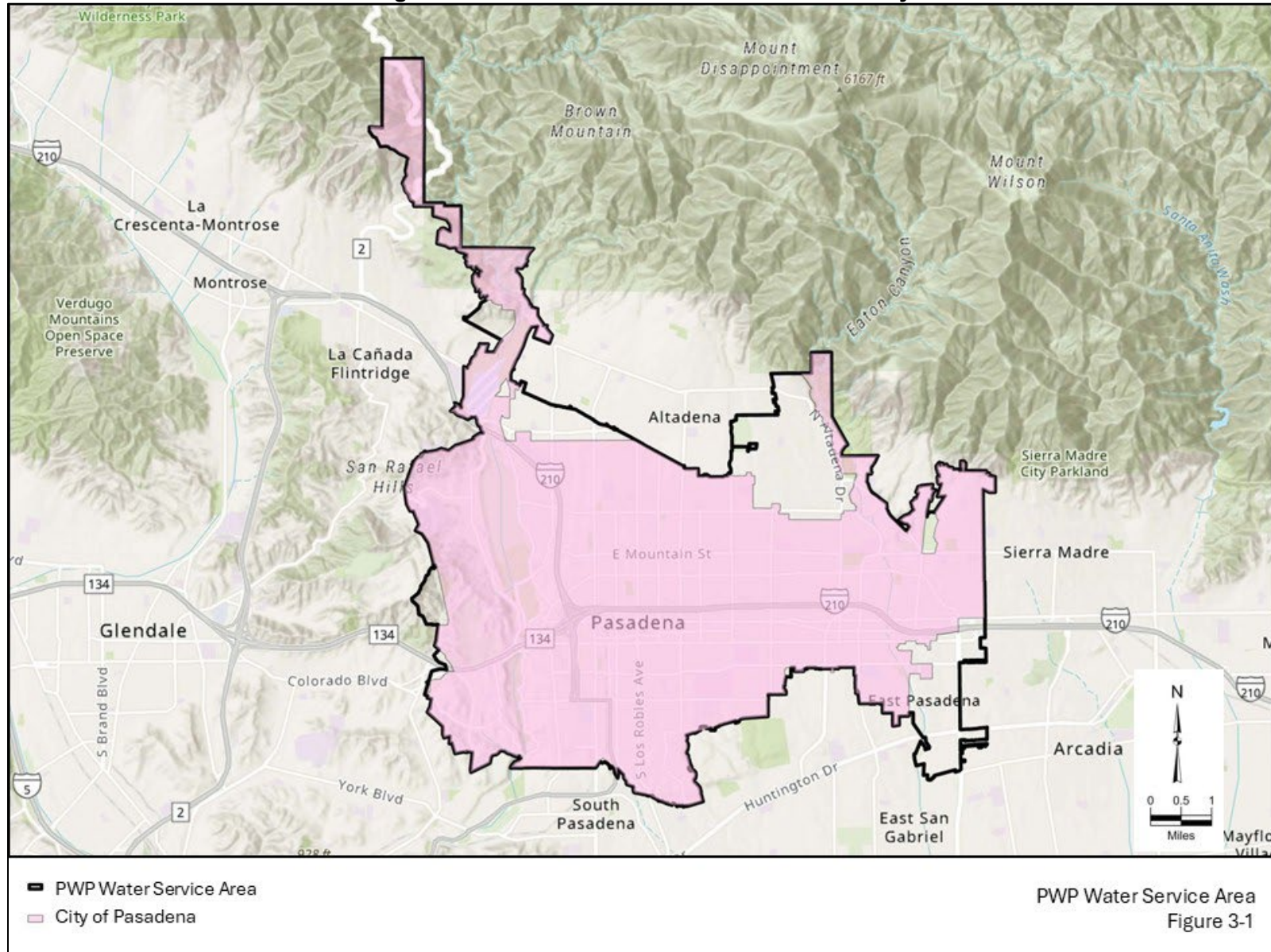
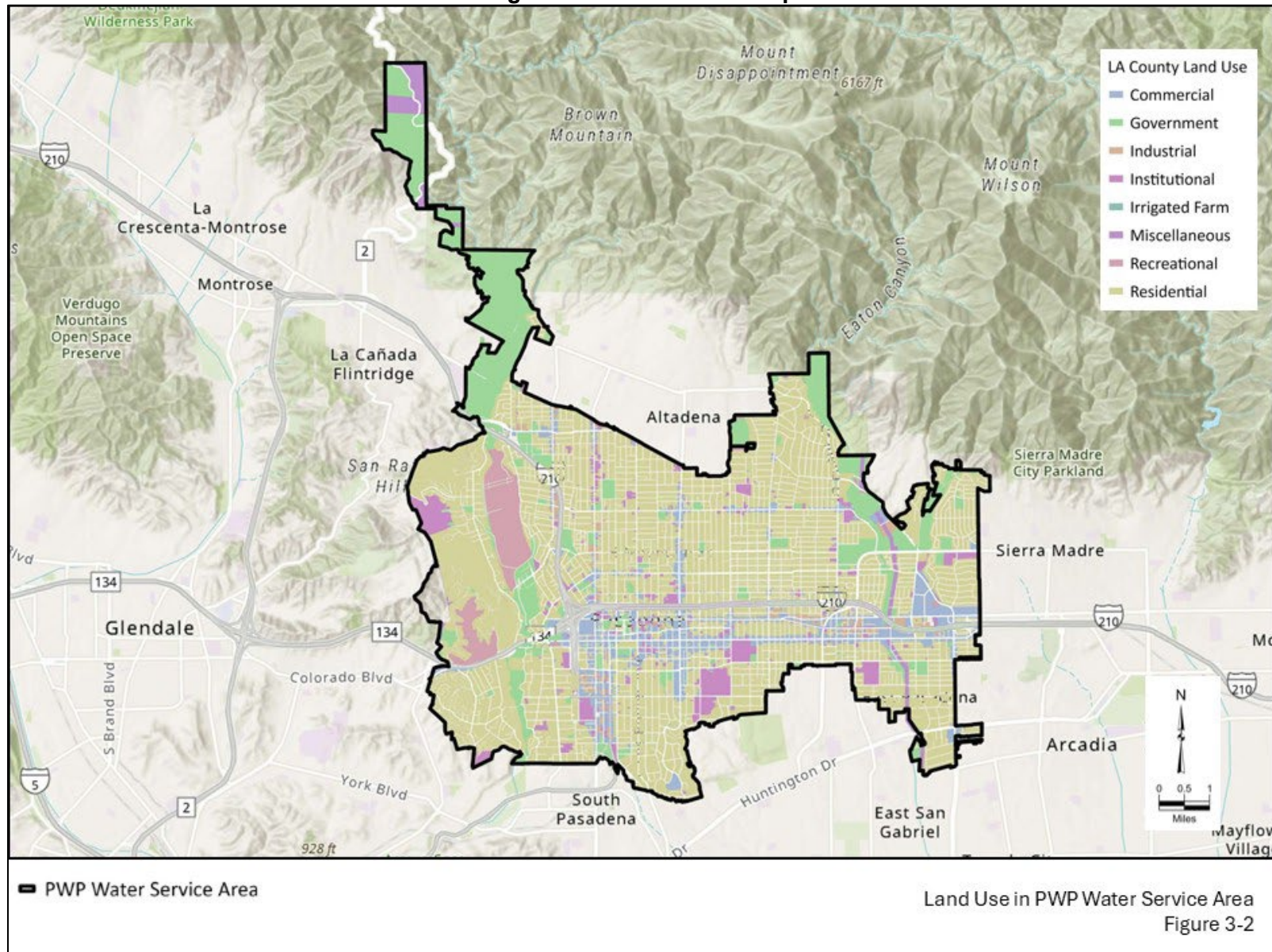


Figure 3-2: Land Use Map



### 3.3 Population, Demographics and Socioeconomics

#### 3.3.1 Population

Table 3-1 shows the current and projected PWP service area population in five-year increments to year 2050.

The current population for the PWP service area is based on the 2025 State of California Department of Finance (DOF) estimate for the City of Pasadena (DOF 2025), adjusted to account for outlying areas within the PWP service area. It is estimated that City boundaries make up 85% of the service area and 15% of the service area is outside of city boundaries. Adjustments are made accordingly to calculate service area population based on City population estimates.

Projections through 2050 are based on Southern California Association of Governments (SCAG) growth rates projected for the City of Pasadena (SCAG 2024). SCAG projections for the City were available for 2035 and 2050. PWP population projections through 2035 are based on the growth rate calculated between the 2025 service area population estimate and the SCAG 2035 City population projection, adjusted to account for outlying areas within the PWP service area. Projections from 2035 to 2050 are based on the growth rate between 2035 and 2050 from SCAG projections.

**Table 3-1: Current and Projected Population**

[DWR Table 3-1]

	2025	2030	2035	2040	2045	2050
Population Served	165,448	167,244	169,059	169,645	170,233	170,824

#### 3.3.2 Demographics and Socioeconomics

In addition to land use changes, other factors including social, economic, and demographic factors may also affect water management and planning. Table 3-2 summarizes the demographic and socioeconomic indicators for the City of Pasadena. While PWP’s water service area extends beyond the jurisdictional boundaries of the City, general demographic characteristics of the City of Pasadena are considered to be representative of the PWP water service area.

**Table 3-2: Summary of Service Area Demographics**

<b>Demographic Category</b>	<b>Value</b>
<b>Age and Sex</b>	
Persons under 5 years, percent	4.7%
Persons under 18 years, percent	16.7%
Persons 65 years and over, percent	17.4%
Female persons, percent	50.7%
<b>Race and Hispanic Origin</b>	
White alone, percent	39.2%
Black or African American alone, percent	8.3%
American Indian and Alaska Native alone, percent	0.8%
Asian alone, percent	17.4%
Native Hawaiian and Other Pacific Islander alone, percent	0.3%
Two or More Races, percent	16.9%
Hispanic or Latino, percent	34.0%
White alone, not Hispanic or Latino, percent	34.9%
<b>Housing</b>	
Owner-occupied housing unit rate, 2022-2024	42.5%
Median value of owner-occupied housing units, 2022-2024	\$1,093,300
Median gross rent, 2022-2024	\$2,265
<b>Families &amp; Living Arrangements</b>	
Persons per household, 2022-2024	2.30
<b>Education</b>	
High school graduate or higher, percent of persons age 25 years+, 2022-2024	89.9%
Bachelor's degree or higher, percent of persons age 25 years+, 2022-2024	56.1%
<b>Economy, Income &amp; Poverty</b>	
In civilian labor force, total, percent of population age 16 years+, 2022-2024	67.4%
Median household income (in 2024 dollars), 2022-2024	\$105,192
Persons in poverty, percent	13.3%

**Source:** <https://www.census.gov/quickfacts/fact/table/pasadenacitycalifornia/BZA115223>

### **3.4 Service Area Climate**

Pasadena's climate is characterized as Mediterranean, temperatures are mild in the winter, spring and fall, and hot and dry during summer months. Average temperatures range from 45°F to 91°F. Total annual rainfall averages about 20 inches per year. Most of the rainfall occurs between December and March. Average monthly climate data for the City of Pasadena are summarized in Table 3-3.

**Table 3-3: Pasadena Monthly Average Climate Data Summary**

Month	Standard Monthly Average ETo (inches) <sup>1</sup>	Average Total Rainfall (inches) <sup>2</sup>	Average Temperature (°F)	
			Max	Min
January	2.20	4.13	68	45
February	2.47	4.87	68	45
March	3.85	3.24	70	47
April	4.58	1.09	74	50
May	5.19	0.56	77	55
June	5.97	0.10	83	59
July	6.79	0.03	89	63
August	6.41	0.22	91	63
September	5.01	0.20	88	61
October	3.47	0.81	81	56
November	2.51	1.41	74	49
December	1.97	3.23	68	45

**Source:** California Irrigation Management System (CIMIS) monthly data from Station No. 159, Monrovia, October 1999 to December 2025. <https://www.cimis.water.ca.gov/>

**Notes:**

<sup>1</sup>Monrovia CIMIS station ETo data collection ended in 2019.

<sup>2</sup>2010 precipitation readings omitted due to data anomalies.

### 3.4.1 Potential Effects of Climate Change

A topic of increasing importance for water planners and managers is climate change and the potential impacts it could have on California’s future water supplies. With a range of potential scenarios and potential impacts, climate change is increasing the uncertainty for future demand conditions and local and imported water supply conditions, thereby posing additional water management challenges.

DWR’s California Water Plan Update 2023 considers how climate change may affect water availability, water use, water quality, and water-dependent ecosystems across the State. The California Water Plan identifies numerous climate change impacts related to water management, including the following:

- Higher temperatures, less snowpack, increasing evaporation, increased consumptive use by vegetation and humans
- Increased variability in precipitation and runoff patterns, creating challenges for existing water storage and delivery systems
- Greater extremes with longer and more intense droughts, sudden and severe flooding, and more frequent and catastrophic wildfires
- Increased sea level rise, increased threat of coastal flooding, and saltwater intrusion into coastal groundwater aquifers.

- Increased groundwater depletion and land subsidence in inland areas

The 2023 California Water Plan Update also underscores that historical hydrology is no longer a reliable foundation for long-term planning. Instead, water agencies must also prepare for a future defined by volatility, extremes, and regional variability (DWR 2023).

In relation to SWP supplies, more frequent droughts, declining snowpack, and shifts in the timing of runoff into water supply reservoirs are reducing overall water availability. A major factor identified to impact Delta exports is the shift in the timing and type of precipitation, and the timing and volumes of surface runoff. More precipitation will fall in the form of rain rather than snow, thereby resulting in a shift to more runoff during winter and early spring seasons. Earlier snowmelt and more rain versus snow will also result in an increasing inability to capture that runoff for later use or utilize it when most needed with existing infrastructure (Wang et al. 2018, Calleguas 2026).

In recent years, SWP supplies have become increasingly variable, with substantial curtailments occurring during dry years. As a result of increasing hydrologic variability compounded with regulatory restrictions and operational changes, the SWP is not capable of delivering full contractor entitlements on a routine basis. Average deliveries have dropped to 50-60% of contracted amounts over the last two decades and during recent droughts (2014, 2021, 2022), SWP deliveries were as low as 5 percent. While some of the reductions since 2005 were also a result of more stringent Delta regulations and operational changes, long-term projections indicate continued curtailments in the future, largely due to climate influences.

Similarly the Colorado River is facing prolonged droughts, rising temperatures, and declining snowpack reducing water availability for all seven Colorado River Basin states: California, Arizona, Nevada, Colorado, New Mexico, Utah and Wyoming. The Colorado River Basin has become permanently hotter and drier and after years of reduced flows, the river's future is uncertain. MWD and the other Colorado River users are negotiating a new set of rules that will guide the river's operations starting in 2027. The negotiations require decisions on how the river's declining supplies should be shared, how to best mitigate the impacts of the reduced supplies, what changes to urban landscapes and rural farmlands must be implemented.

Regionally, climate change analyses presented in the 2016 U.S. Department of the Interior Bureau of Reclamation's Los Angeles County Basin Study project similar impacts, including changes to historical patterns and distribution of total rainfall, intensities of storm events, and seasonal temperatures. Existing patterns could become more extreme, with more intense storms during wet periods and longer and hotter dry periods (2016b).

Regional climate change vulnerabilities were developed as part of the Greater Los Angeles Integrated Regional Water Management Plan (2017). Table 3-4 Shows vulnerabilities that are considered to impact the PWP service area and include the vulnerabilities listed in the Pasadena 2025 Electronic Annual Report to the Drinking Water Program (eAR) for the State Water Resources Control Board (SWRCB).

**Table 3-4: Prioritized Climate Change Vulnerabilities in the PWP Service Area**

<b>Priority</b>	<b>Vulnerability</b>
<b>High</b>	<ul style="list-style-type: none"> <li>• Groundwater depletion</li> <li>• Decrease in local surface water</li> <li>• Destruction of infrastructure (reservoirs, pipelines, equipment) during wildfires and floods</li> <li>• Decreased ability to meet water conservation goals</li> <li>• Reduced resiliency to drought</li> <li>• Disruption of power supply</li> <li>• Municipal water demand would increase</li> <li>• Reliance on surface water (from the Bay-Delta system and the Colorado River)</li> <li>• Increase in wildfire risk and erosion and sedimentation which may impact water quality, flood control, and habitat</li> </ul>
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Invasive species can reduce water supply available, alter flood regimes, and alter wildfire regimes</li> <li>• Increases in inland and flash flooding</li> <li>• Peak demand volume surges, due to extreme heat</li> <li>• Decrease in dilution flows</li> <li>• Increase in source control or surface water treatment</li> <li>• Increased impacts to habitat and flow availability for species</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>• Limited ability to meet higher peaks in water demand (both seasonally and annually)</li> <li>• Habitat water demand would increase</li> </ul>

Based on PWP 2025 eAR and Greater Los Angeles County Integrated Regional Water Management Plan Table 2-8.

Studies have also been performed to assess potential climate change impacts, locally. PWP’s former Water Quality Manager, Dr. David Kimbrough, completed studies in relation to drinking water quality and to streamflow. The 2019 report *Impact of Local Climate Change on Drinking Water Quality in a Distribution System* found that water temperatures in the PWP distribution system increased as air temperature in the PWP service area increased, resulting in the loss of disinfectant residual and the increase in the activity of ammonia-oxidizing bacteria. As such, warmer temperatures may contribute to additional challenges for maintaining drinking water quality. The 2017 report *Local Climate Change in Pasadena, Calif., and the Impact on Streamflow* shows that stream flows in the Arroyo Seco have increased over the last century, along with local air temperatures. However, while those changes may indicate a greater availability of water supply in the stream, the high velocities and destructive forces associated with the extreme flows create new challenges with capturing those additional supplies.

## **Section 4: Water Use Characterization**

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This chapter describes past, current, and projected water usage within PWP’s service area. All current and projected water use for the PWP service area over the planning horizon of this UWMP is potable water. Information on potential future recycled water supplies and use is provided in Section 6.6.

### **4.1 Water Use Sectors**

The water use sectors applicable to PWP’s water system are characterized as follows:

- Single-Family Residential – Applies to separately metered single-family detached residences, also called single-detached dwellings, or single-family with accessory dwelling unit.
- Multi-Family Residential – Applies to multi-family dwellings served by a single meter, including properties permitted as work/live space when used for residential purposes. Multi-family dwellings are apartments, condominiums or town houses with at least two dwelling units at the same physical location.

On average, over the last 15 years, over 60 percent of PWP’s demand comes from the residential (single-family and multi-family) sector.

- Commercial – Water users that provide or distribute a product or service.
- Industrial – Water users that are typically manufacturers or processors of materials.
- Institutional/Governmental – Water users dedicated to public service. Under this sector PWP also includes water use from City Accounts, including parks and city buildings.

For billing purposes, PWP captures commercial, industrial and institutional (CII) uses under a combined category, known as “Commercial”.

- Sales to other Suppliers – PWP has active interconnections with neighboring agencies to which it supplies small volumes of retail and emergency exports. These agencies include Cal-American Water Company, Foothill Municipal Water District, Kinneloa Irrigation District, Lincoln Avenue Water Company, Rubio Cañon Land and Water Association, City of Sierra Madre, City of South Pasadena, and Valley Water Company.
- Distribution System Losses – This category captures real and apparent losses within the water distribution system and storage facilities, up to the point of delivery to the customer’s system. Apparent losses are water losses due to unauthorized consumption and/or nonphysical losses attributed to inaccuracies associated with customer metering, or systematic data handling errors. Real losses are physical water losses from the distribution system. See also Section 4.4.

- Other – PWP water uses not accounted for in above sectors. This category includes portable water meters, metered private fire service, unmetered private fire service, fire hydrant use.

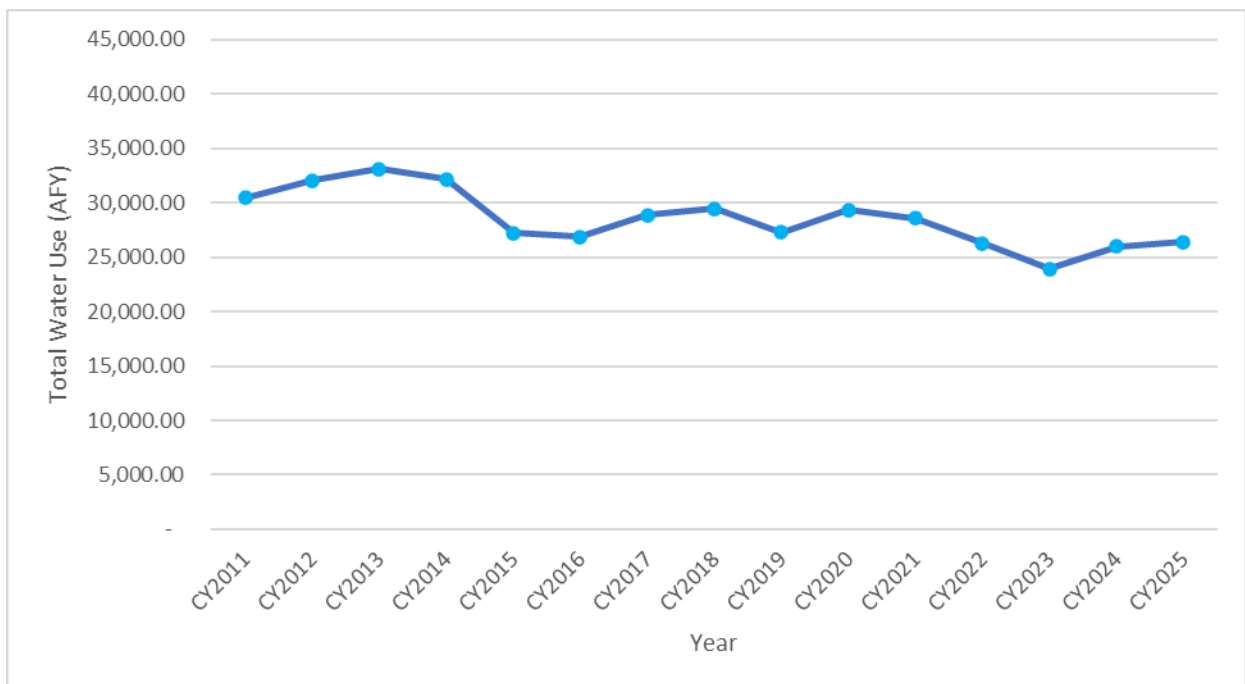
Additional water use sectors that are listed in the water code, but which are not applicable to the PWP system include: saline water intrusion barrier, and agriculture. PWP does have dedicated irrigation meters, but these uses are currently captured under their respective categories, e.g. single family residential.

## 4.2 Past and Current Water Use

### 4.2.1 Historical Trends

Over the last 15 years, PWP’s total water use has shown a downward trend (see Figure 4 1) despite population growth. During that timeframe, the most notable decrease occurred after 2014 when increased water conservation efforts were implemented in response to drought conditions and statewide water use reduction mandates in 2014 and 2015. Since then, total water use has remained below 2014 levels despite population growth. This trend can be, in part, attributed to water conservation programs and demand management measures (DMMs) implemented by PWP. Additional details on these measures are provided in Section 9.

**Figure 4-1: Historical Water Use (2011 – 2025)<sup>1</sup>**

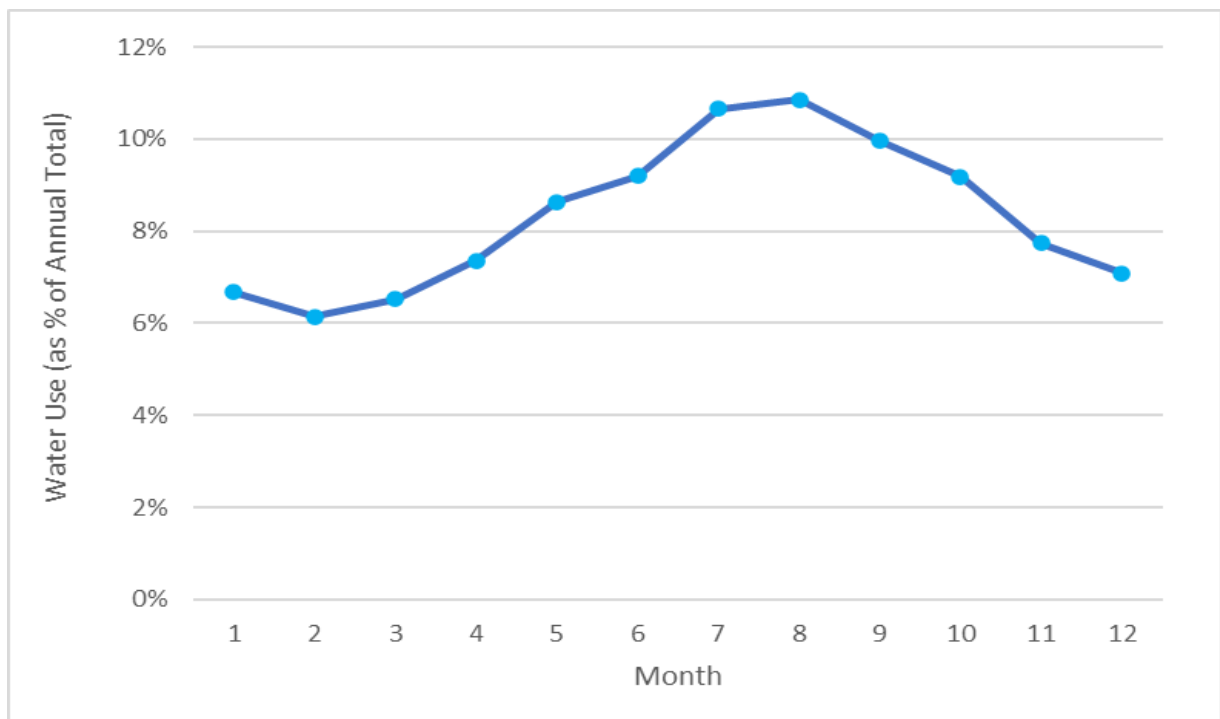


**Note:**

<sup>1</sup>Based on net production.

Water use also fluctuates throughout the year in response to seasonal conditions. Based on water use data over the past 5 years, water use is typically lowest around February and peaks in summer months, with highest use around July and August. Average monthly water use trends are shown in Figure 4-2.

**Figure 4-2: Average Monthly Water Use (2020 – 2025)<sup>1</sup>**



**Note:**

<sup>1</sup>Based on net production.

**4.2.2 Current Water Use**

Current (2025) water use by sector is shown in Table 4-1. All water use was supplied by potable water.

**Table 4-1: 2025 Actual Total Uses**

[DWR Table 4-1]

<b>Use Type</b>	<b>Volume (AF)</b>
Single-Family	12,207
Multi-Family	5,186
CII <sup>1</sup>	7,166
Other: Portable water meter and fire hydrant uses	44
Distribution System Water Losses	1,657
Sales to other Suppliers	142
<b>Total</b>	<b>26,401</b>

**Notes:**

<sup>1</sup>CII volume includes customers with Dedicated Irrigation Meters.

### 4.3 Projected Water Use

Water use in the PWP service area was projected through 2050 for this UWMP. This report includes demands being met by potable water.

#### 4.3.1 Factors Considered in Water Use Projections

Various factors were taken into consideration for PWP’s water use projections analysis, including past and current demands, projected population changes, and potential future land use changes, future water conservation measures, and climate factors, as described in the following.

- **Past and Current Demands:** PWP’s water use projections are based, in large part, on demands over the last decade with the recognition that water use behaviors and use by water sector are likely to remain similar to trends observed over the last 10 years.
- **Population Growth and Land Use Changes:** Population projections for the PWP service area are based on projections obtained from SCAG for the City of Pasadena which indicate moderate population growth for the City. The City of Pasadena is largely built out with limited potential for new major developments. Future growth is anticipated to occur primarily through urban infill and higher density housing. Factors that may impact land use in the future which were considered for this analysis include the following:
  - California Senate Bill 79 (SB 79): This law largely aligns with the City’s ongoing programs to allow higher-density housing in more areas of the City and is not expected to result in significant impacts to water use projections.
  - SR-710 Stub Project: Projected water uses for the new development project are unknown given that alternatives are still being evaluated, however water conservation is a strong focus in ongoing planning efforts and given the relatively small area, this project is not anticipated to have significant impacts on water use in the planning period of this UWMP.

- Conservation Measures and Passive Savings:** Since projections are based on historical water use, they account for conservation savings resulting from existing codes and regulations. Locally, these include water waste prohibitions outlined in Chapter 13 of the City’s Code of Ordinances and price effect conservation from the City’s tiered water rate structure, among others. Similarly, State and Federal codes and regulations that are currently in effect, such as plumbing codes and high efficiency device and appliance regulations, are also inherently accounted for in the projections due to ongoing conservation effects. Savings from these measures were not specifically estimated in this UWMP but were considered as part of this demand projections analysis.
- Urban Water Use Objectives:** Making Conservation a California Way of Life statutes AB 1668 and SB 606 establish water use objectives and long-term standards for efficient water use for urban retail water suppliers, including PWP. Standards apply to indoor residential water use, outdoor residential water use, CII water use, and water loss. Based on these standards, maximum water budgets are determined for each urban retail water supplier. An urban water use objective is the sum of standard-based budgets for a subset of water uses, such as residential outdoor use. The regulations were finalized in 2024 with more stringent standards between 2025 and 2040, with enforcement from the State Water Resources Control Board beginning in 2027. Water use objectives applicable to PWP were estimated based on available data to evaluate whether additional conservation savings will be necessary in the PWP service area over the planning horizon. Based on projections with existing conservation savings, the analysis indicates that additional conservation savings will be required to meet established objectives. These savings are accounted for in the demand projections.
- Climate Change:** Climate change is of special concern for water resource management because of the range of potential scenarios and their potential impacts on water supplies and demands. Overall, warmer temperatures, increased evapotranspiration and changes in precipitation patterns that are expected with climate change, are anticipated to result in increasing water demands primarily to meet outdoor water needs. However, water waste prohibitions specific to outdoor water use and targeted demand reduction actions that may be implemented under future drought conditions may counteract climate change-related demand increases. As drought conditions become more frequent and intense and would generally lead to increased outdoor demands, PWP may increasingly respond to these drought conditions with additional water conservation and/or demand reduction measures. Additionally, the historical data utilized as a basis for water use projections provide a reference for future climate change impacts as they inherently reflect historical drought conditions and responses. As such, climate change impacts on water demands were not specifically quantified but are accounted for in the demand projections of this UWMP.
- Weather:** Based on analysis of PWP’s historical water use over the last 3 decades, the average demands increase by approximately 8% in dry years versus wet or average hydrologic years. Therefore, projections assume an 8% increase during single-dry and multiple dry years.

### 4.3.2 Total Projected Water Use

Water use projections were calculated in a two-step process. The first step was to estimate future water use based on the status quo, which reflects current levels of conservation. These projections were based on population growth rates estimated for the PWP service area (see Section 3) in combination with the average per capita water use between 2015 and 2025 as the baseline. The 2015 to 2025 average is considered a reasonable baseline, as per capita water use showed a downward trend starting in 2015 and has remained below 2014 levels since then. The demand distribution by water use sector was estimated based on proportional water demands by sector over the last 15 years. Those proportions have stayed relatively constant over that timeframe.

The second step was to adjust projected water demands assuming urban water use objectives (UWUO) are met. For these calculations, applicable urban water use budgets were estimated for residential uses and water loss. CII with dedicated irrigation meter budgets were not calculated due to data limitations, PWP is awaiting landscape measurement data from DWR. The projections with UWUO were lower than status quo projections, indicating that additional conservation savings will be required in the future to meet the objectives. PWP currently meets real water loss standards, as such, additional conservation savings were not estimated for that use type.

Projections of total water use by sector, for normal years, are shown in Table 4-2. These projections account for additional conservation savings anticipated to be required to meet urban water use objectives.

**Table 4-2: Projected Water Use – Normal Years (AF)<sup>1</sup>**

[DWR Table 4-2]

<b>Use Type</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Single-Family	12,382	12,081	11,671	11,399	11,421
Multi-Family	4,700	4,586	4,430	4,327	4,335
CII <sup>2</sup>	8,447	8,539	8,569	8,598	8,628
Other <sup>3</sup>	19	19	19	19	19
Distribution System Water Losses	1,777	1,796	1,803	1,809	1,815
Sales to other Suppliers <sup>4</sup>	50	50	50	50	50
<b>Total</b>	<b>27,376</b>	<b>27,072</b>	<b>26,542</b>	<b>26,203</b>	<b>26,269</b>

**Notes:**

<sup>1</sup>All water use projected to be met with potable water.

<sup>2</sup>CII volumes include customers with Dedicated Irrigation Meters.

<sup>3</sup>Includes uses from portable water meters, metered private fire service, unmetered private fire service, water fire hydrant, and/or other uses not captured in other sectors.

<sup>4</sup>Based on average exports since 2015.

Water use projections during dry years are summarized in Table 4-3. As noted above, dry year water use is projected to be 8% higher than normal year water use based on historical observations. Additionally, it is assumed single-dry year and multiple dry year water use to be the same.

**Table 4-3: Projected Water Use – Dry Years (AF)<sup>1, 2</sup>**

Use Type	2030	2035	2040	2045	2050
Single-Family	13,373	13,048	12,605	12,311	12,335
Multi-Family	5,076	4,953	4,785	4,673	4,682
CII <sup>3</sup>	9,123	9,222	9,254	9,286	9,319
Other <sup>4</sup>	20	21	21	21	21
Distribution System Water Losses	1,919	1,940	1,947	1,954	1,960
Sales to other Suppliers	54	54	54	54	54
<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>

**Notes:**

<sup>1</sup>All water use projected to be met with potable water.

<sup>2</sup> Demands are based on an 8% increase compared to normal years, for each sector. Single-dry years and multiple dry years are assumed to be the same.

<sup>3</sup>CII volumes include customers with Dedicated Irrigation Meters.

<sup>4</sup>Includes uses from portable water meters, metered private fire service, unmetered private fire service, water fire hydrant, and/or other uses not captured in other sectors.

### 4.3.3 Water Use for the Next Five Consecutive Dry Years

UWMPs are required to include a five-year Drought Risk Assessment, in which water suppliers compare available water supplies with projected water use for a five-year drought period. Table 4-4 presents water use over the next five years, assuming drought conditions, i.e., dry year conditions. See Section 7.3 for additional details.

**Table 4-4: Projected Five-Year Drought Water Use (2026 – 2030) (AF)**

Use Type	2026	2027	2028	2029	2030
Single-Family	13,229	13,258	13,287	13,315	13,373
Multi-Family	5,022	5,033	5,043	5,054	5,076
CII <sup>1</sup>	9,025	9,045	9,064	9,084	9,123
Other <sup>2</sup>	20	20	20	20	20
Distribution System Water Losses	1,899	1,903	1,907	1,911	1,919
Sales to other Suppliers	54	54	54	54	54
<b>Total</b>	<b>29,249</b>	<b>29,312</b>	<b>29,376</b>	<b>29,439</b>	<b>29,566</b>

**Notes:**

<sup>1</sup>CII includes customers with Dedicated Irrigation Meters.

<sup>2</sup>Includes uses from portable water meters, metered private fire service, unmetered private fire service, water fire hydrant, and/or other uses not captured in other sectors.

### 4.3.4 Water Use Projections for Lower-Income Households

CWC Section 10631.1 requires that the UWMP water use projections include the projected water use for single-family and multi-family residential housing for lower-income households, as defined in Section 50079.5 of the Health and Safety Code, and as identified in the housing element of any city, county, or city and county in the service area of the supplier.

According to the household income distribution within the City, as described in Table A-6 of the City’s Housing Element (2022), approximately 40 percent of households fall within the state-defined income category of extremely low, very low or low. For purposes of estimating lower - income household water use projections within the PWP service area, it is assumed that the city-wide occurrence of lower-income households (i.e., 40 percent) is representative of the residential distribution within the PWP water service area and that this percentage will remain the same over the planning period, through 2050. Water use projections of lower-income households are accounted for in total water demands presented in this UWMP and are summarized in Table 4-5.

**Table 4-5: Water Use Projections for Lower-Income Households**

<b>Water Use</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Estimated Lower Income Household Water Use (AF) <sup>1, 2</sup>	6,833	6,667	6,441	6,291	6,303

**Notes:**

<sup>1</sup>Calculated as 40% of residential (single family and multi-family) water use within the PWP service area, based on total of Extremely Low Income, Very Low Income and Low Income percentages presented in City General Plan 2021-2029 Housing Element.

<sup>2</sup>Lower-income household water use projections are captured in total water demand projections presented in this UWMP.

#### **4.4 Distribution System Water Losses**

Like all water suppliers, PWP experiences water losses within its distribution system, which are calculated as the difference between the amount of water produced and the amount of water authorized for use. Losses include a combination of real and apparent losses. Real losses are physical losses from the pressurized system and storage tanks up to the point of customer consumption, i.e., customer meters. Apparent losses include all types of inaccuracies associated with customer metering, such as due to worn meters, as well as systematic data handling errors related to meter reading, billing, archiving and reporting, plus unauthorized consumption, such as theft or other illegal use.

Retail suppliers are required to report their distribution system water losses for each of the five years preceding the UWMP update. PWP’s Water Loss Audit report submittals to DWR are summarized in Table 4-6. As a note, audit results were reported in calendar years through 2022. PWP subsequently switched to fiscal year reporting starting in 2023. Based on those analyses, over the last five years, system water losses have averaged around 6 percent of total water consumption.

**Table 4-6: Water Loss Audit Reporting**

[DWR Table 4-5]

<b>Reporting Period</b>	<b>Submitted to DWR (Yes/No)</b>	<b>Link to WUEdata Submittal</b>
Calendar Year 2020	Yes	<a href="#">2020 Submittal Link</a>
Calendar Year 2021	Yes	<a href="#">2021 Submittal Link</a>
Calendar Year 2022	Yes	<a href="#">2022 Submittal Link</a>
Fiscal Year 2023	Yes	<a href="#">2023 Submittal Link</a>
Fiscal Year 2024	Yes	<a href="#">2024 Submittal Link</a>
Fiscal Year 2025	Yes	<a href="#">2025 Submittal Link</a>

#### 4.4.1 Water Loss Performance Standard

The State Water Resources Control Board (State Water Board) Water Loss Performance Standard is composed of the real water loss standard and the apparent water loss standard. The water loss standard does not have to be met until 2028, however, pursuant to Water Code Section 10631(d)(3)(C), Retail Suppliers are required to include data in their 2025 UWMPs demonstrating whether they met the water loss standard.

A comparison of results from the most recent (FY2025) American Water Works Association (AWWA) Water Loss Audit to the 2028 standard is shown in Table 4-7, in gallons per service connection per day (gpscd). Based on the audit results, PWP meets its Real Water Loss Performance Standard but currently exceeds the Apparent Water Loss Performance Standard. Compliance will be re-evaluated with PWP’s 2026 or 2027 annual water loss audits once those are available.

**Table 4-7: Progress Towards 2028 Water Loss Standard**

[based on DWR Table 4-6]

Real Water Loss		Apparent Water Loss	
State Water Board 2028 Standard	Real Water Loss based on FY2025 Audit	State Water Board 2028 Standard	Apparent Water Loss based on FY2025 Audit
28.4 gpscd	17.6 gpscd	18 gpscd	23.7 gpscd

Note: The Eaton Fire in January 2025 in Altadena destroyed homes and services in Pasadena water service area and the fire fighting and removal of the debris from the fire activities contributed to the increased apparent losses.

## **Section 5: SBX7-7 Baseline, Targets, and Compliance**

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The Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7 or SBX7-7, mandated 20% reduction in urban per capita water use by 2020, statewide. SBX7-7 required each water supplier to establish water use targets, presented in gallons per capita per day (GPCD). In the 2020 UWMP, water agencies were required to compare actual 2020 GPCD against their 2020 target to demonstrate that the agency met its 2020 Compliance Target by December 31, 2020.

Consistent with these requirements, the City's 2020 UWMP demonstrated that PWP met the 20% reduction by December 31, 2020. Table 5-1 shows that PWP met the SB X7-7 requirement.

**Table 5-1: SBX7-7 2020 Target Progress**

[based on DWR Table 5-1]

<b>2020 Target GPCD</b>	<b>Actual 2020 GPCD</b>	<b>In Compliance?</b>
169	153	Yes

## Section 6: Water Supply Characterization

### 6.1 Overview

The City has diverse sources of water: local groundwater from the Raymond Basin, stream water from Arroyo Seco and Eaton Canyon which is recharged to, and pumped from, the Raymond Basin, and imported water from MWD. On average, groundwater produced from the Raymond Basin makes up from one third to nearly one half of PWP’s total supplies. Imported water from MWD makes up the other one half to two thirds of PWP’s supplies, approximately. Additionally, a small volume of potable water is imported from neighboring agencies, making up less than one percent, on average. An overview of supplies utilized in 2025 is provided in Table 6-1. Current and potential supplies are discussed in more detail below.

**Table 6-1: Water Supplies – 2025 Actual (AFY)**

[DWR Table 6-8]

<b>Water Supply Source</b>	<b>2025</b>
Groundwater – Raymond Basin <sup>1</sup>	12,075
Water from MWD	14,179
Water from other sources	146
<b>Total<sup>2</sup></b>	<b>26,401</b>

**Notes:**

<sup>1</sup>Includes groundwater allocation and spreading credits

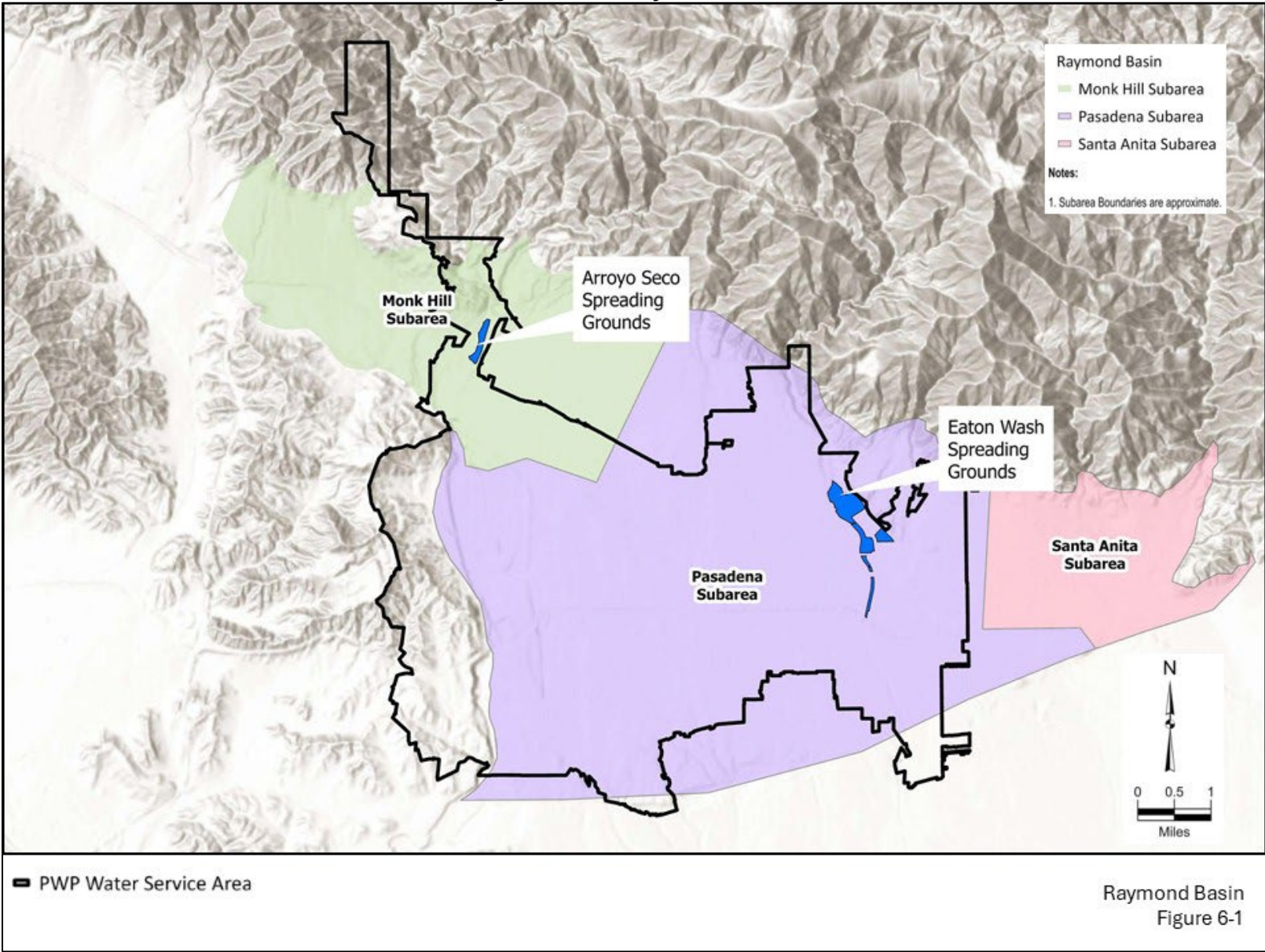
<sup>2</sup>Total does not equal sum of individual values in table due to rounding

### 6.2 Groundwater

#### 6.2.1 Raymond Basin

The Raymond Basin is a 40-square-mile aquifer underlying the majority of the City and neighboring areas. See Figure 6-1. The basin is bounded by the San Gabriel Mountains to the north, the San Rafael Hills to the west, and the Raymond Fault to the south/southeast. The base of the water-bearing strata of the Raymond Basin is defined by impervious bedrock material that is not considered to yield significant quantities of water. Overlying the bedrock are unconsolidated alluvial materials consisting of boulders, gravel, sand, silt, and clay, which in some areas are more than 1,200 feet deep. This alluvium is the principal water-bearing unit in the Raymond Basin. Well yields in the alluvium range from a few hundred to several thousand gallons per minute (gpm). The alluvial aquifer system in the Raymond Basin consists of many individual interconnected water-bearing zones. The alluvial valley slopes to the south, ranging in elevation from 2,000 feet above mean sea level (MSL) near the San Gabriel Mountains to between 500 and 700 feet MSL at the Raymond Fault.

Figure 6-1: Raymond Basin



Groundwater generally flows southerly from areas of recharge at the base of the San Gabriel Mountains to areas of discharge along the Raymond Fault. Groundwater discharge in the Raymond Basin occurs through pumping and subsurface outflow across the Raymond Fault. Current sources of groundwater recharge to the Raymond Basin include:

- Natural infiltration and percolation of rainfall and surface water
- Percolation of applied water from irrigation and other return flows
- Subsurface inflow from adjacent groundwater basins, bedrock areas, and the San Gabriel Mountains
- Artificial recharge through surface water infiltration
- Percolation of water from septic tanks

The basin is divided into three subareas: the Monk Hill subarea in the northwest, the Pasadena subarea in the central portion of the basin, and the Santa Anita subarea in the east. While PWP produces groundwater from the Pasadena and Monk Hill subareas, the majority of PWP's wells are in the Pasadena subarea.

### **6.2.2 Raymond Basin Judgement**

Raymond Basin was the first groundwater basin adjudicated in California; this occurred in December 1944 with the purpose of alleviating overdraft of the basin. Under the adjudication, it was determined that certain parties had the right to extract water, of which the City was one. The court allocated the rights to each party, based on a judgment of "safe yield". The safe yield was determined to be 21,900 AFY but was increased in 1955 to 30,662 AFY. Today, there are 15 members to the Raymond Basin. A copy of the Judgement of 1984 is available at: [https://www.raymondbasin.org/files/ugd/d1b21e\\_e7652bc3210142689891d96337670dce.pdf](https://www.raymondbasin.org/files/ugd/d1b21e_e7652bc3210142689891d96337670dce.pdf)

The authority to manage the basin, resolve future disputes and make binding judgments is vested in a Basin Watermaster. The Raymond Basin Watermaster is the Raymond Basin Management Board (RBMB), which is the representative of the parties (pumpers) of the Judgement. The City of Pasadena is a member of the 10-member board.

The City owns 42 percent of the water rights in the basin. The City's decreed right was set at 12,807 AFY, divided between the Monk Hill (4,464 AFY) and Pasadena (8,343 AFY) subareas. These decreed rights were set in 1955. Due to declining water levels in the basin, the RBMB implemented a resolution on July 1, 2009, that voluntarily reduced pumping from the Pasadena subarea. As a result, PWP's pumping from the Pasadena subarea was reduced by 30%, down to 5,840 AFY. Since then, additional pumping adjustments have occurred. As of July 2024, PWP's pumping from Monk Hill was reduced by 24%, down to 3,393 AFY. Current pumping rights, with voluntary reductions amount to 9,233 AFY plus spreading credits, which are described below.

### **6.2.3 Spreading Credits**

The PWP service area is located within the Los Angeles River Watershed and overlies portions of three sub-watersheds. The small drainage area in the central part is directed to the Alhambra

Wash. The western portion of the service area drains to the Arroyo Seco and the eastern portion drains to Eaton Wash.

The City has pre-1914 rights to divert up to 25 cubic feet per second (cfs) of surface water from the Arroyo Seco and Millard Canyon streams and up to 8.9 cfs from the Eaton Wash. The 1984 Basin Judgment allows each pumper to take the surface water directly or recharge the Raymond Basin and then pump a portion of the recharged volume, as spreading credits, in addition to their decreed rights. In wet and normal years, PWP diverts runoff to recharge the Raymond Basin and receive spreading credits. Recharge occurs at the Arroyo Seco Spreading Grounds, which are owned and operated by PWP, and the Eaton Wash Spreading Grounds which are owned and operated by the Los Angeles County Flood Control District. PWP has diverted runoff for recharge to the Arroyo Seco since 1912 and to Eaton Wash Spreading Grounds since 1923. PWP receives spreading credits of the water recharged at the Arroyo Seco Spreading Grounds and Eaton Wash Spreading Grounds.

Runoff from the Arroyo Seco is highly variable depending on hydrologic conditions and seasonality. In wet years, runoff may exceed 40,000 AF, most of which flows past Devil’s Gate Dam to the Pacific Ocean. In dry years, runoff can be less than 1,000 AF. Since 2000, PWP has recharged approximately 1,700 AFY from Arroyo Seco and received spreading credits of approximately 1,200 AFY, on average. Eaton Canyon flows can also vary but are generally less. On average, since 2000, PWP recharged approximately 850 AFY from Eaton Wash and received spreading credits of approximately 680 AFY. In total, since 2000, these recharge operations have provided PWP an average of nearly 1,900 AFY in credits, ranging from approximately 300 AF in 2015 to 5,300 AF in 2024.

The full amount of the City’s diversion rights from the Arroyo Seco and Eaton Canyon is not typically realized due to stream flow variability, limitations of the City’s existing diversion infrastructure, and capacity limitations of the infiltration basins. Operational constraints currently exist which impact PWP’s ability to maximize existing diversion rights along the Arroyo Seco. Efforts to rehabilitate and improve existing diversion and recharge facilities to increase recharge to the basin in the Arroyo Seco Canyon are in progress and are discussed in Section 6.9.1.

### 6.2.4 Groundwater Production

A typical average year would provide PWP with approximately 11,130 AFY in groundwater, which includes decreed rights with voluntary reductions and surface water spreading credits. Groundwater volumes pumped over the last five years are summarized in Table 6-2. PWP has ongoing efforts to replace wells and improve its overall groundwater operations to improve pumping capacity and long-term reliability, including purchasing additional water from MWD during wet periods and turning off wells in calendar years 2022 and 2023.

**Table 6-2: Groundwater Volume Pumped (2021-2025) (AF)**

[DWR Table 6-1]

Groundwater Type	Basin Name	2021	2022	2023	2024	2025
Alluvial Basin <sup>1</sup>	Raymond Basin	6,689	7,853	7,730	11,030	12,075

**Notes:**

<sup>1</sup>Volumes include groundwater pumping rights and spreading credits

Groundwater volumes projected over the planning period, for normal, dry and five-consecutive-year drought conditions are presented in Table 6-3. Projections assume full use of PWP’s pumping rights, adjusted for voluntary reductions, totaling 9,233 AFY for all year types, plus spreading credits, which differ based on hydrology. PWP assumes up to 1,897 AFY in spreading credits in future normal years which reflects approximate average credits over the last 25 years. Single-dry year estimates are based on total spreading credits in 2015, which is the minimum credits received since 1975. Five-year drought projections are based on spreading credits available during each year of the 2014-2018 drought period. See also Table 7-1 in Section 7.

**Table 6-3: Groundwater Projections (AFY)**

		2030	2035	2040	2045	2050
Normal Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	1,897	1,897	1,897	1,897	1,897
	<b>Total</b>	<b>11,130</b>	<b>11,130</b>	<b>11,130</b>	<b>11,130</b>	<b>11,130</b>
Single-Dry Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	300	300	300	300	300
	<b>Total</b>	<b>9,533</b>	<b>9,533</b>	<b>9,533</b>	<b>9,533</b>	<b>9,533</b>
<b>Multiple Dry Years<sup>1</sup></b>						
1 <sup>st</sup> Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	556	556	556	556	556
	<b>Total</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>
2 <sup>nd</sup> Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	556	556	556	556	556
	<b>Total</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>
3 <sup>rd</sup> Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	556	556	556	556	556
	<b>Total</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>
4 <sup>th</sup> Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	556	556	556	556	556
	<b>Total</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>
5 <sup>th</sup> Year	Pumping Rights	9,233	9,233	9,233	9,233	9,233
	Spreading Credits	556	556	556	556	556
	<b>Total</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>	<b>9,789</b>

**Notes:**

<sup>1</sup>Volumes shown here reflect range of volumes available during 2014-2018 dry year sequence. Average of 2014-2018 spreading credits was used to reflect all 5 years.

### 6.2.5 Groundwater Quality

Groundwater contamination is an identified issue at all PWP wells and includes perchlorate, volatile organic compounds, nitrates, and 1,2,3-trichloropropane. PWP uses a combination of treatment and blending to ensure water delivered to customers meets drinking water quality standards established by the SWRCB and the United States Environmental Protection Agency. Groundwater is blended for nitrates and treated for volatile organic compounds (VOCs). The Monk Hill subarea groundwater is also treated for perchlorate.

In the Monk Hill subarea, past research and development activities conducted by the NASA Jet Propulsion Laboratory resulted in releases of rocket fuel and other chemicals to the environment, and contamination of the local groundwater with VOCs and perchlorate. The Monk Hill Treatment Plant (Monk Hill Plant) has been operating since 2011 to remove VOCs and perchlorate from PWP's affected wells. The Monk Hill Plant has a capacity to treat four wells (7,000 gallons per minute [gpm]). The extent of plume containment is being monitored.

In the Pasadena subarea, the Wadsworth Treatment Plant removes 1,2,3-trichloropropane (1,2,3-TCP) from three PWP wells. 1,2,3-TCP, a VOC, is a manmade chemical. Because of the chemical's carcinogenic risk at low-level exposures, the SWRCB set the maximum contaminant level (MCL) at 5 parts per trillion in 2017. The plant became operational in 2024 and has a total treatment capacity of 3,000 gpm.

### **6.2.6 Groundwater Operations**

In recent years, PWP has been undertaking measures to address operational challenges at PWP facilities which have been preventing PWP from maximizing groundwater production. PWP has wells approaching 100 years old with conditions that reduce their pumping capacity and/or future reliability. PWP has completed several improvements over the last five years which have enhanced PWP's groundwater operations, including the following:

- Construction of two new wells: Parke and Explorer
- Construction of the new Wadsworth Groundwater Treatment Plant
- Upgrade of Ross Booster Station

PWP is currently undertaking additional measures to enhance its recharge operations and upgrade related facilities. These projects will help increase recharge to the basin and increase available spreading credits. See Section 6.9.

Overall, these improvements enable PWP to enhance long-term reliability of its system by minimizing operational constraints and maximizing use of its available local resources.

### **6.3 Imported Water from MWD**

PWP purchases imported water from MWD to supplement local groundwater and meet its water demands. Water, purchased from MWD, makes up from approximately one half to two thirds of PWP's total supplies since 2000. MWD is the Southern California regional water wholesaler with primary sources of water from Northern California through the SWP and Colorado River through the CRA. PWP incorporated MWD's imported supplies into its water supply portfolio to meet a portion of its water demands since 1941, when it became the first member agency to receive water from MWD. Over the last ten years, deliveries from MWD have averaged approximately 18,000 AFY.

PWP currently receives MWD water via five turnouts with MWD's Upper Feeder. Turnout capacity is sufficient to meet existing and projected PWP demands. Water served to PWP is treated at MWD's Weymouth Water Treatment Plant (WTP). In the case of outages at the Weymouth WTP, PWP could also receive treated water from MWD's Jensen WTP, if available under certain conditions.

Projections of imported supplies available to PWP over the planning horizon of this UWMP are based on MWD’s projected ability to meet demands in its service area. According to MWD’s 2025 UWMP (MWD 2026), MWD has determined that it has sufficient supplies to meet expected member agency demands through the 2050 planning period under all hydrologic scenarios (normal year, single dry year, and a five-consecutive-year drought). Table 6-4 summarizes the volumes of MWD supplies projected for PWP over the planning period.

**Table 6-4: Imported Water Supply Projections (AFY)**

<b>Year Type</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Normal Year	16,146	15,842	15,312	14,973	15,039
Single-Dry Year	19,933	19,604	19,032	18,666	18,738
Multiple Dry Years					
1 <sup>st</sup> Year	19,677	19,348	18,776	18,410	18,482
2 <sup>nd</sup> Year	19,677	19,348	18,776	18,410	18,482
3 <sup>rd</sup> Year	19,677	19,348	18,776	18,410	18,482
4 <sup>th</sup> Year	19,677	19,348	18,776	18,410	18,482
5 <sup>th</sup> Year	19,677	19,348	18,776	18,410	18,482

**Notes:**

MWD has determined it has supply capabilities sufficient to meet water demands under all hydrologic year types.

MWD coordinated the preparation of its 2025 UWMP with its 26 member agencies, among other stakeholders and relevant agencies. PWP provided preliminary water use projections and projected local water supply availability to MWD for consideration in its 2025 UWMP water supply reliability analysis.

**6.3.1 Imported Water for Groundwater Storage**

In years of water supply surplus, which can result when there is higher than normal precipitation, MWD may have supplies available for local storage augmentation via in-lieu deliveries. Under MWD’s Cyclic Cost-Offset Program (CCOP), MWD provides a credit to help offset costs incurred by member agencies to take additional deliveries beyond their normal demands. The program allows MWD to store excess water and overcome operational constraints, while allowing member agencies to preserve their own water supplies and/or replenish local groundwater basins. In August 2023, MWD’s Board approved amendments to the CCOP, including an increase to the credit limits (MWD 2024).

PWP has an agreement with MWD for CCOP, which allows PWP to purchase water at an offsetting cost through in-lieu deliveries. Under the terms of the Cyclic Agreement, PWP has the option to take water deliveries, but no obligation. This Cyclic Agreement provides an opportunity to improve the reliability of the Raymond Basin, thereby contributing to the City’s long-term water supply reliability. PWP has utilized CCOP supplies in several years since the CCOP was initiated in 2019. Most recently between December 2022 and July 2023, PWP turned off several groundwater wells for in-lieu groundwater recharge through MWD’s CCOP.

### **6.3.2 Imported Water Supply Reliability**

Based on MWD's 2025 UWMP, MWD has determined that it has supply capabilities sufficient to meet expected member agency demands through the 2050 planning period under all hydrologic scenarios (normal year, single dry year, and a five-consecutive-year drought). However, MWD also acknowledges that there are risks and uncertainties such as climate change, regulatory actions, and infrastructure vulnerabilities that may impact supply.

MWD has invested significantly in the development of a diverse mix of water supplies and robust resource management program to ensure continued reliability of its supplies. MWD has undertaken numerous planning initiatives, including preparation of its Integrated Water Resources Plan (IRP), the Water Surplus and Drought Management (WSDM) Plan, and the Water Supply Allocation Plan (WSAP). These efforts enable MWD to meet water supply needs of its member agencies under various water year types and scenarios.

MWD adopted its first IRP in 1996, which focused on increasing regional supply reliability through a diverse water resource portfolio and conservation measures. The IRP emphasizes the goals of meeting agency demand under all foreseeable hydrologic conditions, while also promoting water use efficiency to increase reliability. In recognition of the significant uncertainty in long-term water supply planning, additional emphasis has been put on adaptive management planning. The 2020 IRP enhances MWD's adaptive management planning by considering multiple scenarios of future demand and supply conditions and evaluating investments and actions necessary to maintain regional water reliability based on potential future uncertainties. Updates to the existing IRP are in progress.

The WSDM Plan, approved in 1999, provides guidelines for supply strategy implementation depending on current demands and available supplies. The plan identifies a sequence of management actions to minimize the probability of severe shortages and reduce the possibility of extreme shortages and water allocations. As demand exceeds normal supplies, MWD will utilize surface and groundwater storage supplies, cease other deliveries, call for demand reductions, and purchase additional water. The region's ability to implement a long-term WSDM Plan results from the significant investments MWD and its member agencies have made in a variety of resources. These include increased local conservation and water recycling, improvements in the reliability of imported supplies, increased regional storage, and increased conjunctive use groundwater programs.

If supplies are still not sufficient after implementing shortage response actions guided by the WSDM, MWD may implement the WSAP. The WSAP is the established formula for allocating available water supplies to each of MWD's retail and wholesale customers in the case of an extreme water shortage and establishes surcharges for excess water use. The WSAP was originally adopted by the MWD Board in 2008 and was last revised in 2014.

### **6.3.3 Delta Reliance**

The Sacramento-San Joaquin Delta Reform Act of 2009 established that it is state policy to "reduce reliance" on the Delta in meeting the state's future water supply needs by investing in improved regional supplies, conservation, and water use efficiency. *Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Delta Plan Policy WR P1, California Code Reg., tit. 23, § 5003)* identifies UWMPs as the tool to demonstrate consistency with the policy for an urban water supplier that anticipates participating

in or receiving water from a proposed project (covered action) such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta. As such, a Supplier that carries out or takes part in a covered action should provide information in their UWMPs that can then be used in the certification of consistency process to demonstrate consistency with *Delta Plan Policy WR P1*. DWR has suggested that any entity receiving imported water from the SWP should anticipate being part of a covered action.

MWD's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. MWD's member agencies coordinate reliance on the Delta through their membership in MWD, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual MWD member agencies and not by the customers of those member agencies.

MWD's member agencies do not directly control the amount of Delta water they receive from MWD. MWD manages a statewide integrated conveyance system consisting of its participation in the SWP, its CRA including Colorado River water resources, programs and water exchanges, and its regional storage portfolio. Along with the SWP, CRA, storage programs, and Metropolitan's conveyance and distribution facilities, demand management programs increase the future reliability of water resources for the region. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies. Details on MWD's Reduced Delta Reliance Reporting are provided in Appendix 10 of MWD's 2025 UWMP.

### **6.3.4 Imported Water Quality**

Water purchased from MWD is a blend of SWP and CRA water and consistently meets all state and federal drinking water regulations. As reported in PWP's 2025 Annual Drinking Water Quality Report, all water obtained from MWD, via the Weymouth Plant, meets or exceeds the standards for public drinking water. With MWD's ongoing source water protection programs, and rigorous treatment and monitoring processes in place, imported water quality is not anticipated to affect PWP's water supply reliability.

## **6.4 Water Exchanges and Transfers**

In addition to MWD, PWP has active interconnections with seven local agencies. Some of these interconnections are for emergency use only, while others allow for the delivery or receipt of water from one agency to the other, as needed and depending on supply availability. A summary of these interconnections is provided in Table 6-5.

**Table 6-5: PWP Interconnections**

<b>Agency</b>	<b>Type of Interconnections</b>
Cal-American Water Company	Emergency; export only
City of Sierra Madre	Emergency
City of South Pasadena	Emergency, Working; export only
Foothill Municipal Water District	Emergency
Kinneloa Irrigation District	Emergency, Working
Lincoln Avenue Water Company	Emergency
Rubio Cañon Land and Water Association	Emergency, Working
Valley Water Company	Emergency, Working; import only

PWP regularly imports small volumes of potable water from some of these connections for non-emergency use within its service area. In most cases, customers served by these supplies are located within pressures zones served by the neighboring agencies and are therefore more efficiently supplied with those imports. Over the last five years, non-emergency imports totaled approximately 100 AFY, on average. Water supply projections account for these imports and assume approximately 100 AFY during all water year types.

## **6.5 Surface Water and Stormwater**

As noted above, PWP currently diverts surface runoff from the Arroyo Seco and the Eaton Wash for recharge to the Raymond Basin. See Section 6.2.3.

## **6.6 Wastewater and Recycled Water**

Wastewater collection and treatment for PWP customers is provided by the Los Angeles County Sanitation Districts. No wastewater is treated or disposed of within PWP's service area. Table 6-6 documents wastewater collection in the PWP service area in 2025.

**Table 6-6: Wastewater Collected Within the Service Area in 2025 (AF)**

[DWR Table 6-2]

Name of WW Collection Agency	WW Volume Metered or Estimated?	Volume of WW Collected from UWMP Service Area 2025	Name of WWTP and Place ID Number	Is WWTP Located Within UWMP Area?
Los Angeles County Sanitation Districts	Estimated	19,286 AF <sup>1</sup>	<ul style="list-style-type: none"> <li>• A.K. Warren Water Resource Facility – 234156</li> <li>• Whittier Narrows Water Reclamation Plant – 235826</li> <li>• Los Coyotes WRP – 238646</li> <li>• San Jose Creek Water Reclamation Plant - 260156</li> </ul>	No

**Notes:**

<sup>1</sup>Actual CY 2025 sewer use across all four WWTPs, which is about 70% of the total water use in the water service area.

PWP does not currently use recycled water and does not include recycled water production or use within the service area in this UWMP. However, the cities of Pasadena, Los Angeles, and Glendale have been planning to increase local water supplies using advanced purified water. The plan is to expand the Los Angeles-Glendale Water Reclamation Plant (“LAG Plant”) with a new state-of-the-art purification facility that would purify the tertiary treated recycled water from the effluent of the existing LAG Plant with advanced treatment technology with multistep treatment processes. In Pasadena, the advanced purified water will be used for non-potable water use and groundwater recharge in the Arroyo Seco and Eaton Spreading Basins to replenish the Raymond Basin.

Due to the uncertainty of the project timeline, and volumes available to PWP, this project is not currently accounted for in projected water supplies in this UWMP.

**6.7 Desalinated Water**

PWP is not planning to use desalinated water as part of its water supply portfolio within the planning horizon of this UWMP. PWP is located too far inland to feasibly desalinate ocean water, and there is currently no readily available supply of brackish groundwater or surface water within PWP’s service area.

**6.8 Future Water Projects**

Additional projects that may contribute to the amount of water supply available to PWP in the future are being evaluated by PWP and are described below. Given their planning status, these projects are not quantified as future supplies in the projections of this UWMP.

### 6.8.1 Arroyo Seco Canyon Project

PWP's existing diversion and intake structures in the Arroyo Seco were built in the 1920's and 1930's and continue to capture PWP's water diversion rights. However, the facilities were damaged during the storms that followed the 2009 Station Fire in the Angeles National Forest, in the upper Arroyo Seco watershed. Prior to the fire, the headworks structure diverted stream flows to adjacent sedimentation basins, which provided less turbid water for the infiltration basins. Debris flows damaged the headworks and as a result, there is reduced spreading at the Arroyo Seco facilities.

The Arroyo Seco Canyon Project will remove the existing Arroyo Seco headworks, replace the intake structure and build a new diversion structure, and build a new sedimentation basin and new infiltration basins. The project would allow PWP to fully use its surface water rights of 25 cubic feet per second and recharge additional surface water during wet periods. The project's Environmental Impact Report was approved by City Council in 2021.

### 6.8.2 Devil's Gate Pump Back Project

This concept proposes to recharge the Monk Hill subarea with surface water from the Arroyo Seco stream collected from behind Devil's Gate Dam, which is owned and operated by the Los Angeles Department of Public Works. The project includes installation of a new pumping system and controls at the dam and a new pipeline to the Arroyo Seco spreading basins. Implementation of this project is estimated to result in an average of approximately 1,000 AFY of surface water recharged in the Monk Hill subarea.

## 6.9 Summary of Projected Water Supplies

The management of PWP's supplies is governed by the availability of supplies in combination with the cost effectiveness of utilizing available supplies. In general, PWP prioritizes the use of groundwater rights and spreading credits, followed by imported water from MWD. Imported supplies may be prioritized in years of surplus imported supplies (e.g., when the Cyclic Cost-Offset Program is available, as discussed in Section 6.3). Moving forward, PWP will continue to evaluate opportunities to diversify its supply, while also focusing on sustaining existing sources and maximizing use of its local water resources.

Table 6-7 through Table 6-9 provide an overview of supplies anticipated to be available to PWP over the planning horizon of this UWMP, during normal, single-dry, and multiple dry years.

**Table 6-7: Projected Water Supply – Normal Year (AFY)**

[DWR Table 6-9]

Water Supply Source	2030	2035	2040	2045	2050
Groundwater – Raymond Basin <sup>1</sup>	11,130	11,130	11,130	11,130	11,130
Water from MWD <sup>2</sup>	16,146	15,842	15,312	14,973	15,039
Water from other sources <sup>3</sup>	100	100	100	100	100
<b>Total</b>	<b>27,376</b>	<b>27,072</b>	<b>26,542</b>	<b>26,203</b>	<b>26,269</b>

**Notes:**

<sup>1</sup> See Table 6-3

<sup>2</sup> See Table 6-4

<sup>3</sup> See Section 6.4

**Table 6-8: Projected Water Supply – Single-Dry Year (AFY)**

<b>Water Supply Source</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Groundwater – Raymond Basin <sup>1</sup>	9,533	9,533	9,533	9,533	9,533
Water from MWD <sup>2</sup>	19,933	19,604	19,032	18,666	18,738
Water from other sources <sup>3</sup>	100	100	100	100	100
<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>

**Notes:**

<sup>1</sup> See Table 6-3

<sup>2</sup> See Table 6-4

<sup>3</sup> See Section 6.4

**Table 6-9: Projected Water Supply – Multiple Dry Years (AFY)**

	<b>Water Supply Source</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
1 <sup>st</sup> Year	Groundwater – Raymond Basin <sup>1</sup>	9,789	9,789	9,789	9,789	9,789
	Water from MWD <sup>2</sup>	19,677	19,348	18,776	18,410	18,482
	Water from other sources <sup>3</sup>	100	100	100	100	100
	<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
2 <sup>nd</sup> Year	Groundwater – Raymond Basin <sup>1</sup>	9,789	9,789	9,789	9,789	9,789
	Water from MWD <sup>2</sup>	19,677	19,348	18,776	18,410	18,482
	Water from other sources <sup>3</sup>	100	100	100	100	100
	<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
3 <sup>rd</sup> Year	Groundwater – Raymond Basin <sup>1</sup>	9,789	9,789	9,789	9,789	9,789
	Water from MWD <sup>2</sup>	19,677	19,348	18,776	18,410	18,482
	Water from other sources <sup>3</sup>	100	100	100	100	100
	<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
4 <sup>th</sup> Year	Groundwater – Raymond Basin <sup>1</sup>	9,789	9,789	9,789	9,789	9,789
	Water from MWD <sup>2</sup>	19,677	19,348	18,776	18,410	18,482
	Water from other sources <sup>3</sup>	100	100	100	100	100
	<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>
5 <sup>th</sup> Year	Groundwater – Raymond Basin <sup>1</sup>	9,789	9,789	9,789	9,789	9,789
	Water from MWD <sup>2</sup>	19,677	19,348	18,776	18,410	18,482
	Water from other sources <sup>3</sup>	100	100	100	100	100
	<b>Total</b>	<b>29,566</b>	<b>29,237</b>	<b>28,665</b>	<b>28,299</b>	<b>28,371</b>

**Notes:**

<sup>1</sup> See Table 6-3

<sup>2</sup> See Table 6-4

<sup>3</sup> See Section 6.4

PWP’s supply reliability during normal, single dry, and multiple dry year conditions is discussed in more detail in Section 7.

## 6.10 Energy Use

This Section includes an assessment of the energy intensity of the water supply operations in PWP’s service area, i.e., within PWP’s operational control, as required by Water Code Section 10631.2 (a). Energy used to treat or transport imported water within the MWD system is not included. As summarized in Table 6-10, the system-wide energy intensity of PWP’s water supply was calculated as 1,900 kilowatt-hours (kWh) per million gallons (MG), or 619 kWh per AF.

**Table 6-10: Energy Intensity for PWP’s Water Service Area**  
[DWR Table O-1B]

	<b>Sum of All Water Management Processes<sup>1</sup></b>
Volume of Water Entering Process (AF)	27,577
Energy Consumed (kWh) <sup>2</sup>	17,075,734
<b>Energy Intensity (kWh/MG)</b>	<b>1,900</b>

**Notes:**

<sup>1</sup>Based on the 12-month period from July 1, 2024 to June 30, 2025.

<sup>2</sup>Based on a combination of estimates and metered data.

## **Section 7: Water Service Reliability and Drought Risk Assessment**

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CWC Section 10635(a) requires every urban water supplier to assess water service reliability by comparing total long-term projected water use with the expected water supply during normal, dry, and multiple dry water years in five-year increments over the next 20 years, at a minimum. This section summarizes the City's water supply relative to demands over the 25-year planning period of this UWMP, under various hydrologic conditions. Additional details on PWP's water use projections and water supply are provided in Chapter 4 and 5, respectively.

### **7.1 Constraints on Water Sources**

#### **7.1.1 Groundwater**

PWP is continuously undertaking efforts to improve the long-term reliability of its system and to sustainably manage the use of its local resources. Construction of new wells, well upgrades and planned improvements to its recharge operations will help to minimize operational constraints on PWP's groundwater supplies. Additionally, groundwater treatment and blending operations are helping to address existing groundwater quality concerns.

Potential future constraints on groundwater supplies may arise from impacts to recharge conditions. Hydrologic variability, which may increase with climate change, for example, could impact the amount and timing of recharge to the Raymond Basin in the future. These conditions could impact groundwater levels and/or impact PWP's recharge operations and spreading credits. Reduced precipitation and warmer temperatures could result in less runoff, and therefore recharge, at times, while more frequent flashier storm events could impact PWP's ability to maximize diversions and recharge.

Hydrologic variability is accounted for in groundwater supply projections by estimating available spreading credits based on historical drought conditions.

#### **7.1.2 Imported Water**

There are several factors with potential to impact the reliability of MWD supplies, including impacts to one of MWD's largest water supply sources, SWP supplies. Climate change impacts are anticipated to result in substantial reductions in Delta exports, especially under dry year conditions. Additional challenges that are impacting or may impact SWP supply availability include, but are not limited to, increasing environmental water demands and related regulatory restrictions on Delta exports.

Also, aging levees are susceptible to damage during a potential major earthquake and could result in a significant and prolonged interruption of SWP supply. While all of these factors may place constraints on SWP water supplies in the future, MWD's reliability assessment shows that its supplies are sufficient to meet its member agency water demands over the planning period under all hydrologic year types. Additionally, MWD has developed robust and comprehensive

water shortage response planning to address water supply constraints or shortages, should they occur.

Additional details on imported water supply reliability are provided in Section 6.3 and in Section 2.3 of MWD's 2025 UWMP.

## **7.2 Water Service Reliability Assessment**

### **7.2.1 Year Type Characterization**

Water supply and demands comparisons are presented in this section for three hydrologic scenarios: a normal year, a single dry year, and a five-consecutive-year drought. These scenarios are defined as follows:

- **Normal Year:** This condition is a year in the historical sequence that most closely represents average supply availability. For this analysis, normal year supply availability is based on the average over the 25-year timeframe ending in 2025.
- **Single-Dry Year:** This condition represents the year with the lowest water supply available. 2015 was the year with the lowest volume of spreading credits available to PWP since 1975 and is considered to be representative of future single-dry years.
- **Five-consecutive-year drought:** This scenario represents the driest five-year historical with the lowest supply available, which for PWP are the years from 2014 through 2018.

As noted previously, MWD anticipates having sufficient supplies to meet member agency demands during all hydrologic year types. Therefore, PWP anticipates 100% availability of imported supplies in all hydrologic year types. Additionally, PWP projects 100% availability of its groundwater pumping rights (adjusted for voluntary reductions) in all hydrologic year types.

The primary variable in the water supply projections for all year types is the volume of spreading credits. Spreading credits, however, are highly dependent on hydrologic conditions (see discussions in sections 6.3.3 and 6.3.4). Table 7-1 summarizes the basis of water year data utilized for the reliability assessment related to spreading credits. Water availability assumptions for all sources are described in more detail in Section 6.

**Table 7-1: Basis of Water Year Data – Spreading Credit Reliability Assessment**

[DWR Table 7-1]

Year Type	Base Year	Available Supplies if Year Type Repeats <sup>1</sup>
		Volume of Spreading Credits (AFY) <sup>2, 3</sup>
Average Year	2025	1,897
Single-Dry Year	2015	300
Consecutive Dry Years 1st Year	2014	556
Consecutive Dry Years 2nd Year	2015	556
Consecutive Dry Years 3rd Year	2016	556
Consecutive Dry Years 4th Year	2017	556
Consecutive Dry Years 5th Year	2018	556

**Notes:**

<sup>1</sup>Only spreading credits are shown here, as imported supplies and groundwater pumping rights are projected to be 100% available during all water year types.

<sup>2</sup>Average Year credits based on 25-year average through period ending 2025.

<sup>3</sup>Single-Dry Year credits reflect actual availability during specified base year.

<sup>4</sup>Consecutive Dry Year credits reflect the average of the period between 2014 to 2018.

## 7.2.2 Supply and Demand Comparisons

The following tables summarize the water supply versus demand evaluations for the different hydrologic year types. Assumptions about demands and supplies are provided in Chapters 4 and 6, respectively.

### 7.2.2.1 Water Service Reliability – Normal Year

As shown in Table 7-2, the City anticipates adequate supplies to meet demands from 2030 through 2050 under normal year supply conditions. Imported water would generally only be purchased as needed to make up the difference between demands and local supplies (groundwater and other imported supplies). Any local groundwater supplies that exceed demands would remain in the Raymond Basin.

**Table 7-2: Normal Year Supply and Demand Comparison (AFY)**

[DWR Table 7-2]

	2030	2035	2040	2045	2050
Supply Totals <sup>1</sup>	27,376	27,072	26,542	26,203	26,269
Demand Totals <sup>2</sup>	27,376	27,072	26,542	26,203	26,269

**Notes:**

<sup>1</sup>Supplies from Table 6-7.

<sup>2</sup>Demands from Table 4-2.

### 7.2.2.2 Water Service Reliability – Single-Dry Year

PWP’s water demands and supplies over the 25-year planning period were analyzed based on a potential repeat of conditions similar to 2015. As shown in Table 7-3, estimated supply is sufficient to meet single-dry year demands.

**Table 7-3: Single-Dry Year Supply and Demand Comparison (AFY)**

[DWR Table 7-3]

	2030	2035	2040	2045	2050
Supply Totals <sup>1</sup>	29,566	29,237	28,665	28,299	28,371
Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371

**Notes:**

<sup>1</sup>Single-dry year supplies from Table 6-8.

<sup>2</sup>Demands from Table 4-3.

**7.2.2.3 Water Service Reliability – Multiple Dry Years**

PWP’s water demands and supplies over the 25-year planning period were analyzed for the occurrence of five consecutive dry years, similar to conditions during the 2014-2018 drought period. Table 7-4 summarizes the projected supplies and demands under the multiple dry year scenario and shows that supplies are sufficient to meet demands.

**Table 7-4: Multiple Dry Year Supply and Demand Comparison (AFY)**

[DWR Table 7-4]

		2030	2035	2040	2045	2050
1 <sup>st</sup> Year	Supply Totals <sup>1</sup>	29,566	29,237	28,665	28,299	28,371
	Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371
2 <sup>nd</sup> Year	Supply Totals <sup>1</sup>	29,566	29,237	28,665	28,299	28,371
	Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371
3 <sup>rd</sup> Year	Supply Totals <sup>1</sup>	29,566	29,237	28,665	28,299	28,371
	Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371
4 <sup>th</sup> Year	Supply Totals <sup>1</sup>	29,566	29,237	28,665	28,299	28,371
	Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371
5 <sup>th</sup> Year	Supply Totals <sup>1</sup>	29,566	29,237	28,665	28,299	28,371
	Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371
	Demand Totals <sup>2</sup>	29,566	29,237	28,665	28,299	28,371

**Notes:**

<sup>1</sup>Supplies from Table 6-9.

<sup>2</sup>Demands from Table 4-3.

**7.2.3 Summary of Comparisons**

As shown in the analyses above, PWP has adequate supplies to meet demands during normal, single-dry, and multiple dry years throughout the 25-year planning period.

**7.3 Drought Risk Assessment**

CWC Section 10635(b) requires every urban water supplier to include, as part of its UWMP, a drought risk assessment (DRA) for its water service to its customers as part of information considered in developing its demand management measures and water supply projects and programs. Additionally, CWC Section 10612 requires the DRA to be based on the driest five-

year historical sequence for the agency’s water supply. CWC Section 10635 also requires that the analysis consider plausible changes in climate, regulations, and other locally applicable criteria which may impact supplies and demands.

As described above, the main variable in PWP’s water supply availability is the volume of spreading credits. The drought period from 2014-2018 was the driest five-year sequence to date with respect to spreading credits and is therefore being used for the DRA. PWP’s DRA is presented in Table 7-5 which shows the total projected water supplies and total projected use for the next five years, from 2026 to 2030, assuming a 5 consecutive-year drought.

**Table 7-5: Five-Year Drought Risk Assessment**  
[DWR Table 7-5]

<b>2026</b>	<b>Total</b>
Total Water Use (AF) <sup>1</sup>	29,249
Total Supplies (AF) <sup>2</sup>	29,249
<b>2027</b>	
Total Water Use (AF) <sup>1</sup>	29,312
Total Supplies (AF) <sup>2</sup>	29,312
<b>2028</b>	
Total Water Use (AF) <sup>1</sup>	29,376
Total Supplies (AF) <sup>2</sup>	29,376
<b>2029</b>	
Total Water Use (AF) <sup>1</sup>	29,439
Total Supplies (AF) <sup>2</sup>	29,439
<b>2030</b>	
Total Water Use (AF) <sup>1</sup>	29,566
Total Supplies (AF) <sup>2</sup>	29,566

**Notes:**

<sup>1</sup>See Table 4-4.

<sup>2</sup> MWD anticipates having sufficient supplies to meet water demands during all hydrologic year types.

Similar to the results of the reliability analyses for dry year scenarios in previous sections, DRA projections indicate sufficient supplies to meet demands. This analysis accounts for MWD’s DRA presented in its 2025 UWMP which shows that MWD’s available supplies are expected to meet projected demands on MWD (MWD 2026).

Due to the sufficiency of supplies projected during this drought scenario, the WSCP is not anticipated to be implemented. Accordingly, no WSCP-specific demand reductions nor WSCP-specific supply augmentation actions would be taken. Conditions under which the WSCP would be implemented are described in the attached WSCP (Appendix E).

## **Section 8: Water Shortage Contingency Plan**

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### **8.1 Overview**

In accordance with requirements of Section 10632 of the CWC, PWP updated its WSCP as part of this UWMP update. The WSCP was prepared as a separate stand-alone document which may be amended, as needed, independently of the UWMP. This section summarizes PWP's WSCP and a copy of the WSCP is included in Appendix E.

Water supplies may be significantly reduced or interrupted for a number of reasons, including as a result of severe droughts, an earthquake which damages water delivery or storage facilities, a regional power outage, or a major water quality impairment within the PWP water service area all of which could impact local supplies or imported water supply deliveries from MWD.

The 2025 WSCP provides a comprehensive guidance document for responding to water shortage events and relies on reliability analyses prepared in this UWMP, for both local and imported supplies.

### **8.2 Annual Water Supply and Demand Assessment**

As of July 2022, provisions in Water Code Section 10632.1. require that an urban water supplier, such as PWP, conduct an annual water supply and demand assessment (Annual Assessment), by July 1 of each year, and submit to DWR. In its WSCP, PWP outlines the procedures for conducting its Annual Assessment, including:

- The written decision-making process that PWP will use each year to determine its water supply reliability.
- The key data inputs and assessment methodology used to evaluate PWP's water supply reliability for the current year and one dry year.

### **8.3 Water Shortage Levels**

PWP's WSCP outlines the six standard water shortage levels established in the California Water Code that convey the relative severity of a water supply shortage and trigger specific water use restrictions and demand reduction actions, depending on the shortage severity. Table 8-1 presents the WSCP shortage levels with a cross-reference between the standard six levels and the City's four shortage levels. The six water shortage levels correspond to progressively increasing estimated shortage conditions compared to normal reliability and align with response actions PWP together with the City of Pasadena would implement to address the estimated severity of the identified shortage.

Procedures for determining and declaring a water shortage level are detailed in the WSCP.

**Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels**

[DWR Table 8-1]

Standard Shortage Levels <sup>1</sup>	Percent Shortage Range <sup>1</sup>	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%	1	Up to 10%
2	Up to 20%	2	Up to 30%
3	Up to 30%		
4	Up to 40%	3	Up to 40%
5	Up to 50%	4 (emergency condition)	>40%
6	>50%		

**Note:**

<sup>1</sup>Percent shortage range refers to gap between normally available supplies and normally expected customer water use.

### 8.4 Water Shortage Response Actions

Water shortage response actions generally include water supply-side or demand-side actions, as well as voluntary and mandatory measures. The WSCP describes PWP’s water shortage response actions, including but not limited to the following:

- Supply augmentation actions
- Voluntary and mandatory demand reduction measures
- Enhanced communication with customers
- Public outreach
- Operational changes

The WSCP also summarizes efforts to assess and prepare for catastrophic events, which include but are not limited to PWP’s Emergency Response Plan, Risk and Resilience Assessment, and seismic risk assessment and mitigation plan.

### 8.5 Additional WSCP Content and Procedures

Additional items addressed in the WSCP include the following:

- Discussion on financial consequences of actions during shortages
- Monitoring and reporting procedures
- WSCP refinement and update procedures
- Plan adoption and availability details

## **Section 9: Demand Management Measures**

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The purpose of this section of the UWMP is to describe efforts that PWP has undertaken and plans to undertake to promote conservation and reduce demands on water supplies. This discussion includes descriptions of Demand Management Measures (DMMs) that PWP (a) has implemented over the past five years (since 2020) to meet its urban water use reduction targets and (b) plans to implement to continue to promote conservation and meet water use objectives.

Water Code Section 10631 requires the following:

*(e) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1)(A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

*(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:*

*(i) Water waste prevention ordinances.*

*(ii) Metering.*

*(iii) Conservation pricing.*

*(iv) Public education and outreach.*

*(v) Programs to assess and manage distribution system real loss.*

*(vi) Water conservation program coordination and staffing support.*

*(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.*

PWP recognizes the importance of implementing demand management measures to effectively manage its water demands and has continuously implemented a water conservation program since 1991. Narrative descriptions of PWP's DMMs are provided below.

### **9.1 Water Waste Prevention Ordinances**

The City maintains permanent water waste and conservation standards that are in effect at all times and are outlined in Pasadena Municipal Code Title 13, chapter 13.10, Water Waste Prohibitions and Water Supply Shortage Plans. Permanent water conservation requirements that apply at all times, including under normal supply conditions, include:

- ***Limits on Watering Days:*** *Watering or irrigating of lawn, landscape or other vegetated area is limited to 3 days per week year round, on a schedule to be*

*determined by the department general manager, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.*

- **Limits on Watering Hours:** *Watering or irrigating of lawn, landscape or other vegetated area is prohibited between the hours of 9:00 a.m. to 6:00 p.m. on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.*
- **No Watering During Periods of Rain:** *Watering or irrigating of lawn, landscape or other vegetated area during and within 48 hours after periods of rain is prohibited.*
- **No Water Flow or Runoff:** *Watering or irrigating any lawn, landscape or other vegetated areas in a manner that causes or allows runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures is prohibited.*
- **No Watering Turf on Public Street Medians:** *Watering ornamental turf on public street medians with potable water is prohibited. This ban is consistent with California's ban on non-functional turf.*

A ban on watering non-functional turf was enacted by the State of California with Assembly Bill 1572 and will begin phased implementation starting in 2027. Per the legislation, PWP will incorporate the necessary restrictions into the City's permanent water waste and conservation standards by the January 1, 2027 deadline.

- **No Washing Down Hard or Paved Surfaces:** *Washing down hard or paved surfaces, including, but not limited to, sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except as follows: (i) where necessary to alleviate safety or sanitary hazards and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device; or (ii) when using a low-volume high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.*
- **Obligation to Fix Leaks, Breaks or Malfunctions:** *Loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than 7 days of receiving notice from the Department is prohibited.*
- **Recirculating Water Required for Water Fountains and Decorative Water Features:** *Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.*
- **Limits on Washing Vehicles:** *Using water to wash a vehicle, including, but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.*
- **Drinking Water Served Upon Request Only:** *Eating or drinking establishments,*

*including but not limited to a restaurant, hotel, cafe, cafeteria, bar or other public place where food and drinks are sold, served or offered for sale, are prohibited from providing drinking water to any person unless expressly requested by the patrons.*

- ***Restaurants Required to Use Water Conserving Dish Wash Spray Valves:*** Food preparation establishments, such as restaurants, cafes and cafeterias, are prohibited from using non-water conserving dish wash spray valves.
- ***Commercial Lodging Establishments Shall Provide Guests Option to Decline Daily Linen Services:*** Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linens laundered daily. Commercial lodging establishments must prominently display notice of this option in each guestroom using clear and easily understood language.
- ***No Installation of Single Pass Cooling Systems:*** Installation of single pass cooling systems is prohibited in buildings requesting new water service.
- ***No Installation of Non-Recirculating Equipment in Commercial Car Wash and Laundry Systems:*** Installation of non-recirculating water systems is prohibited in new commercial conveyor car washes and new commercial laundry systems.
- ***Commercial Car Wash Systems:*** All commercial conveyor car wash systems must have installed operational re-circulating water systems or must have secured a waiver of this requirement from the City.
- ***Multifamily Properties:*** All master-metered multifamily properties with four or more dwelling units are required to certify (through a process determined by the department) that showerheads and aerators are retrofitted to meet current California Green Building Code standards.

PWP also implements its Water Waste Enforcement Program to actively patrol the City to identify water waste and enforce compliance with Pasadena's Water Waste Ordinance. Information about the watering restrictions and ordinance are distributed to all Pasadena customers through Home Water Reports, e-newsletters, direct email, door hangers, community newsletters, workshops and bill inserts. Pasadena residents are also encouraged to report water waste and are able to do so 24/7 from any smart device using Pasadena's Citizen Service app.

## **9.2 Metering**

PWP's system is fully metered. In addition, all newly established accounts are required to have a water meter, thereby eliminating the possibility of new unmetered accounts. PWP maintains a written plan to test, repair, and replace meters to ensure that meters are functioning as intended and that water use is accurately measured.

PWP is planning system-wide implementation of Advanced Metering Infrastructure (AMI) with expected rollout over the next four years. These meter upgrades will improve water use efficiency by facilitating timely leak detection and providing detailed usage data and remote meter readings.

### 9.3 Conservation Pricing

The City's tiered rate pricing through 2028, is summarized below in Table 9-1.

**Table 9-1: PWP Variable Water Charges**

Variable Charge per Billing Unit						
Note: Tier Allocations for Multi-Family is per dwelling unit						
Class/Tier	Monthly Tier Allocations	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027	July 1, 2028
Single Family Residential						
Tier 1	7	\$2.24818	\$2.51796	\$2.74458	\$2.96414	\$3.17163
Tier 2	29	\$5.92680	\$6.63802	\$7.23544	\$7.81428	\$8.36128
Tier 3	Over 29	\$6.44550	\$7.21896	\$7.86867	\$8.49816	\$9.09303
Multi-Family Residential						
Tier 1	5	\$2.24209	\$2.51114	\$2.73714	\$2.95611	\$3.16304
Tier 2	10	\$5.87186	\$6.57648	\$7.16836	\$7.74183	\$8.28376
Tier 3	Over 10	\$6.24448	\$6.99382	\$7.62327	\$8.23313	\$8.80945
Commercial Small (%—1" meter size)						
Tier 1	8	\$2.21109	\$2.47642	\$2.69930	\$2.91524	\$3.11931
Tier 2	43	\$5.84411	\$6.54540	\$7.13448	\$7.70524	\$8.24461
Tier 3	Over 43	\$6.19440	\$6.93773	\$7.56212	\$8.16709	\$8.73879
Commercial Medium (1½"—4" meter size)						
Tier 1	52	\$2.25510	\$2.52571	\$2.75303	\$2.97327	\$3.18140
Tier 2	265	\$5.88262	\$6.58853	\$7.18150	\$7.75602	\$8.29894
Tier 3	Over 265	\$6.36652	\$7.13050	\$7.77224	\$8.39402	\$8.98160
Commercial Large (6"+ meter size)						
Tier 1	850	\$2.27128	\$2.54383	\$2.77278	\$2.99460	\$3.20422
Tier 2	5,050	\$5.94146	\$6.65444	\$7.25333	\$7.83360	\$8.38195
Tier 3	Over 5,050	\$6.55430	\$7.34082	\$8.00149	\$8.64161	\$9.24652

**Source:** [https://library.municode.com/ca/pasadena/codes/code\\_of\\_ordinances?nodeId=TIT13UTSE\\_CH13.20WASERA\\_13.20.030SECHRA](https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT13UTSE_CH13.20WASERA_13.20.030SECHRA)

## 9.4 Public Education and Outreach

PWP has an active public education and outreach program based on the premise that providing customers with pertinent information will lead to more efficient water use. PWP provides outreach related to water conservation to both the residential and CII customer sectors using numerous methods, including the following:

- Advertising and announcements in newspapers, magazines, radio, and local access television
- Social media
- Dedicated webpages to water conservation and water efficiency
- E-newsletters
- “Pasadena In Focus” newsletter and talk show
- Bill inserts
- Press releases
- Bi-monthly email newsletter for PWP commercial customers, “The Conduit”
- Workshops, presentations and other special events
- School programs

Through online and social media posts, PWP provides information on water shortage and conservation news, upcoming workshops, rebate announcements, conservation tips, self-audits, a link to report water waste, and conservation tools and resources with links to external water conservation websites. PWP also works closely with neighboring water agencies and MWD, to ensure consistent regional water conservation messages.

Workshops, presentations, and other educational outreach events have provided residents, businesses and schools with hands on demonstrations and information about water conservation. At all events, water conservation materials and information on PWP’s programs and Water Shortage Ordinance are provided. Annually, PWP hosts events throughout the month of May, in celebration of Water Awareness Month. Water Awareness Month events include:

- Tours of water facilities, including treatment plants, reservoirs, and the Arroyo Seco
- Workshops
- Conservation pop-up events
- Town Halls providing an overview of PWP’s water and an opportunity for customers to ask questions
- Other community outreach opportunities

Additionally, workshops are offered on a regular basis and have included the following topics:

- Gardening with native and fire-wise plants

- Sheet mulching and composting
- Efficient irrigation, including drip irrigation and weather-based irrigation controllers
- Turf removal and drought tolerant landscape
- Healthy soils and planting techniques
- Greywater and onsite water reuse
- Watershed wise designs
- Rainwater capture/harvesting

PWP has been conducting school education programs since 1999. Upon request, PWP provides water-related class presentations for students in grades K through 12 and distributes educational materials to public schools. At class presentations and events, water conservation messages are distributed using age-appropriate materials including coloring books, pens, pencils, and other items to encourage conservation. PWP hosts a calendar art contest, in partnership with MWD, depicting water conservation messages and images for all grade levels; PWP also provides field trips to students to its water quality laboratory and reservoirs.

## **9.5 Programs to Assess and Manage Distribution System Real Loss**

PWP annually conducts system water audits by comparing the total volume of authorized water use to the total water supply entering the system, in accordance with the AWWA Method. Based on audits performed over the last five years, system water losses have averaged around 6 percent of total water consumption. Links to PWP's Water Loss Audit report submittals to DWR for those years are provided in Section 4.4.

As part of its capital improvements program (CIP), PWP regularly invests in replacing aging pipelines and meters, among other upgrades to reduce system losses. PWP will continue to implement system upgrades to reduce system water losses and to work towards meeting the State Water Board Water Loss Performance Standard by 2028.

## **9.6 Water Conservation Program Coordination and Staffing Support**

Since 2001, PWP has had a designated team responsible for developing, promoting, and implementing PWP's conservation programs and initiatives.

## **9.7 Other DMMs**

### **9.7.1 Residential Water Efficiency Programs**

PWP offers a variety of programs and services to help residential customers improve their water use efficiency, including in-home evaluations with personalized installations, efficiency audits, and rebates.

#### **Home Improvement Program**

Under the Home Improvement Program, PWP provides no-cost services to PWP residential customers including water and energy use evaluations, adjustments to irrigation controllers, and programming of thermostats. Evaluations may include leak detection tests, an assessment/inventory of water fixtures, and identification of opportunities for installing water efficient fixtures. In addition, the evaluator will install free energy and water efficiency products, such as low-flow showerheads and aerators, and will make recommendations for additional water and energy-related improvements. Recommendations for improving energy and water use will also be provided in a customized Home Evaluation Report.

The plumbing retrofits provided through this program are also intended to upgrade fixtures and devices in single- and multi-family residences constructed prior to 1992. 1992 marks the implementation of building standards to require water saving fixtures in new construction; therefore, homes constructed after 1991 should already have water saving devices and fixtures in place. On June 1, 2015, the Pasadena City Council adopted by proclamation the requirement that all multifamily properties retrofit their showerheads and aerators to water efficient ones. Multifamily properties are inspected for compliance as part of the Planning Department's Quadrennial Inspection Program for Multifamily dwellings.

#### **Home Water Reports**

PWP also offers Personalized Home Water Reports to PWP residential water customers through the WaterSmart Customer Portal. These reports provide detailed analytics on current and historical water use, including a comparison of the property's water use with similar homes, and customized recommendations to help customers save water, that integrates available PWP water savings incentives.

#### **Landscape and Irrigation Surveys**

PWP also provides free onsite surveys specific to landscape and irrigation efficiency. The services include assessing customer irrigation practices, checking for leaks and/or breaks, and providing information on water efficient irrigation devices. PWP will also assess landscape, plant watering needs and offer recommendations for drought tolerant plant recommendations and turf removal. Numerous resources are available on PWP's website for drought tolerant landscaping and, as described below, PWP also offers rebates for landscape irrigation system improvements.

#### **Greywater Program**

Since 2015, PWP has been offering its free a Laundry-to-Landscape ("L2L") Greywater Program to its customers. L2L greywater systems allow single family residential customers to reuse the

water from their washing machine, in their landscaping, helping to reduce their overall water usage and providing a second use for this water. The program incentivize greywater system installations for use in onsite drip irrigation systems with free direct installations available to all single-family residential customers. Additionally, PWP offers a rebate to cover the permitting fees for a Simple Greywater System. Simple Greywater Systems discharge less than 250 gallons per day, and collect water from bathtubs, showers, and bathroom washbasins for irrigation purposes.

### 9.7.2 Residential Rebate Programs

PWP partners with MWD to provide rebates to its residential and commercial customers. In 2008, MWD initiated the SoCal WaterSmart Program for residential water conservation replacing previous rebate programs offered by individual water service providers throughout MWD’s service area. This program, sponsored by MWD, sets uniform rebate requirements across the MWD service area, and provides a clearinghouse for processing rebates for all MWD member agency customers. Local agencies have the option of increasing baseline rebate amounts to their customers through the program. PWP has increased baseline rebates for select qualifying products. Eligible customers include single-family and multi-family (with 4 or less units) residential customers. Current rebates are summarized in Table 9-2.

**Table 9-2: Residential Rebates**

Rebate Type	Rebate Amount per Unit	Past Participation (FY20-25)	Lifetime Savings (AF)
Rain Barrel	\$100	700	6.66
Cisterns (200-1,000+gallons)	\$350-\$600	7	0.28
Rotating Nozzle Sprinkler Heads	\$7	1028	21.96
Hose Bib Irrigation Controller	\$60	1	0.18
Residential Leak Detection (on the meter or on consumer property)	\$150 - \$200	77	38.50
Weather-Based Irrigation Controller	Up to \$250 for <1 acre or \$60/station for >1 acre	632	260.56
Soil Moisture Sensor System	Up to \$250 for <1 acre or \$60/station for >1 acre	0	0
High Efficiency Clothes Washer	\$300	1465	684.98
High Efficiency Toilets	\$100	107	45.59
Turf Removal	\$2/sqft, up to 5,000 sqft	1,098,709 sqft removed	1704.91
Tree Removal	\$100 (5 trees/project)	8	0

### 9.7.3 Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

PWP, in partnership with MWD, has also implemented a commercial rebate program, designed specifically for customers in the CII sector including multi-family residences, with 5 or more units. In the CII sector, the program provides rebates for water saving plumbing fixtures, medical/dental equipment, food service equipment, and landscaping equipment. Current CII rebates are listed in Table 9-3.

**Table 9-3: Commercial/Industrial/Institutional Rebates**

Rebate Type	Rebate Amount per unit	Past Participation (FY20-25)	Lifetime Savings (AF)
Plumbing Flow Control Valve	\$10/valve	310	26.04
Laminar Flow Restrictors	\$15/restrictor	0	0
Premium High Efficiency Toilet	\$200	598	125.58
Zero Water/Ultra Low Water Urinal	\$300	0	0
Weather Based Irrigation Controller	\$60	17	2.59
Central Computer Irrigation Controller	\$60	0	0
Soil Moisture Sensor System	\$60	0	0
Hose Bib Irrigation Controller	\$60	0	0
High Efficiency Nozzles for Large Rotary Sprinklers	\$20/set	2563	461.34
Rotating Nozzles for Pop-up Spray Heads (Retrofits)	\$7	421	5.56
In Stem Flow Regulator	\$2	0	0
pH Cooling Tower Controller	\$3,000	1	3.22
Cooling Tower Conductivity Controller	\$1,000	1	3.22
Dry Vacuum Pump	\$150	0	0
Connectionless Food Steamer	\$600/compartment	0	0
Ice-Making Machines	\$1,000	0	0
Irrigation Master Valve	\$150	0	0
Irrigation Flow Sensor	\$150	0	0
Combination Master Valve and Flow Sensor	\$300	0	0
Food Defrosting Equipment	\$900	0	0

<b>Rebate Type</b>	<b>Rebate Amount per unit</b>	<b>Past Participation (FY20-25)</b>	<b>Lifetime Savings (AF)</b>
Turf Removal (commercial, HOA, multi-family of 5 units or more)	\$2/sqft, up to 50,000 sqft	965,011 sqft removed	1254.51
Tree Rebate	\$100 (5 trees/project)	23	0

## **9.8 Planned DMMs to Meet Water Use Targets**

Going forward, PWP plans to continue implementation of its DMMS, as described above. Details of its programs may however be modified, depending on customer response, new information, and new requirements.

As indicated in Section 4, additional water conservation will be necessary to meet established urban water use objectives over the planning period. PWP will be working over the coming years to develop and implement measures necessary to stay within established budgets.

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May 2026

# City of Pasadena Water and Power 2025 Urban Water Management Plan

**Public Review Draft**

## **Appendix A: DWR Checklist**

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Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	1	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	n/a	Section 4; Section 6; Section 6.6 (Wastewater and Recycled Water); Section 9
x	1	Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	n/a	Section 1.3
x	2.1	Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Sections 2.1, 2.2.3
x	2.5	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	UWMP Table 2-1 (page 2-1); Appendix B DWR Submittal Table 2-1
x	2.5	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Section 2.1; Appendix B DWR Submittal Table 2-2
x	2.5	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	UWMP Table 2-2 (page 2-1); Appendix B DWR Submittal Table 2-3
x	2.4	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	n/a	Section 2.2; Appendix C
x	2.4	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	Section 2.2; Appendix C
x	2.4	Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Section 6.3; Appendix B DWR Submittal Table 2-4R
n/a	2.4	Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	n/a
x	3	Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	n/a	Section 3
x	3.3	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Section 3.4
x	3.4	Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	Section 3.3; Appendix B DWR Submittal Table 3-1
x	3.4	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Section 3.1; Section 3.3.2
x	3.5	Section 3.5	10631(a)	Describe the land uses within the service area... include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Section 3.2 and Figure 3-2
x	4.2	Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	Section 4; Appendix B DWR Submittal Tables 4-1 and 4-2
x	4.3	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	Section 4.4; Appendix B DWR Submittal Table 4-5
x	4.3	Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Section 4.4.1; Appendix B DWR Submittal Table 4-6
x	4.2	Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	Section 4.3.4; Appendix B DWR Submittal Table 4-3
x	4.2	Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	4-3	Section 4.3; Appendix B DWR Submittal Table 4-3
x	4.2	Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	Section 4.3; Appendix B DWR Submittal Table 4-3
x	4.2	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall... Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3	Section 4.3; Appendix B DWR Submittal Table 4-3
x	4.2	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Section 4.3.1; 4.3.3
n/a	5.1	Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	n/a
x	5.2	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	Section 5; Appendix B DWR Submittal Table 5-1
x	6.1	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	n/a	Section 6.9
x	6.1	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	n/a	Sections 6.1 to 6.3; Section 6.9; Section 7
x	6.2	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Section 6.2; Appendix B DWR Submittal Table 6-1
x	6.2	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	Section 6.2.2

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	6.2	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	Section 6.2.1, Figure 6-1
x	6.2	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	n/a	Section 6.2.2; Link to judgement provided.
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins... (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin...	Water supplies and recycled water	n/a	n/a. The basin is adjudicated.
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins... describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	n/a. The basin is adjudicated.
x	6.2	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	Section 6.2, Section 6.2.4, Tables 6-2 and 6-3
x	6.2	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	6-9	Section 6.2.4, Table 6-3; Appendix B DWR Submittal table 6-9
x	6.1	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	Section 6.9; Appendix B DWR Submittal Tables 6-8 and 6-9
x	6.2	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	n/a	Section 6.4
x	6.2	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	System supplies (recycled water)	6-2	Section 6.6, Table 6-6; Appendix B DWR Submittal Table 6-2
x	6.2	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	6-3	Appendix B DWR Submittal Table 6-3
x	6.2	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	Appendix B DWR Submittal Table 6-4
x	6.2	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	6-4	Appendix B DWR Submittal Table 6-4
x	6.2	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	Appendix B DWR Submittal Tables 6-4 and 6-5
x	6.2	Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	6-6	Appendix B DWR Submittal Table 6-6
x	6.2	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	n/a	Section 6.6
x	6.2	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	Section 6.7
x	6.2	Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	6-7	Section 6.8
x	6.3	Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	O-1A, O-1B, O-1C, and O-2	Section 6.10; Appendix B DWR Submittal Table O-1B
x	7.1	Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	n/a	Section 6.2.5; Section 6.3.4
x	7.2	Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	Section 7.2, Tables 7-2, 7-3, 7-4; Appendix B DWR Submittal Tables 7-2, 7-3, 7-4
x	7.2	Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	n/a	Section 6.2.6; Section 6.3.3; Section 6.8
x	7.3	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water supply reliability assessment	n/a	Section 7.3
x	7.3	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	n/a	Section 7.2.1, Table 7-1; Section 7.3
x	7.3	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	n/a	Section 7.2.1; Section 7.2.2; Section 7.3
x	7.3	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	Section 7.3, Table 7-5; Appendix B DWR Submittal Table 7-5
x	7.3	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	n/a	Section 3.4.1; Section 7.1; Section 7.2; Section 7.3
x	8	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Section 8; Appendix E: 2025 Water Shortage Contingency Plan (WSCP)
x	8	Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	WSCP Section 1
x	8.2	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	n/a	WSCP Section 2
x	8.2	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	n/a	WSCP Section 2, Table 2-1
x	8.3	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	n/a	WSCP Section 3
x	8.3	Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	WSCP Table 3-1; Appendix B DWR Submittal Table 8-1
x	8.4	Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	WSCP Section 4, Table 4-1; Appendix B DWR Submittal Table 8-2
x	8.4	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	WSCP Section 4, Table 4-2; Appendix B DWR Submittal Table 8-3

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	8.4	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	WSCP Section 4
x	8.4	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	Table 8-3	WSCP Section 4, Table 4-2; Appendix B DWR Submittal Table 8-3
x	8.4	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3	WSCP Section 4, Tables 4-1 and 4-2; Appendix B DWR Submittal Tables 8-2 and 8-3
x	8.4	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	n/a	WSCP Section 4.2
x	8.5	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	n/a	WSCP Section 2, Page 2-2; WSCP Section 5
x	8.5	Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	n/a	WSCP Section 5
x	8.6	Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	n/a	WSCP Section 6
x	8.7	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	WSCP Section 6, WSCP Appendix A
x	8.7	Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. <i>Water Shortage Emergencies</i> .	Water shortage contingency planning	n/a	WSCP Section 3, Page 3-2
x	8.7	Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	n/a	WSCP Section 5
x	8.8	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	WSCP Section 7
x	8.8	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	WSCP Section 7
x	8.8	Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, <i>Excessive Residential Water Use During Drought</i> .	Water shortage contingency planning	n/a	WSCP Section 7
x	8.9	Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	WSCP Section 8
x	8.10	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	WSCP Section 8
x	8.11	Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	n/a	WSCP Page 4-3, Table 4-2
x	8.12	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	WSCP Section 9
x	9.1	Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	n/a	Section 9
n/a	9.2	Sections 9.2	10631(e)(2)	Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	Demand management measures	n/a	n/a
x	10	Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	n/a	Section 2.2.2
x	10.2	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Section 2.2
x	10.4	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6.	Plan adoption, submittal, and implementation	n/a	Section 2.2.4
x	10.2	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	Section 2.2, Appendix C; WSCP Section 9
x	10.2	Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1	Section 2.2
x	10.3	Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	Section 2.2.3, Appendix D; WSCP Section 9, WSCP Appendix C
x	10.4	Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	Section 2.2.4
x	10.4	Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	Section 2.2.4
x	10.4	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	Section 2.2.4
x	10.7	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	Section 2.2
x	10.5	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 2.2.4
x	10.5	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	WSCP Section 9
x	10.6	Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	n/a	n/a

## **Appendix B: DWR Submittal Tables**

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**Submittal Table 2-1 Retail: Public Water Systems**

Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
Add additional rows as needed			
CA1910124	Pasadena Water and Power	38,637	26,401
<b>Total</b>		38,637	26,401
<b>DWR NOTES:</b> <b>Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.</b>			
<b>NOTES:</b>			

**Submittal Table 2-2: Plan Identification**

<b>Select One</b>	<b>Type of Plan</b>	<b>Name of Regional Alliance or RUWMP (Drop Down List)</b>
<input checked="" type="checkbox"/>	<b>Individual UWMP</b>	
	If Water Supplier is also a member of a SB X7-7 Regional Alliance, select name from the drop-down.	
<input type="checkbox"/>	<b>Regional Urban Water Management Plan (RUWMP)</b>	
	If Supplier selected RUWMP, select name from the drop-down.	
<b>NOTES:</b>		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
<input type="checkbox"/>	Supplier is a wholesale supplier
<input checked="" type="checkbox"/>	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP (Select from the drop down list).	
Unit	AF
<b>DWR NOTES:</b> <b>Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.</b>	
<b>NOTES:</b>  	

**Submittal Table 2-4 Retail: Water Supplier Information Exchange  
Water Code Section 10631(h)**

The retail Supplier has informed the following wholesale supplier(s) of projected water use.

Wholesale Water Supplier Name

Add additional rows as needed

The Metropolitan Water District of Southern California

**NOTES:**

**Submittal Table 3-1 Retail: Population - Current and Projected  
Water Code Section 10631(a)**

Population Served	2025	2030	2035	2040	2045	2050(opt)
	165,448	167,244	169,059	169,645	170,233	170,824

**NOTES:**

**Submittal Table 4-1 Retail: Total Uses for Potable and Non-Potable Water — Actual  
Water Code Section 10631(d)(1)**

Use Type	Additional Description (as needed)	2025 Actual Water Use	
<b>Drop down list</b> May select each use multiple times These are the only use types that will be recognized by the WUEdata online submittal tool		<b>Potable or Non-Potable</b> (OPTIONAL) Drop down list	Volume (AF)
Add additional rows as needed			
Single Family		Potable	12,207
Multi-Family		Potable	5,186
Commercial	Captures CII. Includes customers with Dedicated Irrigation Meters.	Potable	7,166
Other (optional)	Portable water meter and fire hydrant uses	Potable	44
Distribution System Water Loss		Potable	1,657
Sales/Transfers/Exchanges to other Suppliers		Potable	142
		Subtotal Potable	26401
		Subtotal Non-Potable	0
		<b>Total</b>	26,401
<b>DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.</b>			
<b>NOTES:</b>			

**Submittal Table 4-2 Retail: Total Uses for Potable, and Non-Potable Water — Projected  
Water Code Section 10631(d)(1)**

Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
		Potable or Non-Potable (OPTIONAL) Drop down list	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 opt (AF)
<b>Drop down list</b> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool							
Add additional rows as needed.							
Single Family		Potable	12,382	12,081	11,671	11,399	11,421
Multi-Family		Potable	4,700	4,586	4,430	4,327	4,335
Commercial	CII. Includes customers with Dedicated Irrigation Meters.	Potable	8,447	8,539	8,569	8,598	8,628
Other (optional)	See note	Potable	19	19	19	19	19
Distribution System Water Loss		Potable	1,777	1,796	1,803	1,809	1,815
Sales/Transfers/Exchanges to other Suppliers		Potable	50	50	50	50	50
		Subtotal Potable	27,376	27,072	26,542	26,203	26,269
		Subtotal Non-Potable	0	0	0	0	0
		<b>Total</b>	<b>27,376</b>	<b>27,072</b>	<b>26,542</b>	<b>26,203</b>	<b>26,269</b>
<b>DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.</b>							
<b>NOTES: "Other" may include uses from portable water meters, metered private fire service, unmetered private fire service, water fire hydrant, and/or other uses not captured in other sectors.</b>							

<b>Submittal Table 4-3 Retail: Inclusion in Water Use Projections</b> <b>Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)</b>	
<b>Are Future Water Savings Included in Projections?</b> Drop down list (y/n)	Yes
If "Yes" to above, <b>state the section or page number</b> , in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found. <b>Optional</b> Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings.	Section 4.3.1, Pag 4-5
<b>Are Lower Income Residential Demands Included In Projections?</b> Drop down list (y/n)	Yes
<b>Optional</b> If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found.	Section 4.3.4, Pages 4-7, 4-8
<b>DWR NOTES:</b> Additional guidance is provided in Appendix K.	
<b>NOTES:</b>	

**Optional Submittal Table 4-4 Retail: Passive Water Savings Projections**  
**Water Code Section 10631(d)(4)(A)**

Description (Codes, Standards, Ordinances, or Plans)	Passive savings				
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 opt (AF)
Add additional rows as needed					
<b>DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.</b>					
<b>NOTES:</b> Passive savings were not specifically calculated.					

**Submittal Table 4-5 Retail: Water Loss Audit Reporting  
Water Code Section 10631(d)(3)(A)**

Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
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**Report submittal status for all five years for each Public Water System as available. Add rows as needed**

	<b>2020</b>	Yes
	<b>2021</b>	Yes
	<b>2022</b>	Yes
	<b>2023</b>	Yes
	<b>2024</b>	Yes

**DWR NOTES:** Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports.

**NOTES:** Audit results were reported in calendar years through 2022 and then in fiscal years starting in 2023. Links are provided below for the last 6 reports, starting in 2020. Active links also found on UWMP page 4-8.

[https://wuedata.water.ca.gov/public/awwa\\_uploads/6923108756/AWWA%20Water%20Audit%20Pasadena%20CY2020%20FINAL%20A%2Exls](https://wuedata.water.ca.gov/public/awwa_uploads/6923108756/AWWA%20Water%20Audit%20Pasadena%20CY2020%20FINAL%20A%2Exls)

[https://wuedata.water.ca.gov/public/awwa\\_uploads/7373685538/AWWA Water Audit Pasadena FINAL v5 CY2021.xlsx](https://wuedata.water.ca.gov/public/awwa_uploads/7373685538/AWWA Water Audit Pasadena FINAL v5 CY2021.xlsx);

[https://wuedata.water.ca.gov/public/awwa\\_uploads/5626996695/CY 2022 AWWA Water Audit v6 A.xlsx](https://wuedata.water.ca.gov/public/awwa_uploads/5626996695/CY 2022 AWWA Water Audit v6 A.xlsx);

[https://wuedata.water.ca.gov/public/awwa\\_uploads/1048856437/FY23%20Water%20Audit%20in%202026%20v6%2Exlsx](https://wuedata.water.ca.gov/public/awwa_uploads/1048856437/FY23%20Water%20Audit%20in%202026%20v6%2Exlsx);

[https://wuedata.water.ca.gov/public/awwa\\_uploads/6863095939/FY 2024 AWWA Water Audit v6 FINAL.xlsx](https://wuedata.water.ca.gov/public/awwa_uploads/6863095939/FY 2024 AWWA Water Audit v6 FINAL.xlsx);

[https://wuedata.water.ca.gov/public/awwa\\_uploads/7440525650/FY25%20Water%20Audit%20Report%20REVISED%20in%202026%2Exlsx](https://wuedata.water.ca.gov/public/awwa_uploads/7440525650/FY25%20Water%20Audit%20Report%20REVISED%20in%202026%2Exlsx)

**Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard**  
**Water Code Section 10631(d)(3)(C)**

Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss <small>Drop down list</small>	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit) (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit) (AF)	Apparent Water Loss Per Unit per Day
Add additional rows as needed.											
CA1910124	Yes	28.4	Gallons per Service Connection per Day (GPSCD)	38637	763.667	17.6	18	Gallons per Service Connection per Day (GPSCD)	38637	1026.507	23.7
								Gallons per Service Connection per Day (GPSCD)			
								Gallons per Service Connection per Day (GPSCD)			

[Water Board's Calculated Water Loss Standards](#)

**DWR NOTES: Units of measure (AF, CCF, MG) for Water Loss MUST remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations.**

**NOTES:**

**Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress**  
**Water Code Section 10608.40**

Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.

Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	Only for suppliers that did not meet the Target in 2020 See DWR NOTES below.	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	169	153	Yes		NA

**DWR NOTES:**  
**Suppliers calculating a 2025 GPCD** will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies.  
**Suppliers that were part of a merger or consolidation since 2020** see Chapter 5 and Appendix P for guidance.  
 NA=Not Applicable

**NOTES:**

**Submittal Table 6-1 Retail: Groundwater Volume Pumped  
Water Code Section 10631(4) and 10631(4)(c)**

Check the box if the Supplier does not pump groundwater.  
Proceed to the next table.

Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)

Groundwater Type <b>Drop Down List</b> May use each category multiple times	Potable or Non-Potable (OPTIONAL) <b>Drop down list</b>	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
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**Add additional rows as needed**

Alluvial Basin		Raymond Basin	6,689	7,853	7,730	11,030	12,075

<b>Total</b>			6,689	7,853	7,730	11,030	12,075
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**DWR NOTES:**  
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

**NOTES**

**Submittal Table 6-2 Retail: Wastewater Collected Within Service Area  
Water Code Section 10633(a)**

Check the box if there is no wastewater collection system.  
Proceed to the next table.

Percentage of 2025 service area served by wastewater collection system (OPTIONAL)

Percentage of 2025 service area population served by wastewater collection system (OPTIONAL)

Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? OPTIONAL Drop Down List	Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number Drop down list	Is WWTP Located Within UWMP Area? Drop Down List

Add additional rows as needed

Los Angeles County Sanitation Districts	Estimated	4,822	A.K. Warren Water Resource Facility, Place ID 234156	No
Los Angeles County Sanitation Districts	Estimated	4,822	Whittier Narrows Water Reclamation Plant, Place ID 235826	No
Los Angeles County Sanitation Districts	Estimated	4,822	Los Coyotes WRP, Place ID 238646	No
Los Angeles County Sanitation Districts	Estimated	4,822	San Jose Creek Water Reclamation Plant, Place ID 260156	No
<b>Total Wastewater Received from UWMP Service Area in 2025:</b>		19,286		

**DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

**Additional Guidance:** See Appendix M, Section M.21 for detailed guidance on this table.

**NOTES:** Total volume of wastewater received is based on actual CY 2025 sewer use, which is about 70% of the total water use in the water service area. Total volume was divided evenly across all WWTPs to obtain estimate for each facility.



**Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area**  
**Water Code Section 10633 (c),(d),(e)**

Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.

Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL) : \_\_\_\_\_  
 Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL) : \_\_\_\_\_  
 Volume of Supplemental Water Added in 2025 (OPTIONAL) : \_\_\_\_\_  
 Source of 2025 Supplemental Water (OPTIONAL) : \_\_\_\_\_

Use Type Drop down list	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop down list	Additional Information (as needed)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)	Potential Recycled Water Use	
									Volume	Narrative page number (OPTIONAL)
Add additional rows as needed										
		Subtotal Potable	0	0	0	0	0	0	0	
		Subtotal Non-Potable	0	0	0	0	0	0	0	
		<b>Total</b>	0	0	0	0	0	0	0	0

**DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.**  
**Additional Guidance:** See Appendix M, Section M.21 for detailed guidance on this table.  
**Potential recycled water use:** a description of the feasibility of these uses must be included in the narrative.  
**Multiple Producers:** If you have multiple recycled water producers, submit a separate table for each.

**NOTES:**

**Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection  
Compared to 2025 Actual  
Water Code Section 10633(e)**

Check the box if recycled water was not used in 2025 nor previously projected for use in 2020. Proceed to the next table.

<b>Use Type</b> Drop Down list	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Add additional rows as needed		
<b>Total</b>	0	0

**DWR NOTES:**  
**Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3  
**Additional Guidance:** See Appendix M, Section M.21 for detailed guidance on this table.

**NOTES:**

**Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use  
Water Code Section 10633(f)**

<input checked="" type="checkbox"/>	Check the box if the Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.6, pages 6-10 and 6-11	Provide page location of narrative in the UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Add additional rows as needed			
<b>Total (AF)</b>			0
<b>Unit Conversion to AF</b>			0
<p><b>DWR NOTES:</b>  <b>Units of measure</b> (AF, CCF, MG) MUST remain consistent with units reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.  <b>The unit conversion to Acre Feet</b> addresses the Water Code's requirement that this value be provided in acre-feet.</p>			
<p><b>NOTES:</b></p>			

**Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs**  
**Water Code Section 10631(f)**

Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Proceed to the next table.

Check the box if some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.

Section 6.8, pages 6-11 and 6-12 Provide page location of narrative in the UWMP

Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop Down list	Planned Implementation Year	Planned for Use in Year Type Drop Down List	Expected Increase in Water Supply to Supplier (This may be a range) (AF)
	Drop Down List (yes/no)	If Yes, Supplier Name					

Add additional rows as needed


**DWR NOTES:**  
**Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3.

**NOTES:**

**Submittal Table 6-8 Retail: Water Supplies — Actual  
Water Code Section 10631(b)**

Water Supply		2025		
<b>Drop down list</b> May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	<b>Potable or Non-Potable</b> (after treatment if treated) (OPTIONAL) Drop Down list	Actual Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed				
Groundwater (not desalinated)	Raymond Basin	Potable	12,075	
Purchased or Imported Water	From MWD	Potable	14,179	
Purchased or Imported Water	From Neighboring Agencies	Potable	146	
Subtotal Potable			26,401	0
Subtotal Non-Potable			0	0
<b>Total</b>			26,401	0
<b>DWR NOTES:</b> <b>Units of measure (AF, CCF, MG)</b> must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. <b>Total Entitlement:</b> e.g. Water Right, Groundwater Allocation, Contracted Amount.				
<b>NOTES:</b>				



**Optional Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH**

<b>Water Delivery Product</b> drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	<b>Only for Water Delivery Products Under the Urban Water Supplier's Operational Control</b>		
Start Date of Reporting Period	7/1/2024	<b>Sum of All Water Management Processes</b>	<b>Non-Consequential Hydropower</b>	
End Date of Reporting Period	6/30/2025			
Is upstream embedded energy in the values reported?	No			
Units of Measure for Water	AF	<b>Total Utility</b> See DWR NOTES	<b>Hydropower</b>	<b>Net Utility</b>
Volume of Water Entering Process		27,577		27,577
Energy Consumed (kWh)		17,075,734		17,075,734
Energy Intensity (kWh/vol. converted to MG)		1,900	-	1,900

**DWR NOTES:**  
**Total Utility:**The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

**Quantity of Self-Generated Renewable Energy**  
 kWh

**Data Quality** (Estimate, Metered Data, Combination of Estimates and Metered Data)

**Data Quality Narrative:**  
 Total power usage from booster stations and wells was compared to total water production for the FY25 period.

**Narrative:**  
 Energy data captured from boosters and wells

**NOTES:**

**Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)**

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. <b>Location:</b> [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available (AF)	% of Average Supply
Average Year	2025	1897	100%
Single-Dry Year	2015	300	
Consecutive Dry Years 1st Year	2014	556	
Consecutive Dry Years 2nd Year	2015	556	
Consecutive Dry Years 3rd Year	2016	556	
Consecutive Dry Years 4th Year	2017	556	
Consecutive Dry Years 5th Year	2018	556	
<p><b>DWR NOTES:</b> Supplier may use multiple versions of Submittal Table 7-1 R if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.</p> <p><b>Units of measure (AF, CCF, MG)</b> must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.</p>			
<p><b>NOTES:</b> Tables reflects availability of spreading credits only. Imported supplies and groundwater pumping rights are projected to be 100% available during all water year types. See UWMP Section 7.2.1. Consecutive dry year volumes represent average from 2014 to 2018.</p>			

**Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison  
Water Code Section 10635 (a)**

	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 R)	27,376	27,072	26,542	26,203	26,269
Use totals (autofill from Submittal Table 4-2 R)	27,376	27,072	26,542	26,203	26,269
Surplus/(shortfall)	0	0	0	0	0

**OPTIONAL Planned WSCP Actions**

WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					

**DWR NOTES :** Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

**NOTES:** No WSCP actions planned as no shortfall is projected. MWD anticipates having sufficient supplies to meet demands during all hydrologic year types.

**Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison  
Water Code Section 10635(a)**

	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals	29,566	29,237	28,665	28,299	28,371
Use totals	29,566	29,237	28,665	28,299	28,371
Surplus/(shortfall)	0	0	0	0	0
<b>OPTIONAL Planned WSCP Actions</b>					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
<b>DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.</b>					
NOTES: No WSCP actions planned as no shortfall is projected. MWD anticipates having sufficient supplies to meet demands during all hydrologic year types.					

**Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison  
Water Code Section 10635(a)**

		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals	29,566	29,237	28,665	28,299	28,371
	Use totals	29,566	29,237	28,665	28,299	28,371
	Surplus/(shortfall)	0	0	0	0	0
	<b>OPTIONAL Planned WSCP Actions</b>					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals	29,566	29,237	28,665	28,299	28,371
	Use totals	29,566	29,237	28,665	28,299	28,371
	Surplus/(shortfall)	0	0	0	0	0
	<b>OPTIONAL WSCP Actions</b>					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals	29,566	29,237	28,665	28,299	28,371
	Use totals	29,566	29,237	28,665	28,299	28,371
	Surplus/(shortfall)	0	0	0	0	0
	<b>OPTIONAL Planned WSCP Actions</b>					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals	29,566	29,237	28,665	28,299	28,371
	Use totals	29,566	29,237	28,665	28,299	28,371
	Surplus/(shortfall)	0	0	0	0	0
	<b>OPTIONAL Planned WSCP Actions</b>					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals	29,566	29,237	28,665	28,299	28,371
	Use totals	29,566	29,237	28,665	28,299	28,371
	Surplus/(shortfall)	0	0	0	0	0
	<b>OPTIONAL Planned WSCP Actions</b>					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

**DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.**

**NOTES:** No WSCP actions planned as no shortfall is projected. MWD anticipates having sufficient supplies to meet demands during all hydrologic year types.

<b>Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)</b>	
<b>2026</b>	<b>Total</b>
Total Water Use (AF)	29,249
Total Supplies (AF)	29,249
Surplus/Shortfall w/o WSCP Action	0
<b>OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)</b>	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
<b>2027</b>	<b>Total</b>
Total Water Use (AF)	29,312
Total Supplies (AF)	29,312
Surplus/Shortfall w/o WSCP Action	0
<b>OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)</b>	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
<b>2028</b>	<b>Total</b>
Total Water Use (AF)	29,376
Total Supplies (AF)	29,376
Surplus/Shortfall w/o WSCP Action	0
<b>OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)</b>	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
<b>2029</b>	<b>Total</b>
Total Water Use (AF)	29,439
Total Supplies (AF)	29,439
Surplus/Shortfall w/o WSCP Action	0
<b>OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)</b>	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
<b>2030</b>	<b>Total</b>
Total Water Use (AF)	29,566
Total Supplies (AF)	29,566
Surplus/Shortfall w/o WSCP Action	0
<b>OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)</b>	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
<b>DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.</b>	
<b>NOTES:</b> No WSCP actions planned as no shortfall is projected. MWD anticipates having sufficient supplies to meet demands during all hydrologic year types.	

**Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels**  
**Water Code Section 10632(a)(3)(B)**

Check the box if the Supplier uses the Standard six levels of water shortage.  
 Proceed to the next table.

Standard Shortage Levels	Percent Shortage Range	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%	1	Up to 10%
2	Up to 20%	2	Up to 30%
3	Up to 30%	2	Up to 30%
4	Up to 40%	3	Up to 40%
5	Up to 50%	4	> 40%
6	>50%	4	> 40%

**NOTES:**

**Submittal Table 8-2 Retail: Supply Augmentation and Other Actions  
Water Code Section 10632(a)(4)(A),(C) and (E)**

Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <b>Drop down list</b> These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
1-6	Other Purchases	Percentage	>50	Purchase of additional MWD supplies in the case of local groundwater disruption
6	Other Actions (describe)	Percentage	up to 10	Maximize available local groundwater supply, increase production
<b>DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.</b>				
NOTES:				

**Submittal Table 8-3 Retail: Demand Reduction Actions**  
**Water Code Section 10632(a)(4)(B),(D), and (E)**

No	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions <b>Drop down list</b> These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? <b>For Retail Suppliers Only</b> Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
Add additional rows as needed					
1	Landscape - Limit landscape irrigation to specific days	Percentage	3	Limits on watering days - one day per week November 1 - March 31; 3 days per week April 1 - October 31	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	2	Obligation to fix leaks, breaks or malfunctions within 72 hours of notification.	Yes
1	Increase Water Waste Patrols	Percentage	10	Increase Water Waste Patrols to actively patrolling areas showing high water use	Yes
1	Expand Public Information Campaign	Percentage	2		No
2	Landscape - Limit landscape irrigation to specific days	Percentage	1	Limits on watering days - one day per week November 1 - March 31; 2 days per week April 1 - October 31	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	2	Obligation to fix leaks, breaks or malfunctions within 48 hours of notification.	Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1	Filling or re-filling of ornamental lakes or ponds is prohibited.	Yes
2	Increase Water Waste Patrols	Percentage	10	Increase patrol shifts to cover a 24 hour period with 50% coverage across city neighborhoods	Yes
2	Expand Public Information Campaign	Percentage	2		No
3	Landscape - Limit landscape irrigation to specific days	Percentage	5	Limits on watering days - one day per week	Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	2	Obligation to fix leaks, breaks or malfunctions within 36 hours of notification.	Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1	Filling or re-filling of ornamental lakes or ponds is prohibited.	Yes
3	Increase Water Waste Patrols	Percentage	10	Increase patrols shifts to cover a 24 hour period with 50% coverage across city neighborhoods	Yes
3	Expand Public Information Campaign	Percentage	2		No
4	Landscape - Prohibit all landscape irrigation	Percentage	10		Yes
4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	2	Obligation to fix leaks, breaks or malfunctions within 24 hours of notification.	Yes
4	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1	Filling or re-filling of ornamental lakes or ponds is prohibited.	Yes
4	Other water feature or swimming pool restriction	Percentage	1	Refilling of more than 1 foot and initial filling of single family residential swimming pools or outdoor spas is prohibited.	Yes
4	Expand Public Information Campaign	Percentage	2		No

**DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.**

NOTES: Shortage gap reduction values are in %.

**Submittal Table 10-1 Retail: Notification to Cities and Counties  
Water Code Section 10621(b) and 10642**

City Name	60 Day Notice Drop Down (yes/no)	Notice of Public Hearing Drop Down (yes/no)
Add additional rows as needed		
Alhambra	Yes	Yes
Arcadia	Yes	Yes
Glendale	Yes	Yes
Sierra Madre	Yes	Yes
South Pasadena	Yes	Yes
County Name Drop Down List	60 Day Notice Drop Down (yes/no)	Notice of Public Hearing Drop Down (yes/no)
Add additional rows as needed		
Los Angeles County	Yes	Yes
<b>NOTES: List of additional entities notified is shown in UWMP Table 2-3.</b>		

## **Appendix C: Coordination and Outreach Materials**

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## PASADENA WATER AND POWER

January 21, 2026

Dennis Ahlen  
Director of Public Works & Utilities  
City of Alhambra  
[dahlen@alhambraca.gov](mailto:dahlen@alhambraca.gov)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

In compliance with the California Water Code, Division 6, Part 2.6, Chapter 3, Section 10621, Pasadena Water and Power (PWP) is initiating the preparation and revision of the City of Pasadena's **2025 Urban Water Management Plan (UWMP)**. This document is required of all "urban water suppliers" at least once every 5 years to evaluate long-term water supply reliability and to remain eligible for state water-related grants and loans.

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For questions or to provide comments, please contact me at [rvoutchkova@cityofpasadena.net](mailto:rvoutchkova@cityofpasadena.net).

Sincerely,

A handwritten signature in blue ink that reads "Roumiana Voutchkova".

Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Paul Cranmer  
Director of Public Works  
City of Arcadia  
[pcranmer@arcadiaca.gov](mailto:pcranmer@arcadiaca.gov)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Daniel Hernandez  
Director of Public Works  
City of Glendale  
[dahernandez@glendaleca.gov](mailto:dahernandez@glendaleca.gov)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Steve Mcgee  
Director of Public Works  
City of Sierra Madre  
[smcgee@sierramadreca.gov](mailto:smcgee@sierramadreca.gov)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Anteneh Tesfaye  
Deputy Director of Public Works  
City of South Pasadena  
[atesfaye@southpasadenca.gov](mailto:atesfaye@southpasadenca.gov)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Nina Jazmadarian  
General Manager  
Foothill Municipal Water District  
[nina.jaz@fmwd.com](mailto:nina.jaz@fmwd.com)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

James Brumder  
Associate Director of Garden Operations  
Huntington Library and Art Gallery  
[jbrumder@huntington.org](mailto:jbrumder@huntington.org)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Justin Bailey  
General Manager  
La Canada Irrigation District  
[justin.lcid@outlook.com](mailto:justin.lcid@outlook.com)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Jennifer Betancourt Torres  
General Manager  
Lincoln Avenue Water Company  
[Jennifer@lawc.org](mailto:Jennifer@lawc.org)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Mark Pestrella  
Director  
Los Angeles County Public Works  
[mpestrella@pw.lacounty.gov](mailto:mpestrella@pw.lacounty.gov)

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Robert Ferrante  
General Manager  
Los Angeles County Sanitation Districts  
[rferrante@lacsds.org](mailto:rferrante@lacsds.org)

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

David Sumi  
Senior Resource Specialist  
Metropolitan Water District of Southern California  
[dsumi@mwdh2o.com](mailto:dsumi@mwdh2o.com)

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 20, 2026

Keith Brown  
Operations Manager  
Pasadena Cemetery Association  
[keith@mtn-view.com](mailto:keith@mtn-view.com)

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Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Kelly Gardner  
Executive Officer  
Raymond Basin Management Board  
[kelly@watermaster.org](mailto:kelly@watermaster.org)

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Roumiana Voutchkova, P.E.  
Principal Engineer



PASADENA WATER AND POWER

January 21, 2026

Lisa Yamashita Lopez  
General Manager  
Rubio Cañon Land and Water Association  
[lisa@rclwa.org](mailto:lisa@rclwa.org)

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Sincerely,

Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Jim Prior  
General Manager  
San Gabriel County Water District  
[JPrior@sgcwd.com](mailto:JPrior@sgcwd.com)

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Sincerely,

Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Kome Ajise  
Executive Director  
Southern California Association of Governments  
[ajise@scag.ca.gov](mailto:ajise@scag.ca.gov)

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PASADENA WATER AND POWER

January 21, 2026

Ken Tcheng  
General Manager  
Sunny Slope Water Company  
[ken@sunnyslopedwatercompany.com](mailto:ken@sunnyslopedwatercompany.com)

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Concurrent with the UWMP Update, PWP will update Pasadena's **Water Shortage Contingency Plan (WSCP)** consistent with Water Code Sections 10632 and 10635. The WSCP outlines how the City will respond to water shortages of up to and exceeding 50%, including provisions for health, safety, and fire protection priorities.

For questions or to provide comments, please contact me at [rvoutchkova@cityofpasadena.net](mailto:rvoutchkova@cityofpasadena.net).

Sincerely,

Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

Tom Majich  
General Manager  
Kinneloa Irrigation District  
[tm@kidwater.info](mailto:tm@kidwater.info)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

In compliance with the California Water Code, Division 6, Part 2.6, Chapter 3, Section 10621, Pasadena Water and Power (PWP) is initiating the preparation and revision of the City of Pasadena's **2025 Urban Water Management Plan (UWMP)**. This document is required of all "urban water suppliers" at least once every 5 years to evaluate long-term water supply reliability and to remain eligible for state water-related grants and loans.

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Sincerely,

Roumiana Voutchkova, P.E.  
Principal Engineer



## PASADENA WATER AND POWER

January 21, 2026

William Kimberling  
General Manager  
Las Flores Water Company  
[lfw@pacbell.net](mailto:lfw@pacbell.net)

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For questions or to provide comments, please contact me at [rvoutchkova@cityofpasadena.net](mailto:rvoutchkova@cityofpasadena.net).

Sincerely,

A handwritten signature in blue ink that reads "Roumiana Voutchkova".

Roumiana Voutchkova, P.E.  
Principal Engineer



PASADENA WATER AND POWER

January 21, 2026

Bob Fan  
General Manager  
Valley Water Company  
[BFan@valleywatercompany.com](mailto:BFan@valleywatercompany.com)

**Subject: 2025 Update of the City of Pasadena's Urban Water Management Plan and Water Shortage Contingency Plan**

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Sincerely,

Roumiana Voutchkova, P.E.  
Principal Engineer

**Appendix D: UWMP Adoption Resolution [to be inserted]**

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## **Appendix E: Water Shortage Contingency Plan**

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2775 North Ventura Road, Suite 202  
Oxnard, California 93036  
805-973-5700

**City of Pasadena  
Water and Power  
2025 Water Shortage  
Contingency Plan  
PUBLIC REVIEW DRAFT**

May 2026

Prepared for

**Pasadena Water and Power**  
150 South Los Robles Avenue, Suite 200  
Pasadena, CA 91101

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- Appendix B: City of Pasadena Local Hazard Mitigation Plan
- Appendix C: WSCP Adoption Resolution [to be inserted]

## List of Acronyms

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City	City of Pasadena
CRA	Colorado River Aqueduct
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
LHMP	Local Hazard Mitigation Plan
MWD	The Metropolitan Water District of Southern California
PWP	Pasadena Water and Power
RRMB	Raymond Basin Management Board
SCADA	Supervisory Control Data and Acquisition
SWP	State Water Project
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan

## **Section 1 Water Supply Reliability Analysis**

---

This plan documents the Water Shortage Contingency Plan (WSCP) for the City of Pasadena (City) Water and Power (PWP), which was prepared per requirements of the Urban Water Management Act, Section 10632 of the California Water Code. This 2025 WSCP is a stand-alone document which may be amended, as needed.

The purpose of the WSCP is to document the process used by PWP to anticipate water supply disruptions and provide a plan of action to be followed in the event of a water supply shortage. Water supplies may be significantly reduced or interrupted for a number of reasons, including as a result of severe droughts, an earthquake which damages water delivery or storage facilities, a regional power outage, or a major water quality impairment within the PWP water service area, all of which could impact local supplies or imported water supply deliveries from The Metropolitan Water District of Southern California (MWD).

The WSCP was prepared in parallel to PWP's 2025 Urban Water Management Plan (UWMP) update and relies on reliability analyses prepared therein. Details on PWP's water supplies, demands, and water reliability findings are found in PWP's 2025 UWMP.

The City has various sources of water: local groundwater, stream water from Arroyo Seco and Eaton Canyon, and imported water from MWD. The City also serves a small number of customers through interconnections with neighboring agencies. Currently, PWP relies on local groundwater from the Raymond Basin for one third to one half of its total water supplies. The Raymond Basin, which comprises of 15 member agencies, was the first adjudicated groundwater basin in California. The City has groundwater pumping rights within the basin and is also credited with additional pumping rights for infiltrating surface water from the Arroyo Seco and Eaton Canyon streams. PWP manages its pumping rights, spreading credits, and long-term storage to maintain a reliable local source.

PWP purchases MWD imported water to supplement local pumped groundwater to meet customer driven water demands. Imported water, purchased from MWD, makes up from approximately half to two-thirds of PWP's water supplies and is projected to be a reliable source of water supply. MWD is the Southern California regional water wholesaler to 26 member agencies, including the City. MWD's primary sources of water are from the State Water Project (SWP) supplies and the Colorado River via the Colorado River Aqueduct (CRA).

According to MWD's 2025 UWMP, MWD has sufficient supplies to meet expected member agency demands through the 2050 planning period under all UWMP hydrologic scenarios (normal year, single dry year, and a five-consecutive-year drought). PWP's reliability analyses reflect MWD's ability to meet all of PWP's demands.

As a result of its planning efforts, MWD is expected to be able to provide reserve supplies to member agencies to help avoid severe water shortages during periods when imported water aqueducts may be out of service. MWD regularly updates various planning documents that guide its operations, long-term reliability, and emergency response, including the following:

- Integrated Water Resources Plan
- Water Shortage Contingency Plan

- Water Surplus and Drought Management Plan
- Water Supply Allocation Plan
- Emergency Storage Objective
- Seismic Risk Assessment and Mitigation Plan

Based on the analyses conducted as part of the 2025 UWMP, PWP anticipates sufficient availability of water supplies through 2050 to meet its projected demands, in all hydrologic year types (normal, single-dry and multiple-dry years). Additionally, the drought risk assessment conducted for the 2025 UWMP, which evaluates supply reliability in the event of a 5-year consecutive drought starting in 2026, also shows that supplies would be sufficient to meet demands. The drought risk assessment is summarized in Table 1-1. Additional details are found in Section 7 of the 2025 UWMP.

**Table 1-1: Five-Year Drought Risk Assessment**

<b>2026</b>	<b>Total</b>
Total Water Use (AF)	29,249
Total Supplies (AF)	29,249
<b>2027</b>	
Total Water Use (AF)	29,312
Total Supplies (AF)	29,312
<b>2028</b>	
Total Water Use (AF)	29,376
Total Supplies (AF)	29,376
<b>2029</b>	
Total Water Use (AF)	29,439
Total Supplies (AF)	29,439
<b>2030</b>	
Total Water Use (AF)	29,566
Total Supplies (AF)	29,566

Additional details on PWP’s water supply reliability are found in its UWMP. The City’s water supplies are projected to be reliable for the foreseeable future, due to diversification of local groundwater and imported water. However, unforeseeable catastrophic events could result in unplanned interruptions of water supplies and water supply shortages, which could require activation of water shortage contingency measures outlined in this WSCP.

Potential disruptions to groundwater supplies could occur as a result of unforeseen water quality impairments, large-scale power outages, damage/loss of pumping or delivery infrastructure, among other conditions. An unplanned interruption to MWD imported supplies could result from a catastrophic earthquake damaging the aqueducts that transport imported water. This damage would impact MWD’s ability to supply water to its member agencies,

including PWP. In the case of unplanned interruption of supplies that result in a water shortage, PWP would implement actions described in this WSCP.

## Section 2 Annual Water Supply and Demand Assessment Procedures

---

As of July 2022, provisions in Water Code Section 10632.1. require that an urban water supplier, such as PWP, conduct an annual water supply and demand assessment (Annual Assessment), by July 1 of each year, and submit to the California Department of Water Resources (DWR). The Annual Assessment should include information on the anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's WSCP. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its Annual Assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later. The Annual Assessment procedures are to be included in the supplier's WSCP.

This section outlines the procedures for performing the Annual Assessment by PWP and includes the following:

- The written decision-making process that PWP will use each year to determine its water supply reliability
- The key data inputs and assessment methodology used to evaluate PWP's water supply reliability for the current year and one dry year, including all of the following:
  - *Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.*
  - *Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.*
  - *Existing infrastructure capabilities and plausible constraints.*
  - *A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.*
  - *A description and quantification of each source of water supply.*

Although the Annual Assessment must be submitted to DWR by July 1 of every year, an early Annual Assessment allows suppliers and customers to identify uncertainties and prepare for any anticipated water supply constraints in the coming months. Therefore, developing procedures, including decision-making processes, that facilitate early analysis and adoption are important for preparing for and mitigating water shortages.

Water supply projections and hydrologic conditions are significant components in deciding when a water shortage response is needed. The severity of a water supply shortage can determine the shortage level declared and the necessary level of response from the City and PWP's customers. Water reliability analyses performed in PWP's 2025 UWMP are summarized in Section 1 of this WSCP and are the starting point for preparing the Annual Assessment.

As imported water may be more than half of PWP’s supplies, MWD’s shortage plans and declared water shortage stages play major roles in PWP’s water shortage plan. Therefore, the primary factor triggering a water shortage determination by PWP would be a determination of water shortage and related water supply curtailments made by MWD. As such, PWP’s Annual Assessment will highly depend on coordination with MWD to evaluate imported water supply conditions. In addition to confirming MWD water supply projections, PWP will also evaluate local groundwater supply conditions.

Table 2-1 outlines PWP’s approximate target timeframes for performing the Annual Assessment.

**Table 2-1: Timeline for Annual Assessment Actions**

Target Date	Action
Oct-Feb	<ul style="list-style-type: none"> <li>• Coordinate with MWD to evaluate imported water supply conditions</li> <li>• Evaluate groundwater supply conditions</li> <li>• Monitor demand trends</li> </ul>
Mar	<ul style="list-style-type: none"> <li>• Obtain updates on MWD supply projections</li> <li>• Prepare initial assessment of total PWP water supplies vs unconstrained demands</li> <li>• Make initial estimate of potential shortage</li> <li>• If shortage anticipated, form Water Shortage Task Force</li> </ul>
Apr	<ul style="list-style-type: none"> <li>• Confirm MWD supply assessment and evaluate PWP’s potential supply shortfall based on MWD’s anticipated water supply condition/stage and available local supplies</li> <li>• If necessary, initiate public outreach, coordinate drought messaging with neighboring retail water agencies and MWD, as appropriate</li> </ul>
May-June	<ul style="list-style-type: none"> <li>• Continue public outreach</li> <li>• Prepare draft Annual Assessment</li> <li>• Finalize Annual Assessment and submit to DWR</li> </ul>
July-Sept	<ul style="list-style-type: none"> <li>• If necessary, recommend City Council make a determination that a water shortage exists and implement demand reduction and other shortage response actions as outlined in the WSCP</li> <li>• Monitor customer response to water shortage messaging and other actions</li> </ul>

By starting to plan in October, PWP will get an early snapshot of conditions, assess the resources necessary to mitigate a supply shortage and start outreach to customers to manage demand. Major actions are proposed in March, when an initial estimate of a potential supply shortage is made. Final annual assessment is completed by June. Depending on the findings, a water shortage may be declared by City Council and demand reductions implemented in accordance with the City’s ordinance and the stages outlined in this WSCP.

DWR guidance for the Annual Assessment is to consider the expected water use in the current year – assuming a dry year, based on recent water use, and before any potential response actions a supplier may trigger under its WSCP.

Expected customer demands will be estimated in-line with the methodologies and assumptions described in PWP's UWMP, unless more current data or improved methodologies are available. Planned water use for the current year will primarily be estimated based on demands of the most recent complete calendar year, historical demand trends for each water use sector, weather, growth, policies to manage supplies, or other factors as described below.

Generally, hotter temperatures, higher evapotranspiration rates, and low rainfall lead to higher water use, primarily due to increased irrigation. To account for weather impacts on demands during the current year, PWP will consider the following:

- 1) Seasonal trends in PWP water demands with a focus on differences between winter and summer demands, and between demands in wet and dry years
- 2) Historical (10 years minimum) trends in demands, taking into account drought conditions
- 3) Weather and drought prognoses for the current year

Sources of information on drought conditions for the current year are anticipated to include the U.S. Seasonal Drought Outlook available from the National Weather Service Climate Prediction Center ([https://www.cpc.ncep.noaa.gov/products/expert\\_assessment/sdo\\_summary.php](https://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php)). Additional sources of drought forecasts, based on the Climate Prediction Center's data, may include U.S Drought Monitor (<https://droughtmonitor.unl.edu/ConditionsOutlooks/Outlooks.aspx>) and Drought.gov (<https://www.drought.gov/forecasts>).

Demand estimates for the current year will take into consideration growth in the PWP service area. These estimates will be based on the long-range projections documented in the current UWMP which account for anticipated development. To the extent possible, data will be normalized to reflect demands without temporary conservation measures or WSCP response actions in order to estimate unconstrained demands. Levels of water savings from select WSCP actions are estimated in Section 4 of this WSCP, which will be referenced as needed. Water use changes in response conservation measures implemented during previous droughts may also be evaluated.

PWP will evaluate current year water supply availability and the potential for a water supply shortfall based on the combined local groundwater supplies and MWD's anticipated imported water. Projected groundwater supplies are based on pumping rights, spreading credits, and groundwater storage. PWP anticipates adequate imported water supplies to meet its demands during average, single-dry, and multiple-dry years throughout the 25-year planning period. MWD projections take into account hydrological and regulatory conditions that may affect the availability of imported water supplies.

PWP's monthly reports submitted to the Raymond Basin Management Board (RBMB) and MWD's monthly supply and operation updates and Water Supply Conditions Report will be primary sources of data for assessing water supply conditions. Each source of water supply will be quantified as part of the Annual Assessment.

In assessing the reliability of PWP's water supplies, it is important to consider existing infrastructure capabilities and plausible constraints for meeting expected water demands in the coming year. Potential constraints may include capacity of active wells, treatment systems, distribution infrastructure, water quality, or other conditions.

## Section 3 Water Shortage Levels

A water shortage means that available water supply is insufficient to meet expected customer water use at a given point in time. A water shortage can result from various circumstances, such as unexpected short-term events on the order of days or weeks to multi-year droughts. Short-term supply interruptions may occur as the result of an earthquake, water system failures, fire, contamination, regional power outage, or other causes. In contrast, drought is a gradual phenomenon under which impacts generally increase with the length of a drought, and as available stored water supplies are depleted. Regardless of the cause, if a potential water shortage is identified, PWP will manage and mitigate the shortage by implementing measures outlined in this WSCP and based on the water shortage levels described below.

The Urban Water Management Plan Act requires water agencies to plan for increasing levels of temporary or prolonged shortages of up to and greater than 50% of normal supplies. Water Code Section 10632(a)(3) requires suppliers to include six standard water shortage levels that represent shortage conditions compared to normal reliability.

Pasadena Municipal Code Title 13, chapter 13.10, Water Waste Prohibitions and Water Supply Shortage Plans was originally adopted on June 1, 2009, and most recently amended on February 6, 2017, with Ordinance No. 7298. The City’s ordinance describes four levels of water supply shortage and related response actions, in addition to permanent water conservation requirements, which are effective at all times. A copy of the ordinance is included in Appendix A.

Table 3-1 presents a cross-reference of the City’s existing four water supply shortage levels to the required six standard water shortage levels with the relative severity of the water supply shortage and a summary of associated response actions. Details on response actions to the increasing water-supply shortage levels are described in Section 4.

**Table 3-1: Cross-Reference for Standard vs Supplier Shortage Levels**

[DWR Table 8-1]

Standard Shortage Levels <sup>1</sup>	Percent Shortage Range <sup>1</sup>	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%	1	Up to 10%
2	Up to 20%	2	Up to 30%
3	Up to 30%	3	Up to 40%
4	Up to 40%	4 (emergency condition)	>40%
5	Up to 50%		
6	>50%		

**Note:**

<sup>1</sup>Percent shortage range refers to gap between normally available supplies and normally expected customer water use.

In the event of a water shortage, PWP would recommend the City Council determine that a water shortage exists and which water shortage level to declare to appropriately respond to the existing water conditions. The City Council would hold a public hearing during which it would determine the necessary water conservation target, and which level of water supply shortage is appropriate to address the water shortage.

A declaration of water shortage emergency would occur per California Water Code Division 1, Section 350, which states:

“The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.”

## **Section 4 Water Shortage Response Actions**

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Water shortage response actions generally include water supply-side and/or demand-side actions, including voluntary and mandatory measures. This section describes PWP's water shortage response actions, including all of the following:

- Local supply augmentation actions.
- Local demand reduction actions to adequately respond to shortages.
- Local operational changes.
- Mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.
- For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

In the event of a water shortage, **supply augmentation** may include use of additional MWD supplies, additional groundwater, and/or purchased water from emergency interconnections, as described below.

Currently, local groundwater meets approximately one third to one half of PWP's customer water demands and the remaining demands are met with imported water from MWD. In the event that local groundwater supplies become unavailable, PWP would seek to increase its demands on MWD for imported water supplies, as available, to make up the shortfall.

If imported water supplies from MWD are disrupted, PWP would rely on local groundwater supplies and additional conservation to meet demands to the maximum extent possible. Under normal conditions, PWP can utilize during the current fiscal year up to 10% of its decreed rights from the next fiscal year with approval of the Raymond Basin. PWP would coordinate with the Raymond Basin Management Board to evaluate options for pumping above its current allocation, if needed to meet immediate demands.

Depending on the emergency, PWP would evaluate use of its existing emergency interconnections with neighboring water purveyors. PWP currently has active interconnections through which it can receive emergency supplies with the following local agencies:

- City of Sierra Madre
- Foothill Municipal Water District
- Kinneloa Irrigation District
- Lincoln Avenue Water Company
- Valley Water Company
- MWD

While the emergency interconnections could allow PWP to receive potable water under emergency conditions, it is important to note that, similar to PWP, neighboring purveyors may

also receive imported water supplies from MWD to meet their potable demands. Therefore, depending on the nature of the water supply disruption, the other purveyors may be equally impacted by the water emergency and unable to deliver supplemental supplies to PWP.

Potential supply augmentation actions that could be considered during a water shortage condition are summarized in Table 4-1.

**Table 4-1: Supply Augmentation and Other Actions**

[DWR Table 8-2]

Shortage Level		Supply Augmentation Methods and Other Actions by Water Supplier	Reduction in Shortage Gap	Additional Explanation or Reference
Standard	City			
1-6	1-4	Other purchases	>50%	Purchase of additional supplies in the case of local groundwater disruption
6	4	Other actions (describe)	up to 10%	Maximize available local groundwater supply, increase production

The City maintains permanent water waste and conservation standards that are in effect at all times and are outlined in Pasadena Municipal Code Title 13, chapter 13.10, Water Waste Prohibitions and Water Supply Shortage Plans. Permanent water conservation requirements that apply at all times, including under normal supply conditions, include:

- **Limits on Watering Days:** *Watering or irrigating of lawn, landscape or other vegetated area is limited to 3 days per week year round, on a schedule to be determined by the department general manager, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.*
- **Limits on Watering Hours:** *Watering or irrigating of lawn, landscape or other vegetated area is prohibited between the hours of 9:00 a.m. to 6:00 p.m. on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.*
- **No Watering During Periods of Rain:** *Watering or irrigating of lawn, landscape or other vegetated area during and within 48 hours after periods of rain is prohibited.*
- **No Water Flow or Runoff:** *Watering or irrigating any lawn, landscape or other vegetated areas in a manner that causes or allows runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures is prohibited.*
- **No Watering Turf on Public Street Medians:** *Watering ornamental turf on*

*public street medians with potable water is prohibited.*

This ban is consistent with California's ban on non-functional turf. Starting January 1, 2027, enactment of Assembly Bill 1572 will prohibit the use of potable water for irrigating purely decorative grass on state and local government properties. The ban on watering non-functional turf with potable water will apply to commercial, industrial, and institutional properties starting in 2028 and Homeowner Association common areas starting in 2029. Per the legislation, PWP will incorporate the necessary restrictions in the City's permanent water waste and conservation standards by the January 1, 2027, deadline.

- **No Washing Down Hard or Paved Surfaces:** *Washing down hard or paved surfaces, including, but not limited to, sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except as follows: (i) where necessary to alleviate safety or sanitary hazards and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device; or (ii) when using a low-volume high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.*
- **Obligation to Fix Leaks, Breaks or Malfunctions:** *Loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than 7 days of receiving notice from the Department is prohibited.*
- **Recirculating Water Required for Water Fountains and Decorative Water Features:** *Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.*
- **Limits on Washing Vehicles:** *Using water to wash a vehicle, including, but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.*
- **Drinking Water Served Upon Request Only:** *Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar or other public place where food and drinks are sold, served or offered for sale, are prohibited from providing drinking water to any person unless expressly requested by the patrons.*
- **Restaurants Required to Use Water Conserving Dish Wash Spray Valves:** *Food preparation establishments, such as restaurants, cafes and cafeterias, are prohibited from using non-water conserving dish wash spray valves.*
- **Commercial Lodging Establishments Shall Provide Guests Option to Decline Daily Linen Services:** *Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linens laundered daily. Commercial lodging establishments must prominently*

*display notice of this option in each guestroom using clear and easily understood language.*

- **No Installation of Single Pass Cooling Systems:** *Installation of single pass cooling systems is prohibited in buildings requesting new water service.*
- **No Installation of Non-Recirculating Equipment in Commercial Car Wash and Laundry Systems:** *Installation of non-recirculating water systems is prohibited in new commercial conveyor car washes and new commercial laundry systems.*
- **Commercial Car Wash Systems:** *All commercial conveyor car wash systems must have installed operational re-circulating water systems or must have secured a waiver of this requirement from the City.*
- **Multifamily Properties:** *All master-metered multifamily properties with four or more dwelling units are required to certify (through a process determined by the department) that showerheads and aerators are retrofitted to meet current California Green Building Code standards.*

In addition to the permanent water waste and conservation requirements effective at all times, the City's Municipal Code also describes four levels of water supply shortage and related response actions. The additional actions for each water shortage level are presented in Table 4-2, with estimates on anticipated water use reductions. PWP proposes additional measures, including increased water waste patrols and expanded public information campaigns that are also shown in the table. In the event of a City level 4 water shortage, PWP also has the ability to limit new potable water services, per the City's Municipal Code, Section 13.10.052, item 5. Implementation of this measure will not reduce existing demands during an extreme shortage but will help to ensure that no additional demands are added during this period.

During a water shortage scenario, **operational changes** are implemented to enhance water waste enforcement and increase outreach to customers. Staff is augmented with temporary workers who are deployed to enforce the water waste restrictions throughout the service area. Staff works in shifts over 24 hours to ensure that any water waste is documented and customers notified. Reports are tracked to execute the appropriate level of action from a 1st violation notice to a 4th notification and subsequent fine. Administrative staff is assigned to track all reports and issue notifications and fines. Additionally, staff time and funding are dedicated to create more outreach materials to inform and engage with customers of the water waste shortage and restrictions.

**Table 4-2: Demand Reduction Actions by Water Shortage Level**

[Based on DWR Table 8-2]

<b>Shortage Level</b>		<b>Demand Reduction Actions</b>	<b>Reduction in Shortage Gap</b>	<b>Additional Explanation or Reference</b>	<b>Penalty, Charge, or Other Enforcement?</b>
<b>Standard</b>	<b>City</b>				
1	1	Landscape - Limit landscape irrigation to specific days	3%	Limits on watering days - one day per week November 1 - March 31; 3 days per week April 1 - October 31	Yes
1	1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Obligation to fix leaks, breaks or malfunctions within 72 hours of notification.	Yes
1	1	Increase Water Waste Patrols	10%	Increase Water Waste Patrols to actively patrolling areas showing high water use	Yes
1	1	Expand Public Information Campaign	2%		No
2-3	2	Landscape - Limit landscape irrigation to specific days	1%	Limits on watering days - one day per week November 1 - March 31; 2 days per week April 1 - October 31	Yes
2-3	2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Obligation to fix leaks, breaks or malfunctions within 48 hours of notification.	Yes
2-3	2	Water Features - Restrict water use for decorative water features, such as fountains	1%	Filling or re-filling of ornamental lakes or ponds is prohibited.	Yes
2-3	2	Increase Water Waste Patrols	10%	Increase patrol shifts to cover a 24-hour period with 50% coverage across city neighborhoods	Yes
2-3	2	Expand Public Information Campaign	2%		No
4	3	Landscape - Limit landscape irrigation to specific days	5%	Limits on watering days - one day per week	Yes
4	3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Obligation to fix leaks, breaks or malfunctions within 36 hours of notification.	Yes
4	3	Water Features - Restrict water use for decorative water features, such as fountains	1%	Filling or re-filling of ornamental lakes or ponds is prohibited.	Yes
4	3	Increase Water Waste Patrols	10%	Increase patrols shifts to cover a 24-hour period with 50% coverage across city neighborhoods	Yes
4	3	Expand Public Information Campaign	2%		No
5-6	4	Landscape - Prohibit all landscape irrigation	10%		Yes
5-6	4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Obligation to fix leaks, breaks or malfunctions within 24 hours of notification.	Yes
5-6	4	Water Features - Restrict water use for decorative water features, such as fountains	1%	Filling or re-filling of ornamental lakes or ponds is prohibited.	Yes
5-6	4	Other water feature or swimming pool restriction	1%	Refilling of more than 1 foot and initial filling of single-family residential swimming pools or outdoor spas is prohibited.	Yes
5-6	4	Expand Public Information Campaign	2%		No

## **4.1 Shortage Response Action Effectiveness**

During the course of a declared water shortage, PWP will reevaluate water supply conditions, and estimates of actual demand reductions will be made by evaluating customer consumption data. Under normal conditions, PWP uses multiple methods to account for water use from water supply production data. Water supply conditions are recorded on a weekly basis. Well production, MWD imported water, and surface water spread are recorded by the Water Engineering Division of PWP. Data is rolled into monthly production totals and added to the water supply report. All data is stored on PWP's network and is accessible by all employees with access to the network. PWP also has a Supervisory Control Data and Acquisition (SCADA) system that produces instantaneous data and logs data in the system.

During water shortage scenarios, a comparison is performed between current weekly production and projected monthly base demand. The analysis is reviewed by the Water Resources and Planning group to verify demand reduction. Monthly reports, similar to normal operating conditions, are shared with the Water Resources and Planning Manager and executive management for review. If the executive management determines water demand reduction goals are not being met, and no available tools remain (drought enforcement, notices, outreach, etc.), the General Manager will inform the City Manager that a recommendation by the City Council is in order. Ultimately, the City Council will take corrective actions, as necessary, to adjust the water shortage emergency level to increase conservation. If dictated by the type of emergency situation, production figures can be reported to the Water Resources and Planning Manager on an expedited and frequent basis, and the General Manager and subsequently the City Council, on a weekly basis.

## **4.2 Catastrophic Supply Interruption Plan**

PWP is also prepared for a catastrophic event that may result in complete loss of supply from its normal sources. It is likely that a complete loss of supply would be short-term in nature, lasting from a day to a week or so, until some reduced supply is restored from normal sources. Major catastrophic events that may affect PWP's major water sources are extreme (worst case) drought, earthquake, region-wide power outage, contamination, or loss of imported water due to imported water system unplanned shutdowns.

To prepare for potential catastrophic events, PWP has developed an emergency response plan and contingency plan to respond to supply interruptions, operates a water quality control laboratory to ensure rapid testing of water quality, continuously implements security upgrades, has back-up power and communications equipment, and has developed points of contacts and chains of command during emergency situations. As PWP is also a power provider, maintains emergency generators, and works closely with Edison in the County unincorporated portions of PWP's service area, power can quickly be restored during catastrophic interruptions.

Additionally, PWP is prepared to deal with secondary effects of emergency events, such as a loss of power, decline in water quality, or a communication system shutdown. PWP's emergency planning procedures are designed to maintain safe water supplies to meet basic customer needs and reduce the impacts of any catastrophic supply interruptions to the greatest extent possible.

PWP maintains relationships with large users within its service area, known as Key Accounts. This includes colleges, schools, parks, hotels, golf courses, and City departments. During emergencies, PWP may request large users to reduce or stop water use which can quickly reduce water demands during an emergency.

The City also operates an Emergency Operations Center (EOC) that can be activated quickly by the Disaster Emergency Services Director (often the City Manager). Life-saving and emergency resources are available through the EOC. In addition, departments such as PWP, also activates a Department Operations Center (DOC) to communicate and coordinate between the EOC and staff on the ground addressing emergencies.

Table 4-3 summarizes potential emergency response actions if a catastrophic event were to impact PWP’s ability to deliver water.

**Table 4-3: Potential Response Actions for Catastrophic Events**

Type of Catastrophe	Response Actions
Extreme Drought	<ol style="list-style-type: none"> <li>1. City Council enacts up to Level 4 water supply shortage water conservation measures.</li> <li>2. Determination by Council if additional water conservation measures are needed to achieve necessary reductions in demand.</li> </ol>
Earthquake	<ol style="list-style-type: none"> <li>1. If power is lost use alternative means of inter-PWP communications.</li> <li>2. If power is lost restore localized power to critical facilities (pumps, boosters, and water treatment facilities) with emergency generators.</li> <li>3. Inspect reservoirs, boosters, pumps, and wells for structural damage.</li> <li>4. Enact Boil Water, Do Not Drink, or Do Not Use orders based on water quality testing, if necessary.</li> <li>5. Implement customer communication &amp; outreach protocols for catastrophic events.</li> <li>6. City Council enacts up to Level 4 water supply shortage water conservation measures.</li> <li>7. Determination by City Council if additional water conservation measures are needed to achieve necessary reductions in demand.</li> <li>8. Check with neighboring agencies if supplies are available using emergency interconnections.</li> <li>9. Establish and maintain communications with MWD.</li> </ol>
Region-Wide Power Outage	<ol style="list-style-type: none"> <li>1. Use alternative means of inter-PWP communications.</li> <li>2. Restore localized power to critical facilities (pumps, boosters, and water treatment facilities) through the PWP’s Power Division and/or with emergency generators.</li> <li>3. Enact Boil Water, Do Not Drink, or Do Not Use orders based on water quality testing, if necessary.</li> <li>4. Implement customer communication &amp; outreach protocols for catastrophic events.</li> <li>5. City Council enacts up to Level 4 water supply shortage water conservation measures.</li> <li>6. Determination by City Council if additional water conservation measures are needed to achieve necessary reductions in demand.</li> <li>7. Check with neighboring agencies if supplies are available using emergency interconnections.</li> <li>8. Establish and maintain communications with MWD.</li> </ol>
Water	<ol style="list-style-type: none"> <li>1. Enact Boil Water, Do Not Drink, or Do Not Use orders based on water quality testing, if necessary.</li> </ol>

Type of Catastrophe	Response Actions
Contamination	2. Implement customer communication & outreach protocols for catastrophic events. 3. Consider increasing disinfection of water. 4. Check with neighboring agencies if uncontaminated supplies are available using emergency interconnections. 5. Establish and maintain communications with MWD.
Loss of Imported Water	1. City Council enacts up to Level 4 water supply shortage water conservation measures. 2. Determination by City Council if additional water conservation measures are needed to achieve necessary reductions in demand. 3. Check with neighboring agencies if supplies are available using emergency interconnections. 4. Establish and maintain communications with MWD.

America’s Water Infrastructure Act of 2018 Section 2013(b) requires community water systems serving populations greater than 3,300 to develop or update an **Emergency Response Plan (ERP)** that incorporates findings of their risk and resilience assessment. In 2025, PWP updated and submitted to the Environmental Protection Agency (EPA) both plans.

PWP completed a seismic vulnerability assessment in 2006 and has been implementing recommended projects since then. In 2020 and 2025 PWP re-evaluated the seismic vulnerability of the water system in several planning documents. Additionally, the 2025 City of Pasadena Local Hazard Mitigation Plan (LHMP) includes a risk assessment of seismic hazards and related mitigation strategies. A copy of the City’s LHMP is included in Appendix B.

## **Section 5 Communication Protocols**

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PWP will inform customers, the public and other relevant stakeholders regarding any current or predicted water shortages, associated shortage response actions, and other relevant communications using the following outreach methods:

- PWP Website and Social Media, along with City of Pasadena Website and Social Media
- Press Releases
- Advertising and Public Radio
- Citywide Direct Mailer
- News Articles Through City/PWP Publications
- Direct Outreach to City Departments, Field Reps, Large Customers, and Community Groups
- PWP Customer Service Team (626-744-4005)
- City of Pasadena Citizen Service Center (626-744-7311)
- PWP Water Emergency Line (626-744-4138)

During the event of a water shortage emergency, PWP will declare the event using the above methods and coordinate with City of Pasadena and County of Los Angeles officials for the proclamation thereof.

DWR will be informed on PWP's water shortage projection as part of the Annual Assessment submittal. Other local and/or regional agencies, such as neighboring retail water agencies and MWD will be informed directly, to alert them of the potential need for assistance and/or otherwise make them aware of the anticipated water conditions, as needed.

## Section 6 Compliance and Enforcement

Violations of the water conservation requirements during normal water and shortage conditions range from a written notice to monetary penalties and are summarized in Table 6-1. Violations and penalties are described in Pasadena Municipal Code starting in Section 13.10.065 (see Appendix A).

**Table 6-1: Penalties for Violating Water Use Prohibitions**

Number of Violations in a 12-Month Period	Penalty	
	All Residential customers and meters less than 1 ½ - inch	Non-Residential meters 1 ½ inch or larger
1	Written notice	Written notice
2	\$100	\$200
3	\$200	\$400
4	\$350	\$700
5 and subsequent violations	\$500	\$1,000

Monetary penalties are collected by adding the fine to a customer's bill and are payable at the same time and in the same manner as such bill or by any other method of collection and payment established by PWP. After receiving notice of an alleged violation, customers have the right to a hearing by the PWP General Manager, or his or her designee.

As an alternative to paying a fine, a customer, with the concurrence of the PWP General Manager, may waive the right to a hearing and elect one of the following options:

1. Complete a water efficiency training class offered by PWP
2. Complete all recommendations presented in a landscape audit
3. Retrofit inefficient fixtures or irrigation systems; and/or
4. Complete other water savings programs PWP may establish for the customer in a timely fashion.

A timetable shall be established for completing the selected option jointly by the customer and PWP. If a customer fails to complete the option to the satisfaction of PWP or within the given timeframe, then the customer must pay the monetary penalty. A customer may not select the same option more than once in a twelve-month period.

If necessary to achieve compliance with the water prohibitions, the City's water waste ordinance allows PWP to install flow restrictors of one gallon per minute for services up to one-inch meters, and comparably sized restrictors for larger meters with a minimum 48-hours advance notice. A customer is responsible for the cost of installation and removal of any water flow restrictors with payment due prior to removal of the restrictor. Service may be discontinued for continuing or willful violations of the ordinance, in addition to any penalties and/or the installation of a water flow restrictor.

The ordinance also allows the General Manager of PWP to request water conservation plans and quarterly follow-up reports from commercial and industrial water users using

25,000 billing units or more per year. Plans must include recommendations for conserving water and progress to date in implementing water savings.

The implementation of each stage of action is triggered by a City Council vote. In the event of a water shortage, PWP recommends that the City Council make a determination that a water shortage exists and the appropriate stage for implementation, corresponding to the degree of the shortage given projected supplies and demands. Prior to implementation of a water shortage level, a public hearing is held by the City Council to determine 1) whether a water shortage exists, 2) the necessary water conservation target needed to address the shortage, and 3) the appropriate stage to implement to address the shortage. Implementation of a WSCP stage occurs immediately upon publication of the City Council's decision.

During the water shortage, the City Council may discontinue stages or implement any other stage, as necessary. After the City Council determines a water shortage is no longer in effect, the water shortage stage in effect is terminated. The percent supply reduction as presented in Table 3-1 is an estimation of the water supply reduction that would trigger City Council to implement each stage of action. Implementing the WSCP based on a City Council decision, rather than a predefined water shortage percentage, gives PWP greater flexibility to adaptively implement water shortage stages and the associated response.

## Section 7 Financial Consequences of a WSCP

The Act requires an analysis of impacts on a water supplier's revenues and expenditures associated with implementation of WSCP, as well as anticipated mitigation actions needed to address financial impacts.

Implementation of the WSCP may result in financial consequences, including reductions in revenue, as well as increased expenses associated with implementing the water shortage response actions described herein. Increased expenses related to implementing water shortage response actions may result from activities such as hiring additional staff; increased staff costs for tracking, reporting, and enforcement; purchasing emergency short-term supplies at higher costs than normal supplies; and/or increased public information costs. PWP anticipates reduced revenues during a drought emergency as a result of a decrease in water sales.

The City has in place a mitigation action to address revenue reductions and expense increases associated with activated shortage response actions. The City water service charges and rates include fixed charges and variable charges. The charges for all water delivered shall be subject to an adjustment to reflect changes in revenue requirements during a declared drought by either City Council or the Governor of the State of California. If the City Council declares drought levels, PWP's General Manager has the option to add the drought rate percentage to the variable charge. The adjustment shall be the product of a percentage multiplied by the variable charges in this ordinance; more information can be found in Chapter 13.20.030 of the City of Pasadena's Municipal Code. Table 7-1 shows the drought rate percentages that may be implemented, according to water supply shortage level and billing tier.

**Table 7-1: Drought Rate Percentages<sup>1</sup>**

<b>Water Shortage Level</b>					
<b>Standard</b>	<b>City</b>	<b>Tier 1</b>	<b>Tier 2</b>	<b>Tier 3</b>	
1	1	0%	11%	17%	
2	2	0%	29%	51%	
3		10%	52%	77%	
4	3	35%	89%	127%	
5	4	58%	152%	175%	
6		125%	178%	225%	

**Note:**

<sup>1</sup>Increases shown as a percentage to the variable rate

Cost of Compliance with Excessive Water Use Prohibition:

Water Code requires retail suppliers to report on the cost of compliance with implementing Water Code Section 366, which requires that retail suppliers prohibit excessive water use from individually- metered or submetered residential customers through either rate structures or excessive water use ordinances. PWP already has both a rate structure based on volumetric use and has a water waste ordinance. In addition, PWP complies with the state's mandates to:

- Report monthly water conservation and production reports

- Validated water loss audit reports, annual water supply and demand assessments
- Electronic annual reports on water quality and system capacity.
- Consumer Confidence Report
- Water Diversion Reporting

PWPs data collection, infrastructure, and staffing already handle extensive reporting and it is unlikely that the cost of compliance with implementing Water Code Section 366 could be separated from the costs of general water resources reporting typically performed by PWP.

## **Section 8 WSCP Monitoring and Refinement Procedures**

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In order to monitor customer compliance and verify that demand reduction goals are being met, PWP will regularly review customer consumption data. PWP monitors customer compliance with the Water Shortage Level by tracking customer water use, using the WaterSmart Software, which identifies customer's usage and percent reduction and increase over previous months. During a state declared drought emergency, PWP deploys its water waste patrol to enforce the watering restrictions in shifts over a 24-hour period. Staff documents all water waste and issues notifications and may issue fines to those violating the ordinance, as described in previous sections.

PWP collects weekly data on water production and provides monthly monitoring reports to the State Water Resources Control Board, which identifies the water shortage level, population, total potable water production, residential use percentage, commercial-industrial-institutional water use and estimated residential gallons per capita per day. PWP tracks all water production by fiscal year, and percentage reduction versus prior baseline years.

**WSCP refinement procedures** are used to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation tactics are implemented when required.

PWP plans to update and refine the WSCP at least every five years in conjunction with the UWMP updates, unless a shorter time frame is deemed appropriate. Tracking will be implemented with each future WSCP to evaluate the effectiveness of the water shortage response actions on demand levels. The evaluation will document programmatic shortage responses and compare the expected percent demand reductions against actual reductions. Shortage response actions in the WSCP will be revised based on results of the evaluation. The success of customer outreach and communications will also be assessed to inform the next WSCP revision. The WSCP development follows the following steps:

1. Implementation
2. Monitoring
3. Performance Indicators
4. Assessment and Evaluation
5. Process to Refine and Improve the Plan
6. Adoption by City Council

## **Section 9 Plan Adoption and Availability**

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Prior to adopting the WSCP, PWP must make the WSCP available for public inspection and shall hold a public hearing, upon which the WSCP can be adopted. While the WSCP must be included as part of the UWMP when the UWMP is submitted to DWR the WSCP may be amended independently of the UWMP, as needed. Any amendments shall be adopted pursuant to Water Code Article 3 Sections 10640 -10645.

This WSCP was adopted by the Pasadena City Council on June 8, 2026. A copy of the Resolution is provided in Appendix C. The WSCP will be made available for public review per the requirements of the Water Code, no later than 30 days after adoption.

## References

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- Metropolitan Water District of Southern California (MWD). 2026. Public Review Draft 2025 Urban Water Management Plan. February.
- Pasadena, City of. 2017. Code of Ordinances. Chapter 13.10 – Water Waste Prohibitions and Water Supply Shortage Plans. Available at:  
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2020. Water System and Resources Plan. Prepared for City of Pasadena, Water and Power. December. Available at: <https://pwp.cityofpasadena.net/wp-content/uploads/2021/09/WSRP-Final-Report-Dec-2020-Rev-9.21.21.pdf>

**Appendix A: Pasadena Municipal Code Title 13, Chapter 13.10**

## Chapter 13.10 - WATER WASTE PROHIBITIONS AND WATER SUPPLY SHORTAGE PLANS

**Sections:**

## 13.10.010 - Short title.

This chapter shall be known as the city of Pasadena Water Waste Prohibitions and Water Supply Shortage Plans.

(Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 2, 6-1-2009)

## 13.10.015 - Policy and purpose.

- A. The purpose of this chapter is to establish a water conservation and supply shortage program that will reduce water consumption within the city of Pasadena and its service territory through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the city of Pasadena and its service territory to avoid and minimize the effect and hardship of water shortage to the greatest possible extent.
- B. This chapter establishes permanent water waste and conservation standards intended to alter behavior related to water use efficiency at all times and further establishes four levels of water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies.

(Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 3, 6-1-2009)

## 13.10.020 - Definitions.

The following words and phrases whenever used in this chapter shall have the meanings defined in this section:

- A. "Billing unit" means the unit of water used to apply water rates for purposes of calculating water charges for a customer's water usage and equals one hundred cubic feet (HCF) or 748 gallons.
- B. "Customer" means any person, persons, association, corporation, or governmental agency supplied and billed for water service by the department.

- C. "Department" means the City of Pasadena Water and Power Department.
- D. "Groundwater" means any water extracted through an excavation or structure created in the ground within the City of Pasadena.
- E. "Newly planted drought tolerant landscape" means a landscape area which has been planted or replanted with native plants with relatively low water requirements or plants that are well adapted to arid climate, within the prior six (6) months.
- F. "Person" means any individual person or persons, corporation, public or private entity, governmental agency or institution, including all agencies and departments of the City of Pasadena, or any other user of water provided by the department.
- G. "Potable water" means water that is suitable for drinking.
- H. "Recycled water" means the reclamation and reuse of non-potable water for beneficial use.
- I. "Single pass cooling systems" means equipment where water is circulated only once to cool equipment before being disposed.
- J. "Water conservation target" means the necessary percentage reduction in the department's total water sales to eliminate or mitigate a water supply shortage.

(Ord. 6425 § 1, 1991; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 4, 6-1-2009; Ord. No. 7298, § 2, 3-13-2017)

#### 13.10.025 - Authorization.

The various officers, departments, commissions, and agencies of the city are authorized and directed to implement the applicable provisions of this chapter upon the effective date hereof.

(Ord. 6275 § 1 (part), 1988)

#### 13.10.030 - Application.

The provisions of this chapter apply to any person in the use of groundwater or any potable water provided by the department, except for the following water uses:

- A. Water necessary for water system or fire suppression system testing and maintenance, or fire suppression and other similar emergency services affecting public health and safety.
- B. Water necessary to protect public health and safety as determined in the sole discretion of the department.
- C. Any use of recycled water.
- D. The use of water by commercial nurseries and commercial growers to sustain plants, trees, shrubs, crops or other vegetation intended for commercial use.

(Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 5, 6-1-2009; Ord. No. 7298, § 3, 3-13-2017)

### 13.10.032 - Permanent water conservation requirements.

The following water conservation requirements are effective at all times and are permanent. Violations of this section constitute waste and an unreasonable use of water.

- A. Limits on Watering Days: Watering or irrigating of lawn, landscape or other vegetated area is limited to 3 days per week year round, on a schedule to be determined by the department general manager, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.
- B. Limits on Watering Hours: Watering or irrigating of lawn, landscape or other vegetated area is prohibited between the hours of 9:00 a.m. and 6:00 p.m. on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.
- C. No Watering During Periods of Rain: Watering or irrigating of lawn, landscape or other vegetated area during and within 48 hours after periods of rain is prohibited.
- D. No Water Flow or Runoff: Watering or irrigating any lawn, landscape or other vegetated areas in a manner that causes or allows runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures is prohibited.
- E. No Watering Turf on Public Street Medians: Watering ornamental turf on public street medians with potable water is prohibited.
- F. No Washing Down Hard or Paved Surfaces: Washing down hard or paved surfaces, including, but not limited to, sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except as follows: (i) where necessary to alleviate safety or sanitary hazards and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a water shut-off nozzle or device; or (ii) when using a low-volume high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.
- G. Obligation to Fix Leaks, Breaks or Malfunctions: Loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than 7 days of receiving notice from the Department is prohibited.
- H.

Recirculating Water Required for Water Fountains and Decorative Water Features: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

- I. Limits on Washing Vehicles: Using water to wash a vehicle, including, but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.
- J. Drinking Water Served Upon Request Only: Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar or other public place where food and drinks are sold, served or offered for sale, are prohibited from providing drinking water to any person unless expressly requested by the patrons.
- K. Restaurants Required to Use Water Conserving Dish Wash Spray Valves: Food preparation establishments, such as restaurants, cafes and cafeterias, are prohibited from using non-water conserving dish wash spray valves.
- L. Commercial Lodging Establishments Shall Provide Guests Option to Decline Daily Linen Services: Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linens laundered daily. Commercial lodging establishments must prominently display notice of this option in each guestroom using clear and easily understood language.
- M. No Installation of Single Pass Cooling Systems: Installation of single pass cooling systems is prohibited in buildings requesting new water service.
- N. No Installation of Non-Recirculating Equipment in Commercial Car Wash and Laundry Systems: Installation of non-recirculating water systems is prohibited in new commercial conveyor car washes and new commercial laundry systems.
- O. Commercial Car Wash Systems: All commercial conveyor car wash systems must have installed operational re-circulating water systems or must have secured a waiver of this requirement from the City of Pasadena.
- P. Multifamily Properties: All master-metered multifamily properties with four or more dwelling units are required to certify (through a process determined by the department) that showerheads and aerators are retrofitted to meet current California Green Building Code standards.

(Ord. No. 7165, § 6, 6-1-2009; Ord. No. 7298, § 4, 3-13-2017)

13.10.035 - Water shortage plan implementation.

The department shall monitor and evaluate the projected supply and demand for water by its customers. In the event of a water shortage, the department shall recommend that the city council make a determination that a water shortage exists and which water shortage level as provided in this chapter permits the department to prudently plan for and supply water to its customers. Prior to implementation of a water shortage level as provided in this chapter, the city council shall hold a public hearing for the purposes of determining: (i) whether a water shortage exists; (ii) the water conservation target that is necessary; and, (iii) which level of water supply shortage provided in this chapter is appropriate to address the water shortage. Notice of the time and place of said public hearing shall be published not less than 10 days before the hearing in a newspaper of general circulation within the city. The city council's determination shall be made by public proclamation and shall become effective immediately upon such publication. The city council may during the period of the declared water shortage take actions to modify the water conservation target, implement a different level of water supply shortage, or order the implementation or discontinuation of any additional water conservation measures appropriate to address the water shortage by motion, and without conducting a public hearing.

(Ord. 7082 § 6, 2007; Ord. 6289 § 1 (part), 1988; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 7, 6-1-2009; Ord. No. 7298, § 5, 3-13-2017)

#### 13.10.036 - Water shortage termination.

During the course of a water shortage declared pursuant to this chapter, the department shall continuously reevaluate water supply availability. When adequate supplies are available, the department shall recommend that the city council make a determination that a water shortage no longer exists. Prior to terminating a declared water shortage as provided in this chapter, the city council shall hold a public hearing for the purposes of determining whether: (i) the water shortage no longer exists; or (ii) a water shortage plan implementation shall continue. Upon a finding by the city council that a water shortage no longer exists, any water shortage level then in effect shall terminate.

(Ord. No. 7298, § 6, 3-13-2017)

#### 13.10.037 - Exemptions from watering day limitations.

The following uses of potable water, as determined by the department in its sole discretion, are exempt from the more restrictive watering day limitations set forth in Sections 13.10.040 through 13.10.052 of this chapter (Water Supply Shortage Levels 1 through 4):

- A. Landscape irrigation zones that exclusively use low flow drip type irrigation systems where no emitter produces more than 2 gallons of water per hour;
- B.

Watering or irrigating by use of a hand-held bucket or similar container, or a hand-held hose equipped with a water shut-off nozzle or device;

- C. Watering for very short periods of time for the express purpose of adjusting or repairing an irrigation system;
- D. Maintenance of trees as necessary to sustain their health and viability;
- E. Maintenance of vegetation, including fruit trees and shrubs, intended for consumption;
- F. Maintenance of landscape for fire protection;
- G. Maintenance of landscape for soil erosion control;
- H. Maintenance of plant materials identified to be rare or essential to the well-being of protected species;
- I. Maintenance of landscape within active public parks and playing fields including playing fields on school grounds and at day care centers, provided that such irrigation is for the express purpose of maintaining the landscape in a condition required for recreation playing fields and athletic events, and does not exceed 3 days per week;
- J. Establishment of newly planted drought tolerant landscape consisting of drought tolerant plants, shrubs, and/or native plants; and
- K. Actively irrigated environmental mitigation projects.

(Ord. No. 7298, § 7, 3-13-2017)

#### 13.10.040 - Level 1 water supply shortage.

- A. A level 1 water supply shortage exists when the city council determines, in its sole discretion, that due to drought or other water supply conditions a water supply shortage or threatened shortage exists and demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Upon the declaration by the city council of a level 1 water supply shortage, the department shall implement the mandatory level 1 conservation measures identified in this section.
- B. Water Conservation Measures: The following water conservation requirements apply during a declared level 1 water supply shortage:
  - 1. Limits on Watering Days: Watering or irrigating of lawn, landscape or other vegetated area is limited to 3 days per week from April 1 through October 31, and no more than 1 day per week from November 1 through March 31, on a schedule established and posted by the department. This subsection does not apply to categories of use determined to be exempt under Section 13.10.037 of this chapter.
  - 2.

Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks or other malfunctions in the water user's plumbing or distribution system shall be repaired within 72 hours of notification by the department unless other arrangements are made with the department.

(Ord. 6289 § 1 (part), 1988; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 8, 6-1-2009; Ord. No. 7298, § 8, 3-13-2017)

#### 13.10.045 - Level 2 water supply shortage.

- A. A level 2 water supply shortage exists when the city council determines, in its sole discretion, that due to drought or other water supply conditions a water supply shortage or threatened shortage exists and demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Upon the declaration by the city council of a level 2 water supply shortage, the department shall implement the mandatory level 2 conservation measures identified in this section.
- B. Water Conservation Measures: The following water conservation requirements apply during a declared level 2 water supply shortage:
  1. Limits on Watering Days: Watering or irrigating of lawn, landscape or other vegetated area with water is limited to 2 days per week from April 1 through October 31, and no more than 1 day per week from November 1 through March 31, on a schedule established and posted by the department. This subsection does not apply to categories of use determined to be exempt under Section 13.10.037 of this chapter.
  2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks or other malfunctions in the water user's plumbing or distribution system shall be repaired within 48 hours of notification by the department unless other arrangements are made with the department.
  3. Limits on Filling Ornamental Lakes or Ponds: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, or for lakes and ponds that may be used for wildfire suppression.

(Ord. 6289 § 1 (part), 1988)

(Ord. No. 7165, § 9, 6-1-2009; Ord. No. 7298, § 9, 3-13-2017)

#### 13.10.050 - Level 3 water supply shortage.

- A. A level 3 water supply shortage exists when the city council determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and demand reduction is necessary to make more efficient use of water and appropriately

respond to existing water conditions. Upon the declaration by the city council of a level 3 water supply shortage, the department shall implement the mandatory level 3 conservation measures identified in this section.

B. Water Conservation Measures: The following water conservation requirements apply during a declared level 3 water supply shortage:

1. Limits on Watering Days: Watering or irrigating of lawn, landscape or other vegetated area is limited to 1 day per week, according to a schedule established and posted by the department. This subsection does not apply to categories of use determined to be exempt under Section 13.10.037 of this chapter.
2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks or other malfunctions in the water user's plumbing or distribution system shall be repaired within 36 hours of notification by the department, unless other arrangements are made with the department.
3. Limits on Filling Ornamental Lakes or Ponds: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, or for lakes and ponds that may be used for wildfire suppression.

(Ord. 6425 § 2, 1991; Ord. 6289 § 1 (part), 1988; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 10, 6-1-2009; Ord. No. 7298, § 10, 3-13-2017)

13.10.052 - Level 4 water supply shortage — Emergency condition.

A. A level 4 water supply shortage condition is also referred to as an "emergency" condition. A level 4 condition exists when the city council declares a level 4 water supply shortage. Upon the declaration by the city council of a level 4 water supply shortage, the department will implement the mandatory level 4 conservation measures identified in this section.

B. Water Conservation Measures: The following water conservation requirements apply during a declared level 4 water supply shortage:

1. No Watering or Irrigating: Watering or irrigating of lawn, landscape or other vegetated area is prohibited. This restriction does not apply to categories of use determined to be exempt under Section 13.10.037 of this chapter.
2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks or other malfunctions in the water user's plumbing or distribution system shall be repaired within 24 hours of notification by the department, unless other arrangements are made with the department.
3. Limits on Filling Ornamental Lakes or Ponds: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, or for lakes and ponds that may be used for wildfire suppression.
- 4.

Limits on Filling Single Family Residential Swimming Pools and Spas: Refilling of more than 1 foot and initial filling of single family residential swimming pools or outdoor spas is prohibited.

5. No New Potable Water Service: Upon declaration of a level 4 water supply shortage, no new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to service or provide potable water service will be issued, except under the following circumstances:
  - i. A valid, unexpired building permit has been issued for the project; or
  - ii. The project is necessary to protect the public health, safety and welfare; or
  - iii. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the department.

This subsection does not preclude the resetting or turn-on of meters to provide continuation of water service or the restoration of service that has been interrupted for a period of 1 year or less.

(Ord. No. 7165, § 11, 6-1-2009; Ord. No. 7298, § 11, 3-13-2017)

13.10.055 - Reserved.

**Editor's note**— Ord. No. 7165, § 12, adopted June 1, 2009, repealed § 13.10.055. Former § 13.10.055 pertained to exception and derived from Ord. No. 6275, § 1 (part), adopted in 1988.

13.10.060 - Additional water shortage measures.

The city council may order implementation of other water conservation measures additional to those set forth in this chapter. Such additional water shortage measures shall be implemented in the manner provided in section [13.10.035](#).

(Ord. 6289 § 2 (part), 1988; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 13, 6-1-2009)

13.10.065 - Violations and penalties: Residential customers and all other customers with water meters less than 1-½ inch.

- A. Violation: A customer shall be responsible for all uses of water served by the customer's water meter. Violation of any of the provisions of this chapter shall be the responsibility of the customer.
- B. Penalties: Monetary penalties imposed under this section shall be collected by adding the same to the customer's water bill and shall be payable at the same time and in the same manner as such bills or by such other method of collection and payment as established by the department.

Penalties for failure to comply are as follows:

1. First Violation: The department will issue a written notice of violation. Said notice shall contain, in addition to the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the alleged violation. Notice of violation shall be sent through regular mail to the address at which the customer is billed by the department.
2. Second Violation: A second violation within the preceding 12 calendar months is punishable by a fine of \$100.00.
3. Third Violation: A third violation within the preceding 12 calendar months is punishable by a fine of \$200.00.
4. Fourth Violation: A fourth violation within the precluding 12 calendar months is punishable by a fine of \$350.00.
5. Fifth and Subsequent Violations: A fifth and any subsequent violation is punishable by a fine of \$500.00.

(Ord. 6425 § 3, 1991; Ord. 6289 § 2 (part), 1988; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 14, 6-1-2009)

13.10.067 - Violations and penalties: Non-residential customers with water meters 1-½ inch or larger.

- A. Violation: A customer shall be responsible for all uses of water served by the customer's water meter. Violation of any of the provisions of this chapter shall be the responsibility of the customer.
- B. Penalties: Monetary penalties imposed under this section shall be collected by adding the same to the customer's water bill and shall be payable at the same time and in the same manner as such bills or by such other method of collection and payment as established by the department. Penalties for failure to comply are as follows:
  1. First Violation: The department will issue a written notice of violation. Said notice shall contain, in addition to the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the alleged violation. Notice of violation shall be sent through regular mail to the address at which the customer is billed by the department.
  2. Second Violation: A second violation within the preceding 12 calendar months is punishable by a fine of \$200.00.
  3. Third Violation: A third violation within the preceding 12 calendar months is punishable by a fine of \$400.00.
  - 4.

Fourth Violation: A fourth violation within the preceding 12 calendar months is punishable by a fine of \$700.00.

5. Fifth and Subsequent Violations: A fifth and any subsequent violation is punishable by a fine of \$1,000.00.

(Ord. No. 7165, § 15, 6-1-2009)

13.10.070 - Reserved.

**Editor's note**— Ord. No. 7165, § 16, adopted June 1, 2009, repealed § 13.10.070. Former § 13.10.070 pertained to notices of violation and derived from Ord. No. 6275, § 1 (part), adopted in 1988; and Ord. No. 6289, § 2 (part), adopted in 1988.

13.10.075 - Right to hearing—Stay.

Any customer receiving a notice of violation with a monetary fine, potential flow restrictor or service disconnection shall have a right to a hearing by the general manager of the department, or his or her designee, on the merits of the alleged violation upon that customer's written request to the department. Customer's written request for a hearing must be received by the department within 10 days of the date of notification of the violation or customer's right to a hearing shall be deemed waived. The customer shall be deemed notified of a violation upon the personal delivery of the notice to customer or, if personal delivery is not given, the date on which the notice is placed in the regular mail. The customer's timely written request for a hearing shall automatically stay the imposition of penalty until the general manager of the department, or his or her designee, renders a decision. No other or further stay shall be granted by the department. The department may issue regulations to govern the contents of the request for hearing and the manner in which such hearings may be conducted.

A customer may, with the concurrence of the general manager, waive the right to hearing and elect one of the following options in lieu of the imposition of a penalty: (i) complete a water efficiency training class offered by the department; (ii) complete all recommendations presented in a landscape audit; (iii) retrofit inefficient fixtures or irrigation systems; and/or (iv) timely complete such other water savings program as the department may establish for the customer. The customer and the department shall establish a timetable for completion of the selected option. In event the customer fails to satisfactorily and completely perform the option within the established timetable, the department shall impose the penalty. A customer shall not be eligible to elect the same option more than once within a 12-month period.

(Ord. 6289 § 2 (part), 1988; Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 17, 6-1-2009; Ord. No. 7298, § 12, 3-13-2017)

13.10.080 - Reservation of rights.

The rights of the department hereunder shall be cumulative to any other right of the department to discontinue service. All monies collected pursuant to the penalty provisions of this chapter shall be deposited in the water fund.

(Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 18, 6-1-2009)

#### 13.10.085 - Reserved.

**Editor's note**— Ord. No. 7165, § 19, adopted June 1, 2009, repealed § 13.10.085. Former § 13.10.085 pertained to application for relief and derived from Ord. No. 6275, § 1 (part), adopted in 1988; and Ord. No. 6289, § 3, adopted in 1988.

#### 13.10.090 - Willful misrepresentation.

Notwithstanding any other provision of law, and in addition thereto, and not in lieu thereof, any willful misrepresentation of a material fact by any person to the department, made for the purpose of securing relief from the provisions of this chapter for any customer, is unlawful. A violation of this section shall be punishable by a fine not exceeding the sum of \$500, or by imprisonment in the county jail for a period not to exceed 6 months, or by both such fine and imprisonment.

(Ord. 6275 § 1 (part), 1988)

#### 13.10.095 - Flow restrictors and disconnecting service.

- A. **Water Flow Restrictor:** Where necessary to achieve compliance, the department may install a water flow restrictor device of approximately 1 gallon per minute capacity for services up to 1½-inch meter size and comparably sized restrictors for larger services. The department will provide the customer with written notice of intent to install a flow restrictor a minimum of 48 hours in advance of installation.
- B. The customer shall be responsible for payment of the department's charges for installing and removing any flow restrictor device and for disconnection and reconnecting service. The charge for installing or removing any flow restrictor device must be paid to the department before the device is removed. Nonpayment will be subject to the same remedies as nonpayment of basic water service billing.
- C. **Discontinuing Service:** In addition to any penalties and/or the installation of a water flow restrictor, the department may disconnect a customer's water service for continuing or willful violations of this chapter.

(Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 20, 6-1-2009)

#### 13.10.100 - Customer water conservation reports.

At the written request of the general manager of the department, all commercial and industrial customers using 25,000 billing units per year or more shall submit a water conservation plan to the department on a form and with a content approved by the department. These users shall thereafter submit quarterly reports to the department on the progress of their conservation plans. The conservation plan must include recommendations for increased water savings and the reports must include progress to date on implementation of such recommendations.

(Ord. 6275 § 1 (part), 1988)

(Ord. No. 7165, § 21, 6-1-2009)

#### 13.10.105 - Public nuisance.

In addition to the penalties provided in this chapter, any condition caused or permitted to exist in violation of any of the provisions of this chapter shall be deemed a public nuisance and may be, by the city, summarily abated as such, and each day such condition continues shall be regarded as a new and separate offense.

(Ord. 6275 § 1 (part), 1988)

#### 13.10.110 - Severability.

If any section, subsection, sentence, clause or phrase in this chapter is for any reason held invalid, the validity of the remainder of the chapter will not be affected. The city council hereby declares it would have passed this chapter and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that one or more sections, subsections, sentences, clauses or phrases or is declared invalid.

(Ord. No. 7165, § 22, 6-1-2009)

## **Appendix B: City of Pasadena Local Hazard Mitigation Plan**



# LOCAL HAZARD MITIGATION PLAN

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## RECORD OF REVIEWS AND REVISIONS

Revision #	Date	Revisions Made	Entered By

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## PLAN DISTRIBUTION

Date	Plan Version	Method of Distribution (Email, Post on Server, Provide Hard Copy, etc.)	Distributed To (Name and Department/Organization)

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## SECTION 1: INTRODUCTION

The City of Pasadena (City) has prepared the 2025 Local Hazard Mitigation Plan (LHMP) to assess the natural and human-caused risks to the City and to reduce the potential impact of these hazards by creating mitigation strategies. The 2025 LHMP represents the City's commitment to create a safer and more resilient community by taking actions to reduce risk and by committing resources to lessen the effects of hazards on the residents and property of the City.

This plan complies with the Federal Disaster Mitigation Act (2000), Federal Register 44 CFR Parts 201 and 206, which modified the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section, 322 - Mitigation Planning. As of November 1, 2004, this law requires local governments to develop and submit hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and other mitigation project grants. The City Fire Department has coordinated the preparation of the LHMP in cooperation with the City departments, community stakeholders, partner agencies, and members of the public.

This introduction to the LHMP provides a brief description of hazard mitigation planning, local mitigation plan requirements, and an outline of the 2025 LHMP. There is also an overview of Federal Emergency Management Agency (FEMA) programs and grants related to hazard mitigation.

### 1.1 Hazard Mitigation Planning

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. In general, hazard mitigation is done to minimize the impact of a hazard event before it occurs, intending to reduce losses from future disasters. 44 CFR § 201.1(b) states that the purpose of mitigation planning is for local governments to identify the hazards that impact them, to identify actions and activities to reduce losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

For the City, hazard mitigation planning is a process in which the City will:

- Identify and profile hazards that affect the City
- Analyze the City facilities and infrastructure at risk from those hazards
- Develop a mitigation strategy and actions to lessen or reduce the impact of the hazards profiled
- Implement the strategy and actions that may involve planning, policy changes, programs, projects, and other activities

The City's implementation of mitigation actions, which include short-term or long-term strategies, is the planning process's primary objective. This type of planning will supplement the City's comprehensive planning and emergency management programs.

## 1.2 Local Mitigation Planning Requirements

Hazard mitigation planning is governed by the Stafford Act, as amended by the Disaster Mitigation Act of 2000 (DMA 2000), and by federal regulations implementing the Stafford Act. DMA 2000 revised the Stafford Act to require state, local, and tribal governments to develop and submit to FEMA a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the jurisdiction. Plan approval by FEMA is a prerequisite to receiving federal hazard mitigation grant funds.

To implement the mitigation planning requirements of the Stafford Act, FEMA promulgated 44 CFR Part 201, the federal regulations governing the planning process, plan content, and the process for obtaining approval of the plan from FEMA. The planning requirements set forth in the CFR are identified throughout this plan mirroring the order of the FEMA Regulation Checklist in the Local Mitigation Planning Handbook.

Federal law and the State of California’s requirements for hazard mitigation plans require coverage of only natural hazards. The City’s Hazard Mitigation Plan (2018) includes technological and human-caused hazards as well as natural hazards. The planning team decided to cover both natural and technological/human-caused hazards for the LHMP, including a description and analysis of each hazard.

FEMA has produced a Local Mitigation Plan Review Tool, which has been tailored by Region IX as an appendix to the Local Mitigation Planning Handbook (2023), to demonstrate how the mitigation plan meets the regulation in 44 CFR § 201.6 and offers State and FEMA Mitigation Planners an opportunity to provide feedback to the jurisdiction. The Plan Review Tool has a regulation checklist that provides a summary of FEMA’s evaluation of whether the plan has addressed all requirements. Local planners can also use the checklist prior to submitting the plan for approval to ensure they have addressed all the requirements. The Local Mitigation Plan Review Tool Regulation Checklist is provided in **Appendix A** of this document.

## 1.3 Hazard Mitigation Plan Description

The 2025 LHMP consists of the sections and appendices described below:

**Table 1-1: Plan Sections, Appendices, and Descriptions**

Section	Description
<b>Section 1: Introduction</b>	Section 1 includes an introduction to hazard mitigation planning, lists the LHMP planning requirements, provides a description of the plan, and discusses grants related to hazard mitigation.

Section	Description
<b>Section 2: Hazard Mitigation Planning Organization and Process</b>	Section 2 describes the planning process for the 2025 LHMP, including an overview of how the LHMP was prepared, identification of the LHMP planning team, involvement of outside agencies and communities, the inclusion of related plans, reports, and information, and stakeholder and public outreach activities.
<b>Section 3: Planning Area Description</b>	Section 3 includes a description of the natural and built states of the City, including climate, geography, demographics, land use, and economic conditions.
<b>Section 4: Risk Assessment</b>	Section 4 provides a list of the hazards identified in the 2025 LHMP, a profile of each hazard and hazard summary, and a risk assessment of the planning area. Additionally, identifies and evaluates the resources available for hazard mitigation within the City.
<b>Section 5: Mitigation Strategy</b>	Section 5 identifies and evaluates the current, ongoing, and completed mitigation projects and programs in the City and lists mitigation strategies for reducing potential losses.
<b>Section 6: Plan Implementation and Maintenance</b>	Section 6 describes procedures for updating the LHMP to keep it current and for continued public engagement in the planning process.
<b>Section 7: Plan Approval and Adoption</b>	Section 7 includes documentation of California Office of Emergency Services (Cal OES) and the U.S. Federal Emergency Management Agency (FEMA) processes and adoption of the LHMP by the City Council
<b>Appendix A</b>	Appendix A contains the FEMA Local Mitigation Plan Review Tool, which documents the City's compliance with the local hazard mitigation plan requirements of 44 CFR Part 201.
<b>Appendix B</b>	Appendix B contains documentation of the planning process for the planning team, including invitations, attendee lists, meetings minutes, presentations, emails, etc.

Section	Description
<b>Appendix C</b>	Appendix C contains documentation of the planning process, including surveys, social media outreach and opportunity for comment for the stakeholders and public, and other stakeholder/public outreach efforts.
<b>Appendix D</b>	Appendix D lists acronyms and abbreviations used in the 2025 LHMP.

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## 1.4 Grant Programs with Mitigation Plan Requirements

Currently, three (3) FEMA grant programs provide funding to local entities that have a FEMA-approved local mitigation plan meeting federal hazard mitigation plan requirements. Two (2) of the grant programs are authorized under the Stafford Act. The remaining two (2) programs are authorized under the National Flood Insurance Act.

### 1.4.1 Stafford Act Grant Programs

FEMA funding is provided to state, local, and tribal governments that have an approved Hazard Mitigation Plan through the following programs.

#### *Hazard Mitigation Grant Program (HMGP)*

The HMGP provides grants to implement long-term hazard mitigation measures after declaration of a major disaster. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. To qualify for HMGP funding, projects must provide a long-term solution to a problem, and the project's potential savings must exceed the cost of implementing the project.

HMGP funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. Under the program, the federal government may provide a state or tribe with up to 20 percent of the total disaster grants awarded by FEMA and may provide up to 75 percent of the cost of projects approved under the program.

### 1.5.2 National Flood Insurance Act Grant Programs

#### *Flood Mitigation Assistance Grant Program*

The goal of the Flood Mitigation Assistance (FMA) Grant Program is to reduce or eliminate flood insurance claims under the National Flood Insurance Program (NFIP). This program emphasizes mitigating repetitive loss (RL) properties. The primary source of funding for the FMA program is the National Flood Insurance Fund. Grant funding is available for planning, project, and technical assistance. Project grants are awarded to local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. In FY 2014, FMA funding totaled \$89 million. The cost-share for this grant is 75 percent federal and 25 percent nonfederal. However, a cost-share of 90 percent federal and 10 percent nonfederal is available in certain situations to mitigate severe repetitive loss (SRL) properties.

*Repetitive Flood Claims Program*

The Repetitive Flood Claims (RFC) Program provides funding to reduce or eliminate the long-term risk of flood damage to residential and non-residential structures insured under the NFIP. Structures considered for mitigation must have had one or more claim payments for flood damage. All RFC grants are eligible for up to 100 percent federal assistance.

## SECTION 2: PLANNING PROCESS

The requirements for documentation of the LHMP planning process are described below. This section summarizes the planning area's hazard mitigation planning efforts in 2025. In addition, the section describes public and stakeholder outreach efforts as part of the LHMP planning process. The section also summarizes the review and incorporation of existing plans, studies, and reports used to develop the LHMP.

Documentation of the 2025 LHMP planning process for the Hazard Mitigation Planning Team is provided in **Table 2-1**, and documentation of the process for the public and stakeholders is found in **Table 2-2**. These appendices document the planning meetings and outreach and include meeting agendas, presentation, sign-in sheet, minutes, social media materials and other documentation used to conduct the planning process.

The planning process began with the City establishing the planning team and emailing stakeholders within the planning area to invite them to participate in the process. The City also posted a notice on its website announcing the planning process that contained a mechanism to provide input and feedback. In addition, the City identified the financial and technical resources required to update the LHMP. Once all the City's financial and technical resources were identified, the City established the planning team and created a schedule for the process.

### 2.1 Plan History

The 2025 LHMP is an update of the 2018-19 Plan. It combines Human Caused hazards into one category and removes Agricultural Pests, Aircraft Crashes, Radiological Incidents, and Train Accidents. The 2025 LHMP contains many of the mitigation actions listed in the 2018-19 version as they are ongoing and still relevant.

### 2.2 Plan Purpose and Authority

The purpose of the Plan is to identify natural and human-caused hazards that impact the City, to assess the vulnerability and risk posed by those hazards to City-wide human and structural assets, to develop strategies for mitigation of those identified hazards, to present future maintenance procedures for the plan, and to document the planning process.

The Plan is prepared in compliance with DMA 2000 requirements and represents an updated LHMP.

The requirements for adopting this LHMP by all local governing bodies, as set forth in the Stafford Act and as amended by DMA 2000 and its implementing regulations, are

described below. The local planning requirements are documented throughout the LHMP and in **Appendix A**, *FEMA Local Mitigation Plan Review Tool*.

The City's 2025 Operations Budget provided funding for the development of the Plan. Navigating Preparedness Associates was retained by the City to provide consulting services in guiding the planning process and Plan development.

### 2.3 Planning Process Description

In August 2025, the planning process for the 2025 LHMP began. Select staff from various departments in the City, and other stakeholders were invited to join the Hazard Mitigation Planning Team to develop the 2025 LHMP. Representatives from the County of Los Angeles, Disaster Management Area Coordinator, CalTech, Jet Propulsion Laboratory, and Pasadena City College were invited to the Planning Team meetings. Documentation of participant outreach and public engagement are in **Appendices B and C**.

### 2.4 Planning Team

Members of the LHMP planning team are listed in **Table 2-1** below.

**Table 2-1: LHMP Planning Team**

Department or Agency	Member Name	Key Role
City Clerk	Mark Jomsky	Planning Team Member
City Manager's Office	Alexander Souto	Planning Team Member
City Manager's Office	Henry Frometa	Planning Team Member
City Manager's Office, PIO	Lisa Derderian	Planning Team Member
City Manager's Office	Sara Goldman	Planning Team Member
Finance	Armine Trashian	Planning Team Member
Finance	Gloria Acevedo	Planning Team Member
Fire	Anthony James	Planning Team Member
Fire	Nallely Procopio	Planning Team Member

<b>Department or Agency</b>	<b>Member Name</b>	<b>Key Role</b>
<b>Housing</b>	Jennifer O'Reilly-Jones	Planning Team Member
<b>Human Resources</b>	Brady Griffin	Planning Team Member
<b>Information Technology</b>	Dan Augustyn	Planning Team Member
<b>Library</b>	William Petry	Planning Team Member
<b>Parks, Recreation, and Community Services</b>	Koko Panossian	Planning Team Member
<b>Parks, Recreation, and Community Services</b>	Melchor Alonzo	Planning Team Member
<b>Planning &amp; Community Development</b>	David Sinclair	Planning Team Member
<b>Planning &amp; Community Development</b>	Anita Cerna	Planning Team Member
<b>Planning &amp; Community Development</b>	Jesse De Anda	Planning Team Member
<b>Police</b>	Arthur Chute	Planning Team Member
<b>Police</b>	Derek Locklin	Planning Team Member
<b>Police</b>	Jose Urita	Planning Team Member
<b>Public Health</b>	Adrienne Kim	Planning Team Member
<b>Public Health</b>	Michael Oshiro	Planning Team Member
<b>Public Works</b>	Brent Maue	Planning Team Member
<b>Public Works</b>	Hayden Melbourn	Planning Team Member
<b>Public Works</b>	Mandy Templeton	Planning Team Member
<b>NPA</b>	Lee Rosenberg	NPA Project Manager

Department or Agency	Member Name	Key Role
NPA	Francisco Soto	NPA Lead Planner

### 2.4.1 Planning Team Activities

Three (3) meetings were held with the planning team: representatives from the City held the responsibility of chairing the planning team. The City project manager reviewed all documents and sent out meeting notices. **Appendix B** documents the LHMP planning activities. The planning team's responsibility included providing feedback on hazards that affect the planning area, reviewing drafts of the plan, and participating in developing mitigation activities.

**Table 2-2: Planning Activities**

Date	Activity	Purpose
8/29/2024	LHMP Project Kickoff Meeting Team Meeting #1	Introduce core Planning Team members, review the project management plan, align expectations. Describe the regulatory issues of LHMP, the value of them, and the LHMP planning process. Distribute data collection forms.
11/14/2024	LHMP Planning Team Meeting #2	Review potential hazards and select those that pose risks. Use CPRI. Review status of 2018 mitigation activities and update status. Review data-collection-sheet inputs, begin to develop potential mitigation activities. Request information for hazard analysis and potential losses
2/18/2025	LHMP Planning Team Meeting #3	Review risk assessment and potential losses. Develop draft mitigation goals and actions. Review current plan mitigation activities.

### 2.4.2 Other Jurisdictions Agency/Organizational Participation

External organizations listed below participated in Planning Team meetings and reviewed drafts of the plan. They were invited by an MS Outlook invitation to the meetings. **Appendix B**, Planning Team Meetings notes, documents their engagement. **Table 2-3** lists the organizations and attendees that were contacted to participate in the planning process.

**Table 2-3: Organization Participation**

Organization	Staff
Pasadena City College	Alexander Boekelheide
The Rose Bowl	Jenessa Castillo
California Institute of Technology	Catherine Christensen
Disaster Management Area Coordinator – Area C	Soraya Sutherlin
Jet Propulsion Laboratory	Chief David Dollarhide
Los Angeles County Office of Emergency Management	Sinan Khan
City of South Pasadena	Andy Dubois
City of San Marino	Mario Rueda
City of Glendale	Tommy Nicola
City of Burbank	Eric Baumgardner
City of Pasadena Accessibility and Disability Commission (Underserved Community)	Sara Goldman
City of Pasadena Home Instruction for Parents of Preschool Youngsters (Underserved Community)	Marina Ovanessian

Copies of the draft LHMP were provided to the City Planning Team, including the participating organizations above, and distributed to the public for their review. Comments received from these partners are incorporated in the final draft of the LHMP and are documented in **Appendix C**.

## 2.5 Community Engagement

Once the planning process commenced, the City provided public notification through its website, press release, and social media accounts. Additionally, the City conducted an online survey to solicit input on the hazards that the City faces and the types of mitigation activities the City should undertake. The draft LHMP was placed on the City website; and hard copies were posted at City Hall and City libraries for public review and comment. Notification of the draft LHMP review and adoption by the City Council was advertised as required by the Brown Act. To reach residents who might get their information from other sources, the City included a hazard mitigation flyer within the water department's customer bills.

The public survey input from the 189 respondents was used to select hazards and rank their effects. Earthquake and Wildfire were ranked as the two (2) top hazards of concern for residents. This input was also used to inform the Calculated Priority Risk Index (CPRI) in **Table 4-2**. Finally, survey input was used to select mitigation actions. Input from publicly posting the draft LHMP was used to refine the Plan and to prepare it for submission for review.

On November 19, 2024, the City posted information about the LHMP update process on its website and social media channels; and invited the public to take a Hazard Mitigation Survey to gather information about the public's knowledge of hazards in the City and their level of preparedness. **Appendix C** contains screenshots of the website, social media, and survey. The City also invited surrounding cities and other stakeholders to review the LHMP. **Appendix C** contains the invitation and feedback received. A survey was distributed to request feedback on the Public Review Draft of the 2025 Hazard Mitigation Plan. The feedback provided valuable insight to the community's concerns regarding wildfire mitigation. Based on the feedback received, the City added several mitigation actions to mitigate wildfire risk, including conducting fuel modification projects to reduce fire hazard risks and creating a wildfire ordinance to reduce development in wildfire hazard zones.

On November 19, 2024, the City hosted their monthly Accessibility and Disability Commission meeting which included a presentation on the hazard mitigation planning process.

On June 9, 2025, a draft of the plan was distributed to the public for review and input. The planning team received 23 comments on the public review draft plan. After reviewing the comments, portions of the LHMP were modified or expanded. One comment received provided detailed recommendations for additional input to the LHMP from and integration with other planning mechanisms such as the City’s planning commission. While the recommendations are valuable, the planning team elected to table them until the next plan review as the current LHMP is expired and the City needs an approved LHMP for current HMPG funding opportunities.

**Table 2-4: Public Engagement Activities**

Date	Activity	Documentation
<b>November 19, 2024 - Present</b>	Survey posted on City Website with links provided in social media accounts. General Hazard Mitigation documents.	Documentation 1 – Survey Documentation 2 – Posting on City Instagram Account Documentation 3 – Posting on City Facebook Account Documentation 4 – News release Documentation 5 – Google Search Documentation 6 – Posting on City website Documentation 7 – LHMP Flyer (English) Documentation 8 – LHMP Flyer (Spanish) Documentation 9 – LHMP Flyer (Chinese) Documentation 10 – Survey (Spanish) Documentation 11 – Survey (Chinese) Documentation 12 – City website presentation and newsletter
<b>November 19, 2024</b>	Public Meetings	Documentation 13: Accessibility & Disability Commission Presentation Agenda

Date	Activity	Documentation
<b>3 months</b>	Public hazard mitigation survey conducted.	Documentation 14: Survey results
<b>Ongoing</b>	Outreach Materials at Public Facing Facilities	Documentation 15: Outreach Materials at Public Facing Facilities
<b>6/9/2025</b>	Draft LHMP provided for public review.	Documentation 16: Survey Distribution for Feedback
<b>Ongoing</b>	Survey Results to Public Review Draft Feedback	Documentation 17: Survey Distribution for Feedback
<b>6/24/2025</b>	Draft LHMP provided to neighboring jurisdiction for review and comment.	Documentation 18: Email/Feedback

## 2.6 Incorporation into Other Planning Mechanisms

The City's 2018-19 LHMP provides key input to and was incorporated into the following planning mechanisms:

1. City Emergency Operations Plan - Hazards descriptions in the LHMP were abbreviated and included in the EOP.
2. General Plan - Land Use Policies: Reviews of zoning and land use policies were conducted to align with hazard mitigation priorities, such as restricting development in flood-prone areas.

The City's 2025 hazard mitigation identification, risk assessment, plan recommendations and mitigation actions will be integrated into the following planning mechanisms.

Emergency Operations Plan

1. Hazards identified in this LHMP were incorporated into the EOP.
2. Align Response Strategies: Ensured that the EOP incorporates the hazard profiles and mitigation strategies from the LHMP for a cohesive response framework.
3. Training and Exercises: Conducted joint training and exercises based on scenarios identified in the LHMP to improve preparedness.

#### Public Health Emergency Operations Plan

1. The prior LHMP informed the risk assessment of the Public Health Emergency Operations Plan.

#### Capital Improvement Plan (CIP)

1. Aligned LHMP actions with climate adaptation strategies to address the increasing frequency and severity of hazards due to climate change. For example, enhanced urban green spaces to mitigate heatwaves.
2. Infrastructure Resilience: Planned for resilient infrastructure investments, such as upgrading drainage systems to handle increased rainfall.

#### Building Codes and Regulations:

1. Strengthen Building Standards: Update building codes to incorporate hazard-resistant construction practices, such as seismic retrofitting for earthquake-prone areas.
2. Enforcement and Incentives: Implement enforcement mechanisms and provide incentives for property owners to comply with updated building standards.

#### Community Rating System (CRS)

1. Enhanced Floodplain Management: Integrated LHMP strategies into the CRS to improve floodplain management and potentially lower flood insurance premiums for residents.
2. Public Education: Used CRS outreach activities to educate the public about hazard mitigation and preparedness.

#### Climate Action Plan:

1. Developed climate adaptation strategies and actions that complement other hazard mitigation strategies when appropriate.

2. Address Climate Risks: Aligned LHMP actions with the Climate Action Plan to address climate-related hazards such as extreme heat, wildfires, and flooding.

### General Plan

1. When possible, updated the Housing Element, Safety Element, and/or local hazard mitigation plan concurrently or sequentially to synchronize long-term integration and meet SB 1035 requirements.
2. Incorporated Hazard Mitigation Goals: Embed the LHMP's goals and objectives into the city's general plan to ensure alignment with broader land use and development policies.
3. Land Use Policies: Updated zoning and land use policies to reflect hazard mitigation priorities, such as restricting development in flood-prone areas.

Incorporating a diverse range of plans and strategies into the Local Hazard Mitigation Plan ensures a comprehensive approach to reducing risks and enhancing community resilience. By addressing risk assessments, land use planning, infrastructure resilience, community engagement, emergency response, natural resource management, economic resilience, and continuous monitoring, communities can better prepare for, respond to, and recover from hazards and disasters.

## 2.7 Review of Existing Plans, Reports, Technical Documents, and Data

In updating the LHMP, the Planning Team used many resource documents and references. **Table 2-5** contains a comprehensive list of guidance, policy tools, extant plans, and authorities incorporated to create the current Plan.

**Table 2-5: Resource Documents and References Reviewed and Incorporated in the Plan**

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
<b>California State Hazard Mitigation Plan (2023)</b> <a href="https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/2023-">https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/2023-</a>	Technical and Planning Resource	Provides the State of California's Hazard Mitigation Plan for 2023-2028. Describes hazards that informed the hazard analysis and risk assessment portion of this

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
<a href="#">California-SHMP Volume-1 11.10.2023.pdf</a>		LHMP.
<p>County of Los Angeles All Hazards Mitigation Plan (2020)</p> <p><a href="https://ceo.lacounty.gov/wp-content/uploads/2023/08/County-of-Los-Angeles-All-Hazards-Mitigation-Plan-APPROVED-05-2020.pdf">https://ceo.lacounty.gov/wp-content/uploads/2023/08/County-of-Los-Angeles-All-Hazards-Mitigation-Plan-APPROVED-05-2020.pdf</a></p>	Technical and Planning Resource	Describes hazards that informed the hazard analysis and risk assessment sections of this LHMP.
<p>California Energy Commission (2018). California's Fourth Climate Change Assessment</p> <p><a href="https://www.energy.ca.gov/data-reports/reports/californias-fourth-climate-change-assessment">https://www.energy.ca.gov/data-reports/reports/californias-fourth-climate-change-assessment</a></p>	Technical and Planning Resource	Describes monitoring, analysis, and modeling of climate as well as efforts designed to reduce emissions.
<p>FEMA Dam Safety</p> <p><a href="https://www.fema.gov/emergency-managers/risk-management/dam-safety">https://www.fema.gov/emergency-managers/risk-management/dam-safety</a></p>	Technical Resource	Database used in the dam failure hazard profiling. Used in the risk assessment.
<p>National Weather Service</p> <p><a href="https://www.weather.gov/">https://www.weather.gov/</a></p>	Technical Resource	Source for hazard information, data sets, and historical event records. Used in the risk assessment.
<p>United States Geological Survey Earthquake Hazards Program.</p> <p><a href="https://www.usgs.gov/programs/earthquake-hazards">https://www.usgs.gov/programs/earthquake-hazards</a></p>	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
<p>Western Regional Climate Center</p>	Website Data	Online resource for climate data used in climate discussion.

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
<a href="https://wrcc.dri.edu/">https://wrcc.dri.edu/</a>		
<b>California Department of Conservation</b> <a href="https://www.conservation.ca.gov/cgs/geohazards">https://www.conservation.ca.gov/cgs/geohazards</a>	Technical and Planning Resource	Identifies significant geologic hazards that exist, or are likely to exist, so that informed land use and emergency response planning decisions can be made.
<b>California Department of Water Resources</b> <a href="https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams/Inundation-Maps">https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams/Inundation-Maps</a> <a href="https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2">https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2</a>	Technical and Planning Resource	Provides information on dam safety, a list of dams within California and dam inundation maps for dams in the planning area.
<b>Federal Emergency Management Agency</b>	Technical and Planning Resource	Resource for LHMP guidance (How-To series), floodplain and flood-related NFIP data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy.
<b>Cybersecurity &amp; Infrastructure Security Agency</b> <a href="https://www.cisa.gov/">https://www.cisa.gov/</a>	Technical and Planning Resource	Resource for cybersecurity and cyberattack guidance, especially regarding critical infrastructure and public utilities. Describes historical cybersecurity incidents and lessons learned. Used in the risk assessment and mitigation strategy.
<b>HAZUS-MH</b>	Technical Resource	Base data sets within the program were used in the vulnerability analysis.
<b>National Centers for</b>	Technical	Online resource for weather-related data and historic hazard event data.

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
<b>Environmental Information</b> <a href="https://www.ncdc.noaa.gov/data-access">https://www.ncdc.noaa.gov/data-access</a>	Resource	Used in the risk assessment.
<b>National Integrated Drought Information System (2025)</b> <a href="https://www.drought.gov/drought/">https://www.drought.gov/drought/</a>	Technical Resource	Source for drought-related projections and conditions. Used in the risk assessment.
<b>California Energy Commission (2018). California’s Fourth Climate Change Assessment</b> <a href="https://www.energy.ca.gov/data-reports/reports/californias-fourth-climate-change-assessment">https://www.energy.ca.gov/data-reports/reports/californias-fourth-climate-change-assessment</a>	Technical and Planning Resource	Describes monitoring, analysis, and modeling of climate as well as efforts designed to reduce emissions.
<b>California Governor’s Office of Emergency Services</b> <a href="http://myhazards.caloes.ca.gov/">http://myhazards.caloes.ca.gov/</a>	Technical and Planning Resource	Provides a tool for the general public to discover hazards in their area (earthquake, flood, fire, and tsunami) and learn steps to reduce personal risk.

## SECTION 3: PLANNING AREA DESCRIPTION

The following section provides an overview of the City's planning area. It includes a description of the natural and population characteristics.

### 3.1 Location and Description

The City is in the San Gabriel Valley, at the base of the San Gabriel Mountains. The area was part of Rancho El Rincon de San Pasqual, a northeast section of the San Gabriel Mission (1771). The City was founded in 1874 by Thomas B. Elliott as Indiana Colony; the name Pasadena, a Chippewa word meaning "crown of the valley," was adopted in 1875.

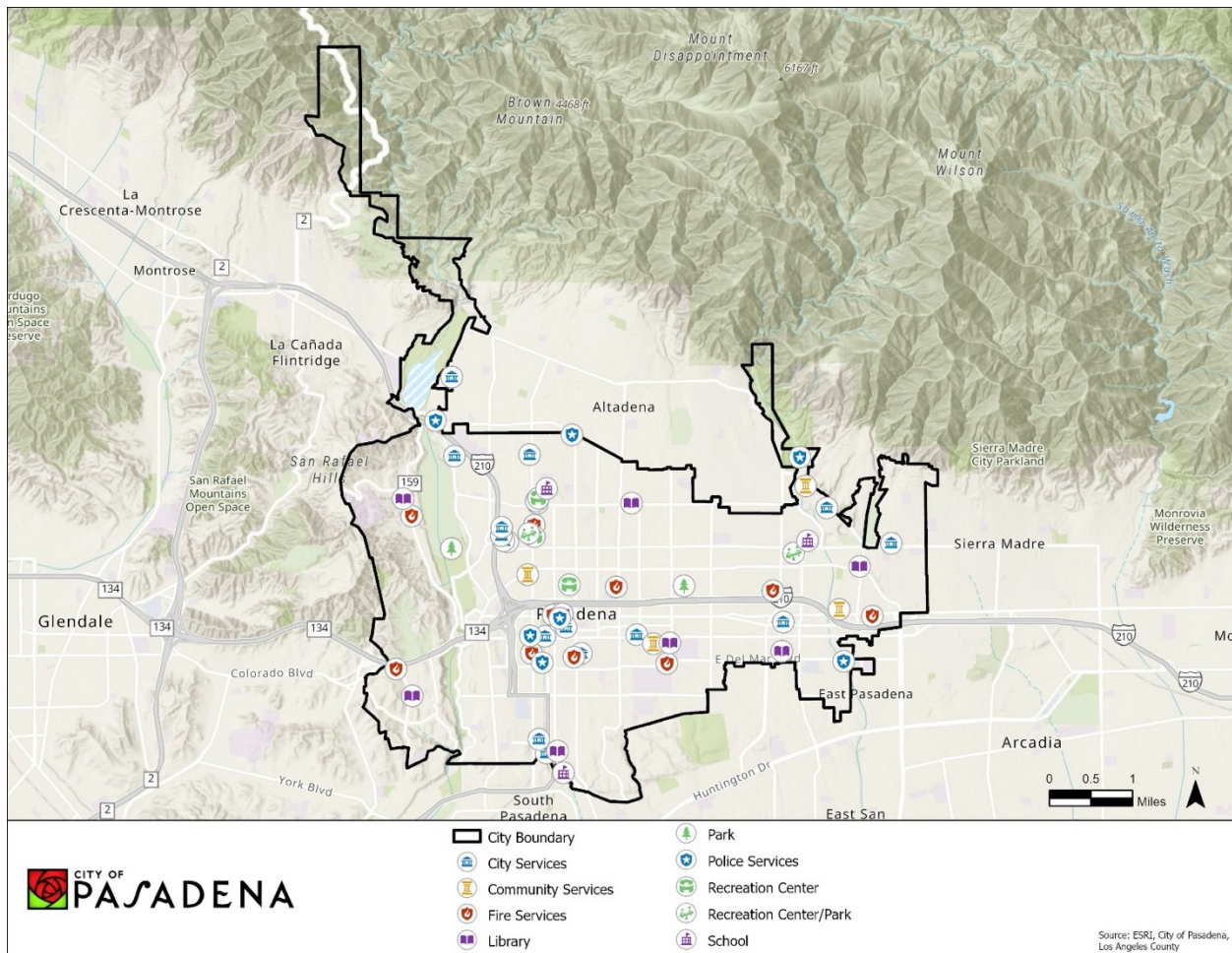
The City's growth as a winter resort and citrus center was stimulated by the Santa Fe Railway, and subsequent freeway construction brought it within easy commuting distance to Los Angeles, which lies 12 miles (19 km) southwest.

Pasadena is the home to many recognized businesses including: Pasadena City (community) College (1924), Pacific Oaks College (1945), and Art Center College of Design (1930), California Institute of Technology- CalTech (1891), the Pasadena Playhouse, the Norton Simon Museum of Art (formerly Pasadena Art Institute and Pasadena Museum of Modern Art), and the Pacific Asia Museum contains exhibits on the history and art of Asia and the Pacific; its grounds contain a Chinese courtyard garden and koi ponds.

The City is perhaps most famous for its New Year's Day Tournament of Roses, first held in 1890, which features a televised parade attended by several hundred thousand people and the Rose Bowl classic, a contest between two (2) major college gridiron football teams.

The City is served by the California 210 - Foothill Freeway, the California 110 - Pasadena Freeway (Arroyo Seco Parkway), the California 134 - Ventura Freeway, and the California Interstate 710 - Long Beach Freeway. The major arterial highways are Fair Oaks Avenue, Lake Avenue, and Los Robles Avenue, which runs north to south. Colorado Boulevard, Walnut Street, Del Mar Boulevard, and Green Street run east to west.

Pasadena has a residential population of 138,699 (2020 U.S. Census). Pasadena consists of 23 square miles and is approximately 58% residential, 9% commercial, 2% industrial and 31% open space, parks, institutional or vacant land. (Land Use Element of Revised General Plan, 2015). The boundary is shown against the regional topography in **Figure 3-1**.



**Figure 3-1. City Boundary with Topography**

### 3.2 Geology

The Los Angeles Basin is a seismically active area in Southern California located in the northern portion of the Peninsular Ranges geomorphic province and is a northwest-trending alleviated lowland plain, sometimes called the Coastal Plain of Los Angeles. The Peninsular Ranges are characterized by northwest-trending blocks of mountain ridges and sediment-floored valleys. The dominant geologic structural features are northwest reverse faults that form the southern margin of the Transverse Ranges. Furthermore, the Los Angeles Basin is filled with sedimentation thousands of feet thick and is structurally influenced by thrusting fault blocks and strike slip fault expressions trending northwest.

### 3.3 Climate

The climate is sub-tropical and semi-arid. The average daytime temperature is 78 Fahrenheit (26 Celsius) annually. The average nighttime temperature is 53 Fahrenheit (11 Celsius). The overall average temperature is 65 (18 C). The highest recorded temperature was 113 Fahrenheit (45 C) on June 17, 1917, while the lowest recorded temperature was 21 Fahrenheit (-6 C) on January 7, 1913. The average yearly rainfall is 20 inches. During the winter months of December through March, it is a sunny or partly sunny 75 percent of the time. It has snowed twice in the City's history: January 13, 1932, and January 7, 1913.

### 3.4 History

In 1886 Pasadena incorporated, largely as a measure to rid the City of its saloon. In the ensuing decade, amenities such as sewers, paved streets, and electric street lighting were installed. On January 1, 1890, the Valley Hunt Club initiated a mid-winter festival with a procession of flower-bedecked horses and carriages. This became a yearly tradition that in 1898 was formally sponsored by the Tournament of Roses Association. An added tourist attraction was the Echo Mountain incline railway which opened in 1893 and included a mountain chalet resort and the Alpine Tavern at Crystal Springs.

The cultural and educational side of the City was not neglected. The educational system expanded in both the public and private sector. Throop Polytechnic Institute (first named Throop University) was founded in 1891 and later became the California Institute of Technology.

### 3.5 Government

The City has a Council-Manager form of government with seven (7) City Councils, each electing a Councilmember to a four (4)-year term. The mayor is an at-large or Citywide elected position serving a four (4)-year term. The City Council is responsible for setting policies, passing ordinances, adopting the budget, appointing committee members, and hiring the City Manager, City Attorney/City Prosecutor, and the City Clerk.

The mayor acts as the chief executive of the City in performing all acts required to be performed under the laws of the State of California and our City Charter. The mayor is the official head of the City for all ceremonial purposes, by the Courts for serving civil processes and by the Governor of the State for military purposes. The mayor has a voice and vote in all proceedings of the City Council and presides over City Council meetings.

The City has 17 departments, three (3) operating companies, the Successor Agency to the Pasadena Community Development Commission (PCOC), and a City Council Office.

### 3.6 Economy

Pasadena has a diverse economy of employers from various sectors, including distribution, retail/wholesale trade, manufacturing, administrative support, construction, hotels and entertainment, health services, and education. Nearly 71,039 of the population are employed in a wide variety of industries. According to the 2023 American Community Survey Estimates, population 16 years and older are employed as follows: 52.6 percent managerial and professional related occupations; 16.2 percent service occupations; 20.4 percent sales and office occupations; 5.1 percent construction, extraction and maintenance occupations; and 5.7 percent production, transportation, and materials moving technology occupations.

### 3.7 Demographics

Pasadena is an ethnically diverse community. The chart below details the estimated City demographics.

**Table 3-1: City Demographics**

Total Population	American Indian & Alaska Native	Asian	Black or African American	Native Hawaiian & Other Pacific Islander	White (Not Hispanic or Latino)	Some Other Race	Two (2) or More Races	Hispanic or Latino (Overlaps with other race categories)
138,699*	1,883	24,550	11,272	156	57,835	22,024	22,024	43,234
N/A	1.3%	17.70%	8.12%	0.11%	41.7%	18.16%	15.87%	31.17%

*\*Note: Population by race for each racial category is also shown as a percentage of the total population for that community. U.S. Census estimates based upon data and surveys collected by the American Community Survey over a five (5)-year period. The demographic data does not include the full breakdown of the overall U.S. Census data from 2020 used in the introduction of the document. Percentage may add up to more than 100% because individuals may report on more than one category.*

### 3.8 Land Use

Pasadena's General Plan Land Use Element is grounded by Guiding Principles that cumulatively represent the community's vision for the future. The Guiding Principles were developed through an extensive program of community outreach and input conducted over a six (6)-year period. The Guiding Principles are:

1. Growth will be targeted to serve community needs and enhance the quality of life. Higher density development will be directed away from residential neighborhoods and into the Central City, Transit Villages, and Neighborhood Villages. These areas will have a diverse housing stock, job opportunities, exciting cities with commercial and recreational uses, and transit opportunities. New development will build upon Pasadena's tradition of strong sense of place, great neighborhoods, gardens, plazas, parks, and trees.
2. Pasadena's historic resources will be preserved. Citywide, new development will be in harmony with and enhance Pasadena's unique character and sense of place. New construction that could affect the integrity of historic resources will be compatible with, and differentiated from, the existing resource.
3. Pasadena will be an economically vital City by providing jobs, services, revenues, and opportunities. A diverse economic base with jobs for Pasadena residents will be fostered; existing businesses will be encouraged to stay or expand; affordable housing will be provided for the labor pool; the continued fiscal health of the City will be ensured.
4. Pasadena will be a socially, economically, and environmentally sustainable community. Safe, well designed, accessible and human-scale residential and commercial areas will be provided where people of all ages can live, work and play.
5. These areas will include neighborhood parks, urban open spaces and the equitable distribution of public and private recreational facilities; new public spaces will be acquired. Human services will be coordinated and made accessible to those who need them.
6. Pasadena will be a City where people can circulate without cars. Specific plans in targeted development areas will emphasize a mix of uses, pedestrian activity, and transit; public and private transit will be made more available; neighborhood villages and transit villages will reduce the need for auto use.
7. Pasadena will be a cultural, scientific, corporate, entertainment and education center for the region. Long-term growth opportunities will be provided for existing

institutions; a healthy economy will be fostered to attract new cultural, scientific, corporate, and entertainment and educational institutions.

8. Community Participation will be a permanent part of achieving a greater city. Citizens will be provided with timely and understandable information on planning issues and projects; citizens will directly participate in shaping plans and policies for Pasadena's future.

The Land Use Diagram (**Figure 3-2**) functions as a guide to the general public, planners, and decision-makers, depicting the ultimate pattern of development for Pasadena in 2035, consistent with the requirements of State planning law (Government Code §65302(a)). It depicts the distribution of various uses and intensity of development that shall be permitted as the physical representation of this element's goals and policies.

### 3.9 Changes in Development

Tracking previous and future growth in potential hazard areas provides an overview of increased exposure to hazards within a community. Hazard mitigation plan updates must be revised to reflect changes in development within the planning area during the previous performance period of the plan, as stated in 44 CFR Section 201.6(d)(3). The plan must describe changes in development in hazard-prone areas that increased or decreased vulnerability since the last plan was approved.

The City has adopted a general plan that governs land-use decisions and policymaking, as well as a building code and specialty ordinances based on state and federal mandates. This hazard mitigation plan update assumes that some new development over the performance period occurred in hazard areas. All new developments would have been regulated pursuant to local programs and codes, such as the International Building Code and flood damage prevention requirements of the NFIP. Therefore, it is assumed that hazard vulnerability did not measurably increase, even if exposure did.

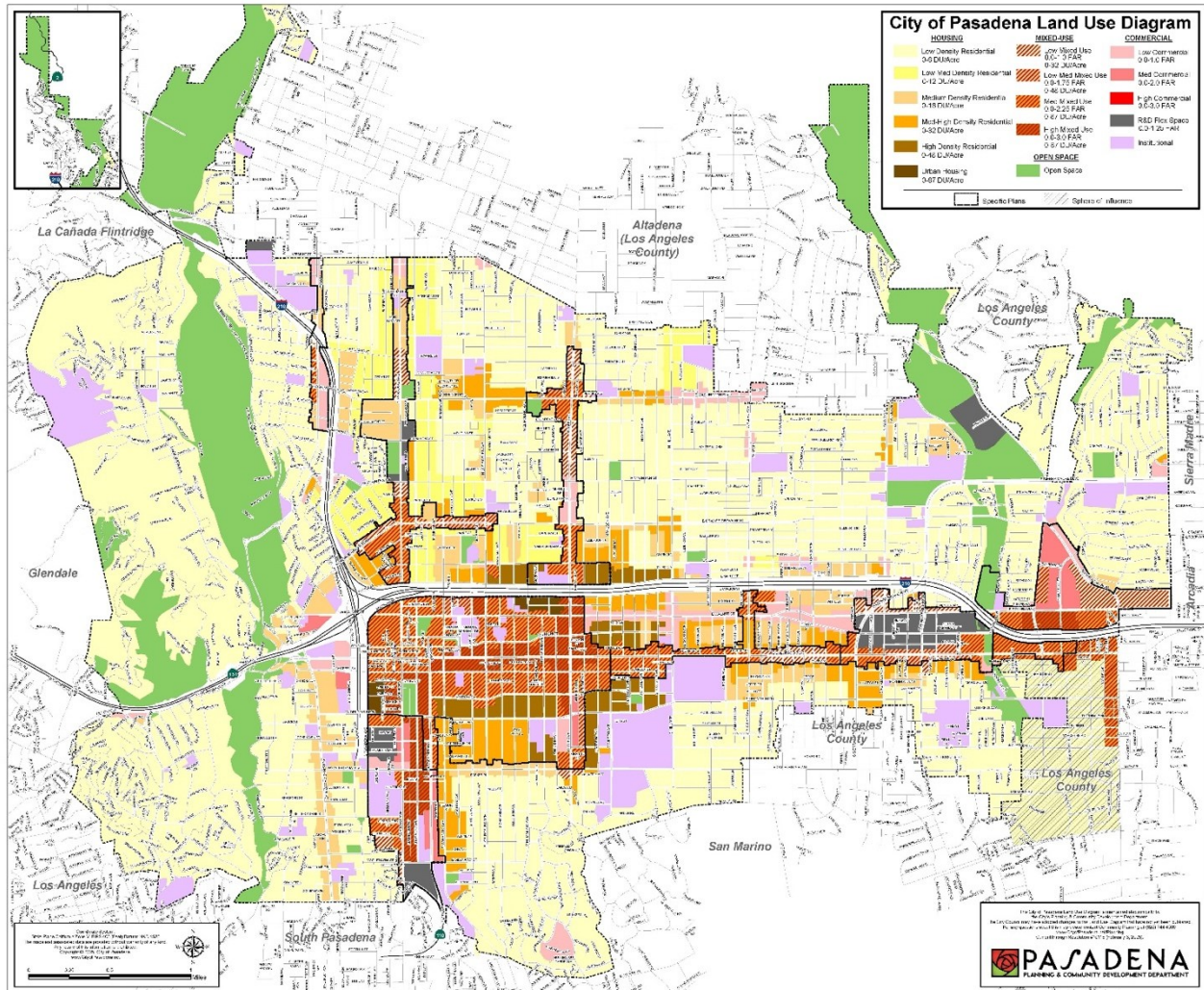


Figure 3-2: City Land Use Diagram

## SECTION 4: HAZARD IDENTIFICATION AND RISK ASSESSMENT

This section of the LHMP includes requirements for hazard profiles and a risk assessment, as provided in the Code of Federal Regulations. The goal of mitigation is to reduce the future impacts of hazards, including loss of life, property damage, disruption to the local economy, and the expenditure of public and private funds for recovery.

### 4.1 Hazard Analysis

A hazard analysis consists of identifying, screening, and profiling each hazard. The hazard analysis encompasses natural, human-caused, and technological hazards. Natural hazards result from unexpected or uncontrollable natural events of significant size and destructive power. Human-caused hazards result from human activity and encompass technological hazards. Technological hazards are generally accidental or result from events with unintended consequences (for example, accidental release of hazardous materials).

The goal of mitigation is to reduce the future impacts of hazards, including loss of life, property damage, disruption to the local economy, and the expenditure of public and private funds for recovery. Hazard identification was conducted as part of the planning process. For the 2025 LHMP, the potential risk for each hazard was rated using the Calculated Priority Risk Index (CPRI). The CPRI examines four (4) criteria for each hazard (probability, magnitude/severity, warning time, and duration). **Table 4-5** provides the results of the CPRI which were used to both select applicable hazards to include in the LHMP and to determine risk.

### 4.2 Disaster Proclamation History and Process

When there is a condition of extreme peril or potential peril to the safety of persons and property, and the condition is beyond the capability of the local jurisdiction to control effectively, the local governing body (city council, board of supervisors, or a person authorized by ordinance) may proclaim that a local emergency exists. The local government may request the California Governor's Office of Emergency Services (Cal OES) Director to concur in their proclamation of a local emergency and to provide assistance under the California Disaster Assistance Act (CDAA).

A copy of the resolution must be provided to the Los Angeles Operational Area as soon as possible for transmission to Cal OES. When a county proclaims a local emergency pursuant to Section 8630 of the Government Code, based upon conditions which

include both incorporated and unincorporated territory of the county, it is not necessary for the cities to also proclaim the existence of a local emergency independently.

If sufficient conditions occur, the state may proclaim a state of emergency to fully commit state and mutual aid assistance and provide resources to assist local government. Following the proclamation of a state of emergency, the California OES Director may recommend that the Governor request a Presidential declaration of a major disaster under the authority of Public Law 93-288. The Governor's request to the president is submitted through FEMA.

**Table 4-1** below lists the state and federal disaster declarations affecting Los Angeles County.

**Table 4-1: Los Angeles County Disaster Proclamation History**

Year	Disaster #	Hazard	Declaration
2025	DR-4856-CA	Fire	California Wildfires ad Straight-line Winds
2025	DR-4769-CA	Severe Storm	Severe Winter Storms, Tornadoes, Flooding, Landslides, and Mudslides
2023	DR-4699-CA	Severe Storm	Severe Winter Storms, Tornadoes, Flooding, Landslides, and Mudslides
2023	EM-3592-CA	Flood	California Severe Winter Storms, Flooding, Landslides, and Mudslides
2023	DR-4683-CA	Flood	California Severe Winter Storms, Flooding, Landslides, and Mudslides
2020	DR-4569-CA	Fire	California Wildfires
2020	DR-4482-CA	Pandemic	California COVID-19 Pandemic
2018	DR-4353-CA	Wildfires, Flooding, Mudflows, Debris Flows	California Wildfires, Flooding, Mudflows, and Debris Flows

Year	Disaster #	Hazard	Declaration
2017	DR-4305-CA	Flooding	Severe Winter Storms, Flooding, and Mudslides in California  One (1) of three (3) proclamations that covered 57/58 counties in the state
2012-2016	Statewide Drought	Drought	This period was one of the driest in California history since record-keeping began. The drought led to Governor Jerry Brown's instituting mandatory 25% water restrictions in June 2015.
2013	Heatwave	Extreme Heat	In late June 2013, an intense heatwave struck the Southwestern United States. Various places in Southern California reached up to 122°F.
2009		H1N1 Swine flu	State proclamation

### 4.3 Hazard Identification

A list of all hazards that had the potential to occur in the City was presented to stakeholders in the first Hazard Mitigation Planning Committee (HMPC) meeting and to the general public through a survey. The list of hazards was derived from the 2018 LHMP, the 2018 Emergency Operations Plan, the 2020 County of Los Angeles All-Hazards Mitigation Plan, and the 2023 California State Hazard Mitigation Plan. The 2018 LHMP contained the following hazards:

- Earthquake
- Wildfire
- Drought/Water Shortage
- Windstorm
- Energy Shortage/Outage
- Agricultural Pests/Disease
- Infectious Disease
- Terrorism
- Cyber Attack
- Civil Disturbance
- Landslide/Earth Movements
- Extreme Heat
- Hailstorm
- Air Pollution
- Oil Spill
- Dam Failure

- Hazardous Material Release
- Radiological Incidents
- Aircraft Crashes
- Train Accidents
- Natural Gas Pipeline/Storage Facility

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 the previous hazards in the 2018-19 plan and discussed other potential hazards, excluding ones that do not pose a threat or are not a significant concern to Pasadena.

**Table 4-2** 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 2023 California State Hazard Mitigation Plan (SHMP), and if it is included in the Los Angeles County Hazard Mitigation Plan (LAC HMP).

**Table 4-2: Hazard Evaluation for Pasadena LHMP**

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Agricultural Pests</b>	SHMP	No	While historically agricultural activities have occurred within the City, commercial farming does not occupy a large amount of land. Most farmland has been replaced by new residential and commercial developments. Without the presence of these large agricultural areas in the community, the HMPC did not identify this as a hazard of concern for the City.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Air Pollution</b>	SHMP	No	<p>Air pollution is a state and regional issue that is addressed through plans and regulations administered by the South Coast Air Quality Management District and/or California Air Resources Board.</p> <p>Since the City does not regulate these resources, the HMPC did not identify this as a hazard of concern that could be addressed in this plan.</p>
<b>Aircraft Incident</b>	SHMP	No	<p>Hollywood Burbank Airport is located within 15 miles of the City. This facility is operated under a Joint Powers Agreement that the City is party to, however the JPA conducts all planning activities for the facility.</p> <p>Given the lack of control over this asset and a few past incidents associated with aircraft incidents have occurred, the HMPC determined that this hazard should not be included in the plan.</p>
<b>Aquatic Invasive Species</b>	SHMP	No	<p>There are no major riparian environments in Pasadena where aquatic invasive species could endanger the community.</p>

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<b>Hazard</b>	<b>Recommended for Consideration</b>	<b>Included in LHMP?</b>	<b>Reason for Inclusion or Exclusion</b>
<b>Avalanche</b>	FEMA guidance SHMP	No	Pasadena is not located within potential avalanche zones.

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Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<p><b>Civil Disturbance or Riot</b></p>	<p>SHMP</p>	<p>No</p>	<p>The HMPC determined that the City includes a number of areas where large populations visit/congregate, however these locations have not experienced significant issues associated with civil disturbance. There was a large-scale protest in 2020 associated with the George Floyd killing. While considerable resources were expended providing security resources, no injuries or property damage occurred.</p> <p>In January 2025, Pro-Palestinian protesters disrupted the 135th annual Rose Parade for about 20 minutes. A dozen or so protesters sat down on the street at the intersection of Lake Ave. and Colorado Boulevard at the start of the parade. Police let the protesters stay for 20 minutes before stepping in to escort them off the street, prompting cheers to erupt from the crowd.</p> <p>Occasional protests have also occurred at PCC but have largely been nonviolent. For this reason, the HMPC did not identify this as a hazard of concern.</p>

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Climate Change</b>	SHMP LAC HMP	Yes	Climate change is discussed as a function of each relevant hazard and is mentioned throughout the Plan.
<b>Coastal Flooding and Storm</b>	FEMA guidance SHMP	No	Pasadena is not located along the coast of California. Coastal flooding and storms are not anticipated to impact on the community.
<b>Cyber Threats</b>	SHMP	Yes	With the increase in cyber threats occurring throughout California and the nation, the HMPC is concerned about the potential effects on vital records, communications and industrial control systems.
<b>Dam Failure</b>	FEMA guidance SHMP LAC HMP	Yes	Pasadena is located downstream of Devils Gate Dam, classified by the California Department of Water Resources as an extremely high danger dam, operated by Los Angeles County Public Works. Due to City's location downstream of these facilities, the HMPC identified dam failure as a hazard of concern.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Drought</b>	SHMP LAC HMP	Yes	While the HMPC is confident in the current hydrologic infrastructure to supply water for the City, drought can potentially impact the operations Pasadena Water and Power. Long term drought can reduce available water from the Raymond Basin aquifer and may result in reduced resources available from the State Water Project through the Metropolitan Water District. The HMPC does not consider drought to be a local issue alone, but rather a regional one. It is addressed in both the State and Los Angeles County HMP's.
<b>Loss of Power</b>	SHMP	Yes	While energy shortage has the potential to occur in Pasadena, the risk associated with this is similar to surrounding communities. For loss of power, the bigger concern for the City is the effects this could have on critical infrastructure services.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Epidemic, Pandemic, Vector-Borne Disease</b>	SHMP	Yes	<p>Pasadena is in Los Angeles County, which has experienced several health-related incidents in the past. Pasadena is one of three (3) cities in California that operates its own public health department.</p> <p>The HMPC felt it was best to address issues with infectious diseases and other public health issues through the Department of Public Health preparedness planning mechanisms such as the Public Health Emergency Operations Plan.</p>
<b>Erosion</b>	FEMA guidance SHMP	No	While a part of the City is in the hilly Arroyo Seco, it is mostly protected parkland and open space. the HMPC did not identify erosion as a hazard of concern for the City.
<b>Expansive Soil</b>	FEMA guidance	No	Expansive soils were not identified by the HMPC as a hazard of concern. While they could exist, the City requires compliance with the California Building Code, which is intended to mitigate hazards associated with this condition.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Extreme Cold</b>	FEMA guidance SHMP	No	Temperatures in the City do not reach a level that would be considered a danger to public safety. Due to this the HMPC did not identify this as a hazard of concern.
<b>Extreme Heat</b>	FEMA guidance SHMP	Yes	Extreme heat has occurred in Pasadena and is expected to be a recurring event. Extreme heat was identified by the HMPC as a hazard of concern and included in the Extreme Weather profile.
<b>Fault Rupture</b>	FEMA guidance SHMP LAC HMP	Yes	The Raymond Fault is a known Alquist-Priolo fault zone is located within Pasadena. As a result, the HMPC identified this as a hazard of concern to the City. Fault rupture is included in the discussion of Seismic Hazards.
<b>Flooding</b>	FEMA guidance SHMP	Yes	Several watercourses transect the City and are identified within FEMA flood hazard zones. While significant flooding events have not affected properties within the City recently, the presence of these flood zones indicates the potential for future hazards. The HMPC identified flooding as a hazard of concern included in the Flooding profile.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Fracking	SHMP	No	Fracking does not occur in the City.
Hail	FEMA guidance	No	Hail that is severe enough to pose a threat to people and property is too rare in Pasadena 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 Pasadena. Although Tropical Storm Hillary impacted the City in August 2023, no fatalities from Hilary were reported in the state. Damage to residences and critical infrastructure as very minimal.
Infrastructure Failure	SHMP	No	Infrastructure failure can pose a threat to people and property in Pasadena. A discussion of infrastructure failure is discussed as a function of other hazards.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Landslide</b>	FEMA guidance SHMP	Yes	Landslides associated with earthquakes can occur in the hilly sections of the City. This hazard is included in the discussion of the Seismic Hazards section.
<b>Levee Failure</b>	SHMP	No	While levees are located within the City in Arroyo Seco, they were not deemed a significant concern for failure. These levees are owned and managed by Los Angeles County and the City does not have the authority to address these facilities but coordinates with the County on issues and upgrades. Based on this, the HMPC did not include levee failure as a hazard of concern.
<b>Lightning</b>	FEMA guidance	No	Although lightning does occasionally occur in Pasadena, it does not pose a significant threat to people or property.
<b>Liquefaction</b>	FEMA guidance SHMP LAC HMP	Yes	According to mapping prepared by the California Geological Survey, area in Arroyo Seco and the western section of the City are prone to liquefaction prone areas. This hazard is included in the discussion of the Seismic Hazards section.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Methane Containing Soils</b>	SBC HMP	No	The City does not have methane- containing soils that pose a threat to the public health and safety of residents and businesses. The HMPC did not identify this as a hazard of concern to the City.
<b>Natural Gas Pipeline Hazards</b>	SHMP	Yes	Natural gas pipelines traverse Pasadena, posing a danger to people and property if they were to breach and release their contents. This condition is discussed in the Community Profile in Chapter 2 and is discussed in the vulnerability assessment where applicable.
<b>Oil Spills</b>	SHMP	No	There is no history of oil drilling and extraction within the City. Based on this, the HMPC did not identify this as a hazard of concern to the City.
<b>Power Failure</b>	SHMP	No	While power loss events can occur in the City, the HMPC determined that this hazard shouldn't be addressed within the LHMP and is better suited as a hazard addressed in the City's EOP.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Radiological Accidents</b>	SHMP	No	There are no known major sources of radiation in Pasadena or the immediate surrounding area that could pose a serious threat to the community.
<b>Sea-level Rise</b>	FEMA guidance SHMP	No	The City is not located along the coast or near any large bodies of seawater. The HMPC did not identify this as a hazard of concern for the City
<b>Seiche</b>	FEMA guidance SHMP	No	There are no major bodies of water in Pasadena that could be subjected to seiche.
<b>Seismic Shaking</b>	FEMA guidance SHMP	Yes	Pasadena 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.
<b>Severe Wind</b>	FEMA guidance	Yes	Severe Weather includes discussions regarding extreme heat, severe wind, and rain, which are weather-related hazards that are most common in Pasadena.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Severe Weather and Storms</b>	FEMA guidance SHMP	Yes	Severe Weather includes discussions regarding extreme heat, severe wind, and rain, which are weather-related hazards that are most common in Pasadena.
<b>Storm Surge</b>	FEMA guidance	No	Pasadena is not a coastal community. The HMPC did not identify this as a hazard of concern to the City.
<b>Subsidence</b>	FEMA guidance	Yes	The HMPC believed that subsidence could occur with significant groundwater pumping. Subsidence is not discussed as a stand-alone hazard but rather is a function of the Seismic Hazards profile.
<b>Terrorism</b>	SHMP	Yes	The HMPC was concerned about terrorism incidents posing a threat to public safety given the number of significant locations that could be considered targets within the City. A discussion of this is in the Human-Caused Hazards profile.
<b>Thunderstorm</b>	SHMP	No	Thunderstorms that cause damage and endanger public safety are rare in the Southern California region. The HMPC did not identify this as a hazard of concern.

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Tornadoes</b>	FEMA guidance SHMP	No	No tornadoes are known to have occurred in Pasadena. The HMPC did not identify this as a hazard of concern.
<b>Transportation Accidents</b>	SHMP	Yes	Around the City, transportation accidents could endanger public safety. A discussion of this is in the Human-Caused Hazards profile.
<b>Tree Mortality</b>	SHMP	No	The HMPC noted that the City's has a significant number of trees, however the City currently manages these resources effectively and did not feel it was necessary to profile as a hazard of concern.
<b>Tsunami</b>	FEMA guidance SHMP	No	Pasadena is not a coastal community. The HMPC did not identify this as a hazard of concern to the City
<b>Urban Fire</b>	SHMP LAC HMP	Yes	The HMPC identified urban fires as a risk to property and life in Pasadena.
<b>Volcano</b>	SHMP	No	There are no volcanoes near Pasadena to reasonably pose a threat. The HMPC did not identify this as a hazard of concern to the City

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
<b>Wildland Fire</b>	FEMA guidance SHMP LAC HMP	Yes	Portions of the City are in the very high fire danger zone as determined by Cal Fire. These areas are in the northern canyons and western section.

After hazard evaluation and the organizational changes made by the HMPC, this Plan discusses ten (10) broad hazard types with their respective sub-categories. During a review of the 2018 hazards, the planning team decided to eliminate Agricultural Pests/Disease, Aircraft Crashes, and Natural Gas Pipeline/Storage Facility. The planning team decided to combine extreme heat, windstorm, and hailstorm into a single hazard named Extreme Weather. Additionally, the planning team combined oil spills, train accidents, and radiological accidents into a single hazard called Hazardous Materials Release. Finally, the planning team decided to combine power outage, cyber-attack, civil disturbance, and Air Quality into a single hazard called Human Caused Hazards. Below are the hazards that will be profiled in the 2025 plan.

Table 4-3: Hazards Profiled in 2025 Plan

Hazard Type	Sub-Categories
Dam Failure/Inundation	
Drought	
Earthquake/Geologic Hazards	<ul style="list-style-type: none"> <li>• Seismic Shaking</li> <li>• Subsidence</li> <li>• Liquefaction</li> <li>• Fault Rupture</li> <li>• Landslide</li> </ul>
Extreme Weather	<ul style="list-style-type: none"> <li>• Severe Winds</li> <li>• Extreme Heat</li> <li>• Severe Rainstorm</li> </ul>
Flooding	
Hazardous Materials Release	Profiled in Human Caused Hazards
Fire	<ul style="list-style-type: none"> <li>• Wildland Fire</li> <li>• Urban Fire</li> </ul>
Human-Caused Hazards	<ul style="list-style-type: none"> <li>• Civil Disturbance</li> <li>• Cyber Attack</li> <li>• Hazardous Materials Release</li> <li>• Power Outage</li> <li>• Terrorism</li> <li>• Transportation Incidents</li> <li>• Natural Gas Incidents</li> </ul>
Public Health Incidents	
Climate Change	Discussed in all Hazard Categories

#### 4.4 Hazard Risk Rating

For the 2025 LHMP, the risk for each potential hazard was rated using the Calculated Priority Risk Index (CPRI). The CPRI examines four (4) criteria for each hazard (probability, magnitude/severity, warning time, and duration) (**Table 4-4**). For each hazard, an index value is assigned for each CPRI category from 0 to 4, with “0” being

the least hazardous and “4” being the most hazardous situation. This value is then assigned a weighting factor, and the result is a hazard ranking score (**Table 4-5**).

**Table 4-4: Calculated Priority Risk Index Tables**  
**CPRI Category: Probability (Assigned Weight 45%)**

Level ID	Description	Index Value
<b>Unlikely</b>	Extremely rare with no documented history of occurrences or events. Annual probability of less than 0.001.	<b>1</b>
<b>Possible</b>	Rare occurrences with at least one (1) documented or anecdotal historic event. Annual probability of between 0.01 and 0.001.	<b>2</b>
<b>Likely</b>	Occasional occurrence with at least two (2) or more documented historical events. Annual probability of between 0.1 and 0.01.	<b>3</b>
<b>Highly Likely</b>	Frequent events with a well-documented history of occurrence. Annual probability of greater than 0.1.	<b>4</b>

**CPRI Category: Magnitude-Severity (Assigned Weight 30%)**

Level ID	Description	Index Value
<b>Negligible</b>	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid, and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.	<b>1</b>

Level ID	Description	Index Value
<b>Limited</b>	<p>Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure).</p> <p>Injuries and illnesses do not result in permanent disability, and there are no deaths.</p> <p>Moderate quality of life lost.</p> <p>Shut down of critical facilities for more than 1 day and less than 1 week.</p>	<b>2</b>
<b>Critical</b>	<p>Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructures).</p> <p>Injuries or illnesses result in permanent disability and at least one death.</p> <p>Shut down of critical facilities for more than 1 week and less than 1 month.</p>	<b>3</b>
<b>Catastrophic</b>	<p>Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure).</p> <p>Injuries or illnesses result in permanent disability and multiple deaths.</p> <p>Shut down of critical facilities for more than 1 month.</p>	<b>4</b>

#### CPRI Category: Warning Time (Assigned Weight 15%)

Level ID	Description	Index Value
<b>&gt; than 24 hours</b>	Population receives greater than 24 hours of warning.	<b>1</b>
<b>12 to 24 hours</b>	The population receives between 12-24 hours of warning.	<b>2</b>
<b>6 to 12 hours</b>	The population receives between 6-12 hours of warning.	<b>3</b>
<b>&lt; than 6 hours</b>	The population receives less than 6 hours of warning.	<b>4</b>

**CPRI Category: Duration (Assigned Weight 10%)**

<b>Level ID</b>	<b>Description</b>	<b>Index Value</b>
<b>&lt; than 6 hours</b>	The disaster event will last less than 6 hours.	<b>1</b>
<b>6 to 24 hours</b>	The disaster event will last between 6-24 hours.	<b>2</b>
<b>24 hrs. to 1 week</b>	The disaster event will last between 24 hours and 1 week.	<b>3</b>
<b>&gt; than 1 week</b>	The disaster event will last more than 1 week.	<b>4</b>

The results of the CPRI are contained in **Table 4-5** below:

**Table 4-5: Calculated Priority Risk Index Summary**

Hazard	Probability	Weighted 45%	Magnitude Severity	Weighted 30%	Warning Time	Weighted 15%	Duration	Weighted 10%	CPRI Ranking
Civil Disturbance	2	.90	1	.30	2	.30	2	.20	<b>1.70</b>
Climate Change	4	1.8	2	.60	1	.15	4	.40	<b>2.95</b>
Cyber Attack	3	1.35	2	.60	4	.60	3	.30	<b>2.40</b>
Dam Failure	1	.45	2	.60	3	.45	1	.10	<b>1.60</b>
Drought	3	1.35	2	.60	1	.15	4	.40	<b>2.50</b>
Earthquake	3	1.35	3	.90	4	.60	4	.40	<b>3.25</b>
Extreme Weather	3	1.35	2	1.2	1	.15	3	.30	<b>3.00</b>
Fire (Windland/Urban)	4	1.8	2	.60	4	.60	3	.30	<b>3.30</b>
Flooding	2	.9	1	.30	1	.15	1	.10	<b>1.45</b>
Hazardous Material Releases	2	.90	2	.60	2	.60	2	.20	<b>2.30</b>
Landslide	2	.9	2	.60	4	.60	1	.10	<b>2.20</b>
Natural Gas Pipeline Failure	1	.45	1	.30	4	.60	1	.20	<b>1.55</b>
Oil Spills	1	.45	2	.60	2	.60	2	.20	<b>1.85</b>
Power Outage	3	1.35	3	.9	3	.45	2	.20	<b>2.00</b>
Public Health	2	.9	4	1.2	2	.30	4	.40	<b>2.80</b>

Hazard	Probability	Weighted 45%	Magnitude Severity	Weighted 30%	Warning Time	Weighted 15%	Duration	Weighted 10%	CPRI Ranking
<b>Hazard</b>									
Terrorism	2	.90	2	.60	4	.60	1	.20	<b>2.30</b>
Transportation Incidents	3	1.35	1	.30	4	.60	1	.20	<b>2.45</b>

**CPRI Hazard Risk Scoring**

Risk Level	Severe	High	Moderate	Low
<b>Rank Score</b>	3.5 – 4.0	3.0 – 3.4	2 – 2.9	1 – 1.9

Power failure has the most immediate and disruptive impacts on the city due to potential interruption of public safety systems and water service to customers.

**4.5 Hazard Profiles**

The hazards that exist in the City are profiled below. Each hazard profile includes a description of the type, location, extent, previous occurrences, regulatory environment, and probability of future events within the description. Maps and graphs are used in this plan to display hazard identification data.

The 2025 LHMP lists 17 hazards that affect the planning area based on historical information, the presence of the hazard, and the likelihood of future occurrences of the hazard. Hazard profiles serve as the basis for hazard assessment.

**4.5.1 Climate Change**

*Hazard Description*

The earth’s climate is changing. The State has warmed about two degrees Fahrenheit (2°F) in the last century. Heat waves are becoming more common throughout the southwestern United States, and snow is melting earlier in spring. In the coming decades, changing climate is likely to decrease the Colorado River’s water flow,

threaten livestock's health, increase the frequency and intensity of wildfires, and convert some rangelands to the desert.

The U.S. Environmental Protection Agency (EPA) describes climate change as “any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, which occur over several decades or longer.”

Many people confuse climate change with global warming, the recent and ongoing rise in global average temperatures near Earth's surface. However, global warming represents only one aspect of climate change. Earth's average temperature has risen by 1.4°F over the past century and is projected to rise another 2.0°F to 11.5°F over the next hundred years. Rising global temperatures have been accompanied by changes in weather and climate. Many places have seen changes in rainfall, resulting in more floods, droughts, or intense rain, as well as more frequent and severe heat waves. The planet's oceans and glaciers have also experienced changes, with every glacier and permanent icefield in the State of California receding or melting entirely. Oceans are warming and becoming more acidic, ice caps are melting, and sea levels are rising. The effects of these indicators include:

- **Greenhouse Gases:** Human activities have increased the emissions of greenhouse gases. As a result of the increase in emissions, average concentration of heat-trapping gases in the atmosphere are also increasing.
- **Weather and Climate:** Average U.S. and global temperatures are increasing while weather and climate attributes, such as precipitation, drought and tropical cyclone activity, are changing.
- **Oceans:** Average oceanic temperatures are increasing. Sea levels are rising worldwide due to thermal expansion and increases from ice melt, and waters are becoming more acidic.
- **Snow and Ice:** Glaciers in the U.S. and worldwide are generally shrinking, while snowfall and snow cover in the U.S. have decreased overall. The extent of the Arctic Sea ice is declining.
- **Health and Society:** Warmer temperatures and later fall frosts allow ragweed plants to produce pollen later into the year, potentially prolonging allergy season. The length of ragweed pollen season has increased at 10 out of 11 locations studied in the central U.S. and Canada since 1995. The change becomes more pronounced from south to north.

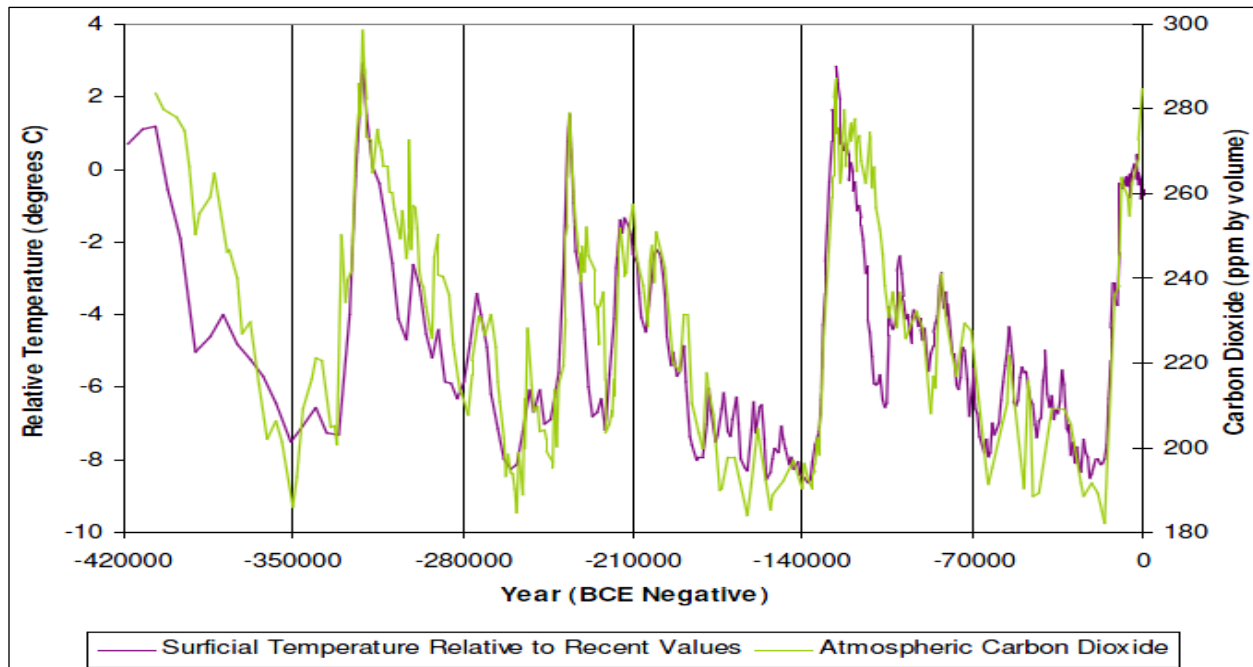
- **Ecosystems:** Many areas are experiencing earlier spring events, such as peak stream runoff and flower blooms. Bird migration patterns are changing, and wildfire zone size has increased.

### *History*

Climate change has occurred throughout the planet's history due to variations in the earth's inclination to the sun, volcanic activity, and other factors such as asteroid impacts and the amount of solar radiation reaching the earth's surface rises and falls. The planet's temperature correlates to the amount of solar radiation arriving at the surface and the climate with it.

In relatively recent history, the last glacial period, popularly known as the Ice Age, occurred from c. 110,000 to 12,000 years ago. This most recent glacial period is part of a larger pattern of glacial and interglacial periods known as the Quaternary glaciation (c. 2,588,000 years ago to present). From this point of view, scientists consider this "ice age" to be merely the latest glaciation event in a much larger ice age that dates back over two (2) million years and is still ongoing.

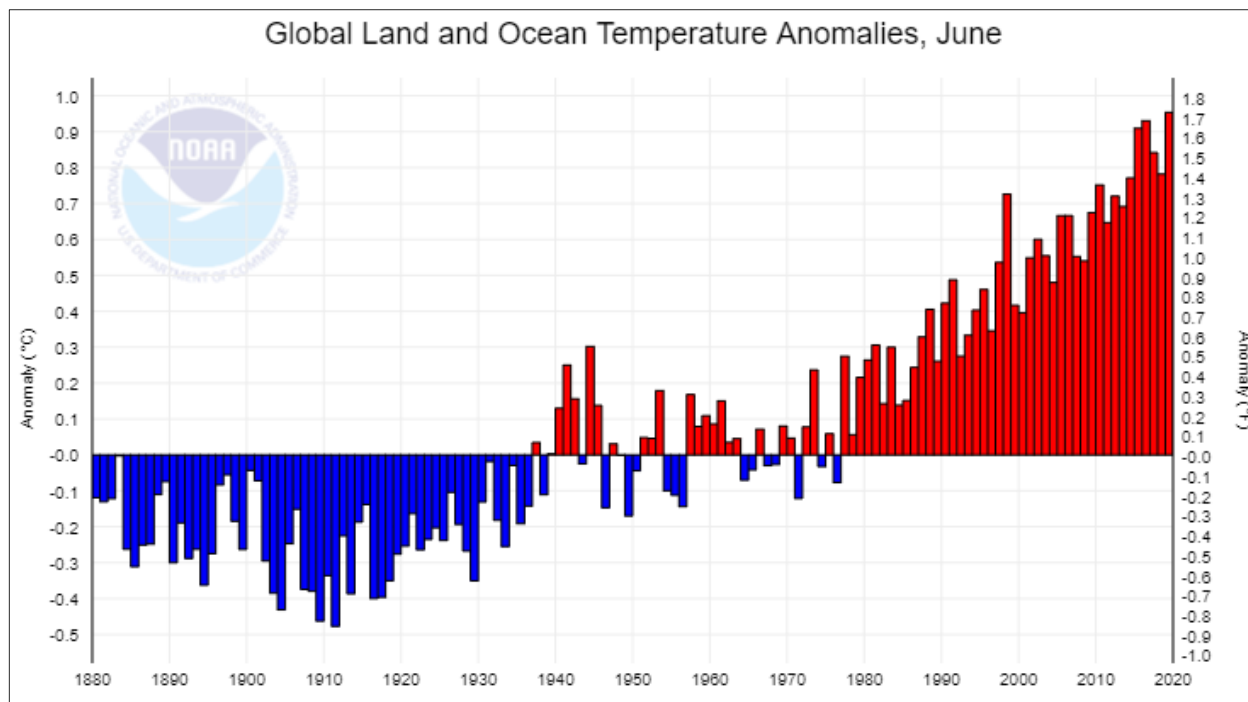
During this last glacial period, there were several changes between glacier advance and retreat. The Last Glacial Maximum, the maximum extent of glaciation within the last glacial period, was approximately 22,000 years ago. While the general pattern of global cooling and glacier advance was similar, local differences in the development of glacier advance and retreat make it difficult to compare the details from continent to continent. Generally, temperature variation and glaciation patterns have lagged in atmospheric carbon dioxide (CO<sub>2</sub>) content. **Figure 4.1** depicts global variations during the past 400,000 years as a correlation between temperature and atmospheric CO<sub>2</sub> content in part per million.



**Figure 4.1: Temperature and Atmospheric CO2 Variation Past 400,000 Years**

For 22,000 years ago, the planet has slowly warmed, and the glaciers retreated to high northern latitudes and mountains. In the last several decades of this period, human activity has likely led to a rapid increase in atmospheric CO2 and a matching rise in global temperature. The result has been that climate change may be accelerating.

**Figure 4.2** provides a graphical depiction of the recent history of temperature rise.



**Figure 4.2: Temperature Rise Since 1880**

### *Location*

Warming and climate change are occurring globally with wide variations based on location and latitude. The polar regions have experienced particularly rapid changes in climate with increased ice melt and more sea-ice-free days. Climate change by its very definition is a global phenomenon, and so it is expected to affect the entire County.

### *Extent*

Climate change is likely to affect the entire earth's population. More widespread drought and associated crop failure, movement of invasive species, more frequent wildfires, increased energy emergencies, and more intense climate events such as storms and extreme heat will occur throughout Southern California. The entire planning area is subject to climate change.

### *Specific likely impacts on California*

Increasing droughts and higher temperatures will likely affect California's top agricultural products, including cattle, dairy, and vegetables. Hot temperatures threaten the health of cows and cause them to eat less, grow more slowly, and produce less milk. Livestock operations could also be impaired by fire, the lack of water, and changes in the landscape from grassland to woody shrubs, more typical of a desert. Reduced water availability would also create challenges for irrigated farms, which account for two-thirds of the water used in the state.

Wildfires, changing landscapes, higher temperatures, and drought are likely to increase the severity, frequency, and extent of wildfires which could harm property, livelihoods, and human health. On average, more than two percent (2%) of the land in California has burned per decade since 1984. Wildfire smoke can reduce air quality and increase medical visits for chest pains, respiratory problems, and heart problems. The combination of more fires and drier conditions may expand deserts and otherwise change parts of California's landscape. Many plants and animals living in arid lands are already near the limits of what they can tolerate. A warmer and drier climate would generally extend deserts to higher elevations and expand their geographic ranges.

In some cases, native vegetation may persist and delay or prevent the expansion of the desert. In other cases, fires or livestock grazing may accelerate the conversion of grassland to desert in response to a changing climate. For similar reasons, some forests may change to deserts or grassland.

Warmer and drier conditions make forests more susceptible to pests. Drought reduces the ability of trees to defend against attacks from pests such as bark beetles which have infested 100,000s of acres in California. Temperature controls the life cycle and winter mortality rates of many pests. With higher winter temperatures, some pests can persist year-round, and new pests and diseases may become established.

Hot days can be unhealthy, even dangerous. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. High air temperatures can cause heat stroke and dehydration and affect people's cardiovascular, respiratory, and nervous systems. Higher temperatures are amplified in urban settings where paved and other surfaces tend to store heat. Construction crews may have to increasingly operate on altered time schedules to avoid the heat of the day.

Rising temperatures can increase the formation of ground-level ozone, a key component of smog. Ozone has various health effects, aggravates lung diseases such as asthma, and increases the risk of premature death from heart or lung disease. The U.S. EPA and the California Air Resources Board have been working to reduce ozone concentrations. As the climate changes, continued progress toward clean air will be more difficult.

*Probability of Future Events:*

Climate change is an ongoing, long-term hazard. The effects of increased CO<sub>2</sub> in the atmosphere will likely increase and persist for hundreds or thousands of years. There is a 100% chance that climate change will continue affecting the City.

*Regulatory Context:*

The State of California has stepped into a leadership role in planning for reducing greenhouse gas emissions and adapting to the potential impacts of climate change. Key laws, regulations, and policies helping to reduce Greenhouse Gas (GHG) emissions include:

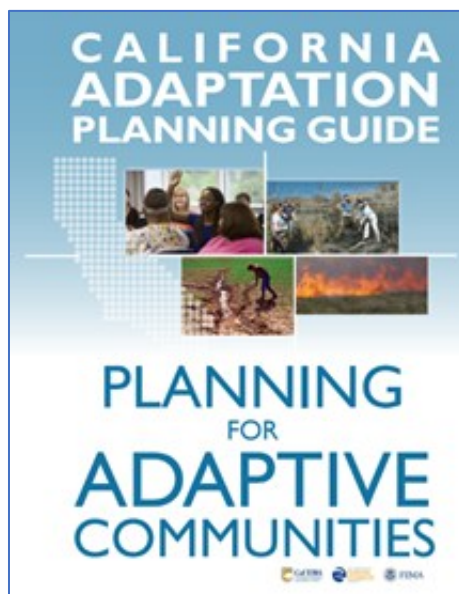
The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32 and Senate Bill [SB] 32): AB 32 is the primary legislation that has driven GHG regulation and analysis in California between 2006 and 2016 by instructing the California Air Resource Board (CARB) to develop and enforce regulations for reporting and verifying statewide GHG emissions. The heart of the bill is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020. Based on CARB's calculations of emissions levels, California must reduce GHG emissions by approximately fifteen percent (15%) below 2005 levels to achieve this goal. In September 2016, the Governor signed SB 32, which builds upon the statewide targets for 2020 by establishing a longer-term target so that "statewide greenhouse gas emissions are reduced to forty percent (40%) below the 1990 levels by 2030." The bill further authorized CARB to adopt regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions.

California Executive Orders S-3-05 (2005) and B-30-15 (2015): These two (2) executive orders highlight longer-term GHG emissions reduction targets for the state, though such targets have not yet been adopted by the legislature and signed into law. Specifically, Executive Order (EO) S-3-05 seeks to achieve a reduction of GHG emissions of eighty percent (80%) below 1990 levels by 2050, consistent with the scientific consensus that developed regions will need to reduce emissions at least eighty percent (80%) below 1990 levels to limit global warming to two degrees Celsius (2.0°C). Executive Order B-30-15 seeks to establish an interim target between the 2020 target established through AB 32 and the long-term targets in EO S-3-05, to achieve a reduction of GHG emissions of forty percent (40%) below 1990 levels by 2030.

CEQA and Greenhouse Gas Emissions (Senate Bill 97): In 2007, the Natural Resources Agency was directed by the legislature to prepare amendments to the California Environmental Quality Act (CEQA) Guidelines, providing direction to lead agencies on how to analyze and mitigate greenhouse gas emissions.

Senate Bill 379 (2015) Planning and Zoning Law: This legislation requires that the next revision of a jurisdiction's local hazard mitigation plan on or after January 1, 2017, or, if the local jurisdiction has not adopted a local hazard mitigation plan, beginning on or before January 1, 2022, include a review and update of the safety element to address

climate adaptation and resiliency strategies applicable to that city or county. The bill would require the update to include a set of goals, policies, and objectives based on a vulnerability assessment, identifying the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts.



California has also prepared programs and guidance for local governments to consider identifying hazards and adapting to a changing climate.

California Climate Adaptation Strategy: Executive Order S-13-08: In 2008, the Governor signed EO S-13-08, which directed the California Natural Resources Agency to lead a statewide effort to develop a climate adaptation strategy. Published in 2009, the statewide plan describes climate trends and the potential impacts of climate change on key sectors, and it outlines short- and long-term actions that state and local governments can take to address future climate impacts.

California Adaptation Planning Guide (APG): Published in 2012, this statewide resource serves as a guide to local governments to identify, evaluate, and plan for the range of unavoidable consequences their community may face in the future due to climate change. The APG includes a step-by-step process for conducting vulnerability assessment and identifying potential adaptation strategies.

#### *4.4.1.1 City Response to Climate Change*

##### **General Approaches—Mitigation and Adaptation**

Communities and governments worldwide are working to address, evaluate and prepare for climate changes that are likely to impact communities in coming decades. Generally,

climate change discussions encompass two (2) separate but inter-related considerations: mitigation and adaptation. The term “mitigation” can be confusing because its meaning changes across disciplines:

- Mitigation in emergency management—as generally addressed in this hazard mitigation plan—is typically defined as the effort to reduce loss of life and property by lessening the impact of disasters.
- Mitigation in climate change discussions is defined as a human intervention to reduce impacts on the climate system. It includes strategies to reduce greenhouse gas sources and emissions and enhance greenhouse gas sinks.

In this chapter, mitigation is used as defined by the climate change community. In the other chapters of this plan, mitigation is primarily used in an emergency management context.

Adaptation refers to adjustments in natural or human systems in response to actual or anticipated effects of climate change. These adjustments may moderate harm or exploit beneficial opportunities. Mitigation and adaptation are related, as the world’s ability to reduce greenhouse gas emissions will affect the degree of adaptation that will be necessary. Some initiatives and actions can both reduce greenhouse gas emissions and support adaptation to likely future conditions.

Societies across the world need to adapt to climate change. Farmers are altering crops and agricultural methods to deal with changing rainfall and rising temperature; architects and engineers are redesigning buildings; planners are looking at managing water supplies to deal with droughts or flooding.

Adaptive capacity goes beyond human systems. Some ecosystems can adapt to change and buffer surrounding areas from the impacts of change. Forests can bind soils and hold large volumes of water, releasing it through the year; floodplains can absorb water during peak flows; coastal ecosystems can attenuate waves and reduce erosion. Other ecosystem services—such as food provision, timber, materials, medicines, and recreation—can provide buffers in the face of changing conditions.

Ecosystem-based adaptation is the use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse effects of climate change. This includes sustainable management, conservation and restoration of specific ecosystems that provide key services.

### City Climate Action Plan

The City has released its first proposed Climate Action Plan (CAP). The CAP will help reduce greenhouse gas emissions and make the City more sustainable and resilient to climate change impacts. The Pasadena CAP is the latest initiative in the City's

ongoing commitment to confronting the issue of climate change. The purpose of the CAP is to analyze GHG emissions at a programmatic-level, outline a strategy to reduce and mitigate municipal and community-wide GHG emissions, demonstrate Pasadena's commitment to achieving the state-wide emissions reduction targets, and serve as a qualified GHG reduction plan consistent with Purpose of the Pasadena Climate Action Plan the California Environmental Quality Act (CEQA) Guidelines Section 15183.5. The timeframe for the CAP extends from the date of adoption through the year 2035, consistent with the horizon year of Pasadena's 2015 General Plan Land Use Element.

The 27 listed adaptation actions in the CAP are organized into five (5) strategies:

1. Sustainable Mobility and Land Use
2. Energy Efficiency and Conservation
3. Water Conservation
4. Solid Waste Reduction
5. Urban Greening

These actions establish an initial roadmap to withstand the impacts. Over time, as understanding climate change science evolves and local impacts are observed, the City will evaluate the need for adjusting existing actions and adding new ones. This will take place through regular CAP monitoring and reporting and future CAP updates.

## 4.5.2 Dam Failure

### *Hazard Description*

Dams and reservoirs of jurisdictional size are defined in the California Water Code Sections 6000 through 6008. There are currently more than 1,400 dams of jurisdictional size in California. Approximately 1,250 of these dams are under the jurisdiction of California's Department of Water Resources, Division of Safety of Dams. Dams and reservoirs owned by the federal government are not subject to state jurisdiction except as otherwise provided by federal law. In California, there are currently 149 dams owned by federal government agencies such as the U.S. Forest Service, Bureau of Reclamation, Army Corps of Engineers, and the U.S. Military.

Los Angeles County leads the state as being the county with the most jurisdictional-size dams, with 100 dams. The term "dam failure" encompasses a wide variety of circumstances. Situations that would constitute a dam failure vary widely, from developing problems to a partial or catastrophic collapse of the entire dam. Potential causes of dam failure are numerous and can be attributed to deficiencies in the original design of the dam, the quality of construction, the maintenance of the dam and operation of the appurtenances while the dam is in operation, and acts of nature, including precipitation in excess of the design, flood, and damage from earthquakes.

Water overtopping the dam crest is a common cause of failure in earth dams. Overtopping will cause erosion of the dam crest and an eventual dam breach. Piping of each dam is another common form of failure. Piping is a form of erosion that occurs underground caused by rodent burrowing and extensive root systems from vegetation growing on and around the dam.

This type of disaster is especially dangerous because it can occur suddenly, providing little warning or evacuation time for the downstream communities. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs due to the momentum of the flood caused by the sediment-laden water flooding over the channel banks and impact debris carried by the flow.

### *History*

Pasadena has not been included in any federal disaster declarations or state emergency proclamations related to dam failure. Dams within Los Angeles County have failed or had the potential to fail within the past 100 years. Major incidents include:

- March 12, 1928 – The St. Francis Dam catastrophically failed, and the resulting flood caused as many as 400 fatalities. The collapse is considered one of the

worst American civil engineering disasters of the 20th century and remains the second-greatest loss of life due to a disaster in California's history.

- December 14, 1963 – The Baldwin Hills Dam inundated the neighborhood of South Los Angeles when the dam suffered a catastrophic failure and flooded the residential neighborhoods surrounding it. It began with signs of lining failure, followed by increasingly serious leakage through the dam at its east abutment. After three (3) hours, the dam breached, with a total release of 250 million U.S. gallons resulting in five (5) deaths and the destruction of 277 homes. Vigorous rescue efforts averted a greater loss of life.
- February 9, 1971 – The San Fernando region was struck by one of the most devastating earthquakes in California history. With a Richter magnitude of 6.6, it claimed 65 lives and caused damage estimated at half a billion dollars. It was California's third-worst earthquake in terms of lives lost, only exceeded by San Francisco, 1906, and Long Beach, 1933. The San Fernando quake could have been a catastrophe instead of just a costly disaster. That conclusion arises from its most striking episode: the near collapse of the lower dam at the Van Norman reservoir. The 1,100-foot dam held 3.6 billion gallons of water, but it was only half full; the water level was 36 feet below the lip. The top thirty feet of the structure crumbled, leaving the water only six feet (6 ft.) from the top and fresh chunks of earth falling off with each aftershock. A University of California Los Angeles (UCLA) study estimated that the collapse of the dam could have killed between 71,600 and 123,400 people.

### *Location*

There are two (2) major flood infrastructure structures located upstream from the Pasadena area to manage the Riverine Flooding potential: Devil's Gate Dam and Reservoir and the Eaton Wash (Creek) Dam and Reservoir. These structures are owned by the Los Angeles County Department of Public Works and are located along the Arroyo Seco and Eaton Wash (Creek) tributary stream systems, respectively.

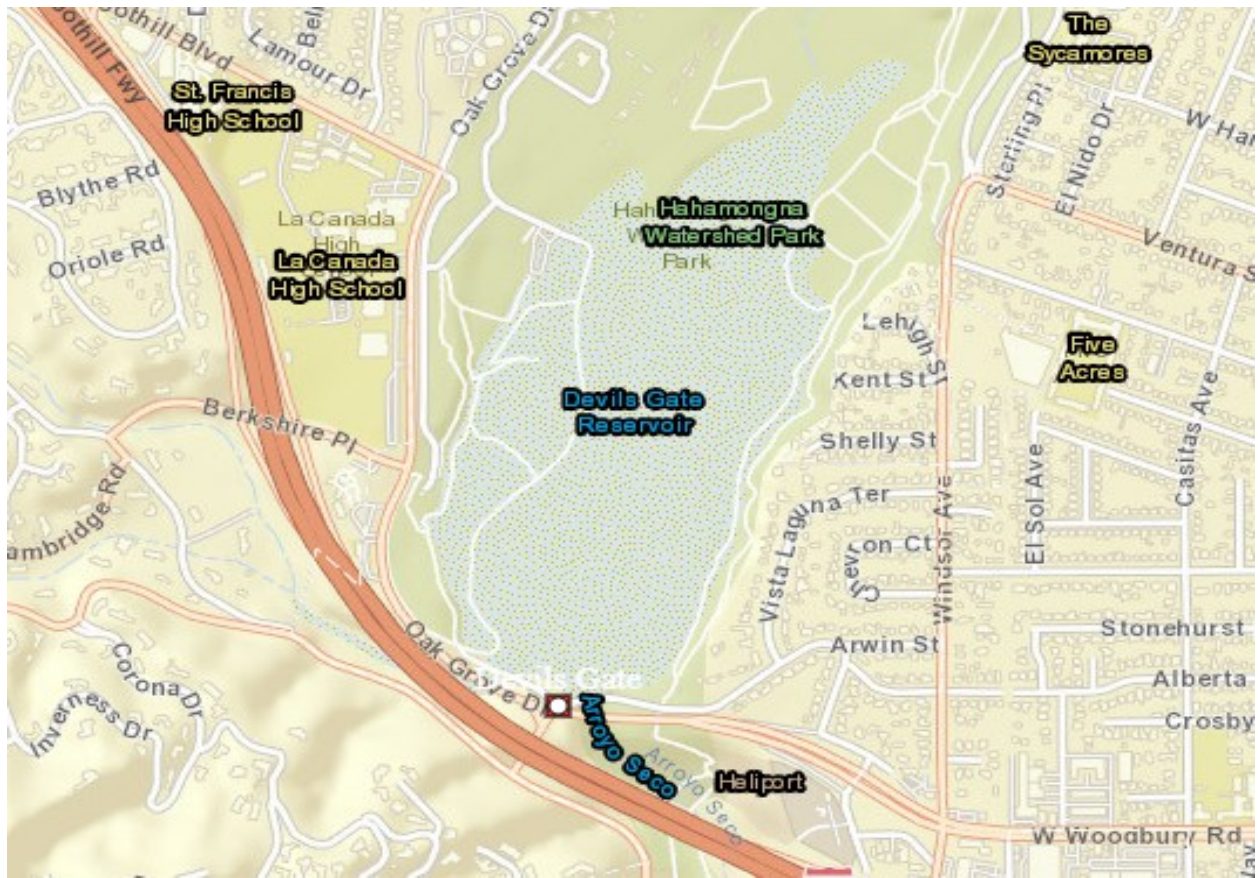
- The Devil's Gate Dam flood inundation path shows that the floodway of the Arroyo Seco would contain most of the water. Since this area is largely undeveloped and used primarily for recreation purposes, the risk posed by this hazard could be considered low.
- The Eaton Wash Dam inundation path shows that, on its southern reaches, some developed areas would be impacted. The risk posed by this hazard could be considered low.

### Devils Gate Dam

Devils Gate Dam was built in 1920, the oldest dam constructed by the Los Angeles County Flood Control City, to provide flood protection to the cities of Pasadena, South Pasadena, and Los Angeles. Parts of North and South Arroyo are in the inundation zone of the Devils Gate Dam. **Figure 4-3** provides an overview of the dam. **Figure 4-4** provides the location of the Devils Gate Dam.



**Figure 4-3: Devils Gate Dam**



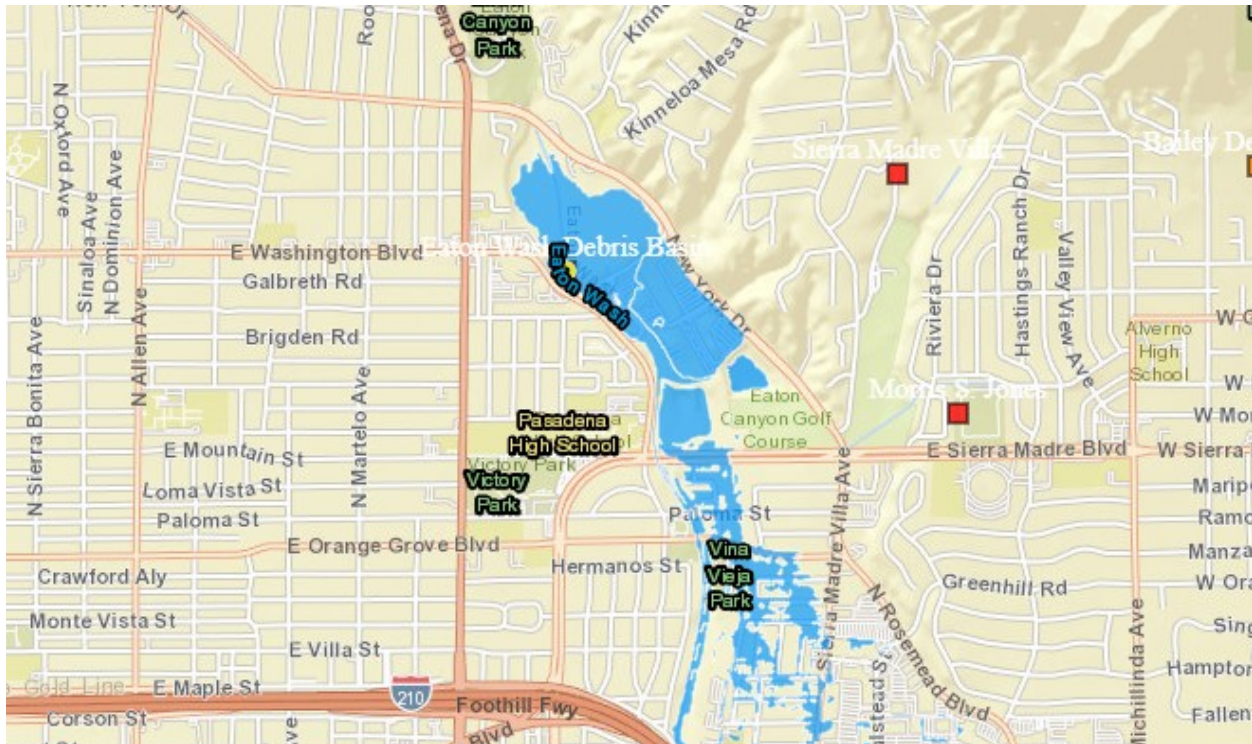
**Figure 4-4: Location of Devils Gate Dam**

#### Eaton Wash Dam

Eaton Wash Reservoir and the Eaton Wash Dam were built in 1937 (87 years ago) and are controlled by the Los Angeles County Department of Public Works. The dam is a rock fill, 63 feet (19 m) in height, and is 1,545 ft (471 m) in length. Normal storage for the reservoir is 721 acre-feet (889,000 m<sup>3</sup>). It has a surface area of 54 acres (22 ha) and drains an area of 9.47 square miles (24.5 km<sup>2</sup>). Its primary usage is for flood control and debris storage. A photograph of the dam is shown in **Figure 4-5**. Its location is shown in **Figure 4-6**.



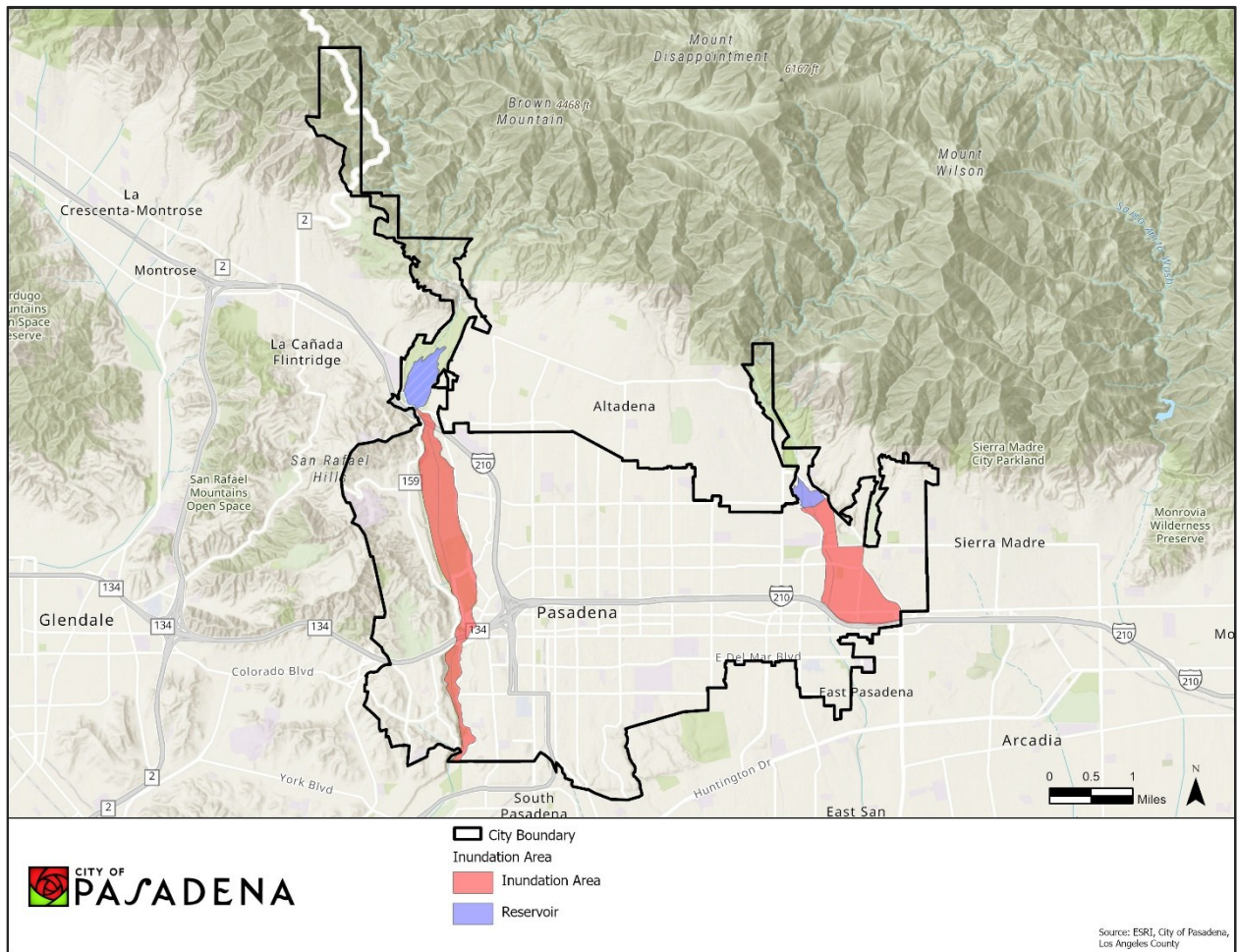
Figure 4.5: Eaton Wash Dam



**Figure 4-6: Location of Eaton Wash Dam**

#### City Owned Reservoirs

Pasadena Water and Power has 12 active wells that feed natural groundwater into 18 reservoirs throughout the community that also receive some purchased water from the Metropolitan Water District. Jones Reservoir holds about 50 million gallons -- the largest capacity of all Pasadena's reservoirs (Lida Reservoir is the smallest). The blended water (natural groundwater and MWD water) is disinfected and then distributed to customers through a pipeline network of 478 miles of mains throughout the City.



**Figure 4-7: Dam Inundation Areas**

*Extent*

DSOD uses a scale for defining the intensity or potential severity of dam failure solely based on potential downstream impacts to life and property. Additionally, the hazard is not related to the condition of the dam or its pertinent structures. This scale has four (4) categories which include the Federal categories and adds a fourth category of “extremely high”. Devils Gate Dam is listed as “High” and Eaton Wash is listed as “Extremely High”. **Table 4-6** outlines the downstream hazard potential classifications used by DSOD.

**Table 4-6: California Department of Water Resources Division of Safety of Dams – Downstream Hazard Classifications**

Downstream Hazard Potential Classifications	Potential Downstream Impacts on Life and Property
<b>Low</b>	No probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.
<b>Significant</b>	No probable loss of human life, but it can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
<b>High</b>	Expected to cause the loss of at least one human life.
<b>Extremely High</b>	Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.

#### *Probability of Future Event*

Dam failure can result from numerous natural or human activities. Earthquakes, internal erosion, improper sitting, structural and design flaws, or rising floodwaters can all result in the collapse or failure of a dam. A dam failure may also be a result of the age of the structure or inadequate spillway capacity. The probability of a future dam failure affecting the City is unknown. While possible, it is unlikely that a dam failure event will occur within the next 10 years. There is less than or equal to 10% likelihood of a dam incident occurring each year.

#### *Regulatory Context*

In California, the regulation of dams is primarily overseen by the Division of Safety of Dams (DSOD) under the Department of Water Resources. This division is responsible for the review, approval, and supervision of dam construction, maintenance, and safety protocols to prevent failure and mitigate risks associated with dam operations.

*Impact of Climate Change*

Severe weather such as more powerful rainstorms are likely to occur as a result of climate change. Atmospheric rivers which can create flooding throughout California may occur more frequently due to warmer weather and more moisture in storm systems. Climate change has the potential to cause more frequent and more heavy precipitation incidents. The results could be additional flows into with the potential for overtopping or other dam failure mechanisms for Devil's Gate Dam and Reservoir and the Eaton Wash (Creek) Dam and Reservoir.

### 4.5.3 Drought

#### *Hazard Description*

Drought is a normal part of virtually every climate on the planet, including areas of high and low rainfall. It is different from normal aridity, which is a permanent characteristic of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity.

Drought is a complex natural hazard which is reflected in the following four (4) definitions commonly used to describe it:

- Meteorological drought is defined solely by the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales
- Hydrological drought is related to the effects of precipitation shortfalls on stream-flows and reservoir, lake, and groundwater levels
- Agricultural drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops
- Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of a weather-related supply shortfall. It may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, geographic extent, and regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses challenges in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three (3) ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline, and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

### *History*

Since record-keeping began, California and the western region of the U.S. have experienced several multi-year drought conditions. The City experienced severe drought from April 2007 through December 2009 and severe to exceptional drought from February 2013 through January 2017. A severe to exceptional drought began in 2020 and ended during the winter of 2022-2023. *Source: U.S. Drought Monitor.*

The following maps show the extent of drought conditions in California from February 2025, 2020 and 2015. They also include a chart showing the history of drought conditions in California from 2001 through early 2025.

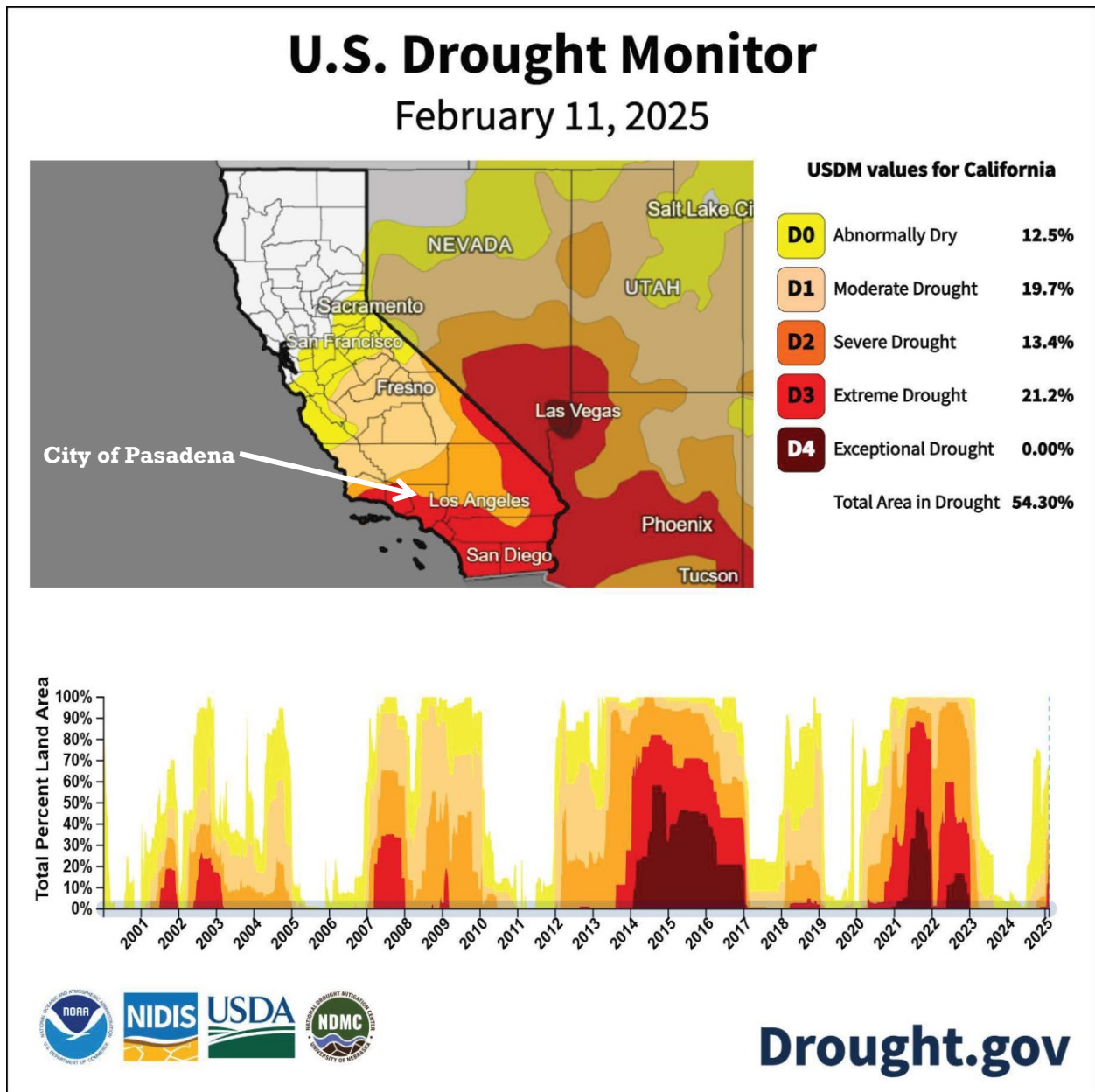


Figure 4.8: California Drought Monitor February 2025

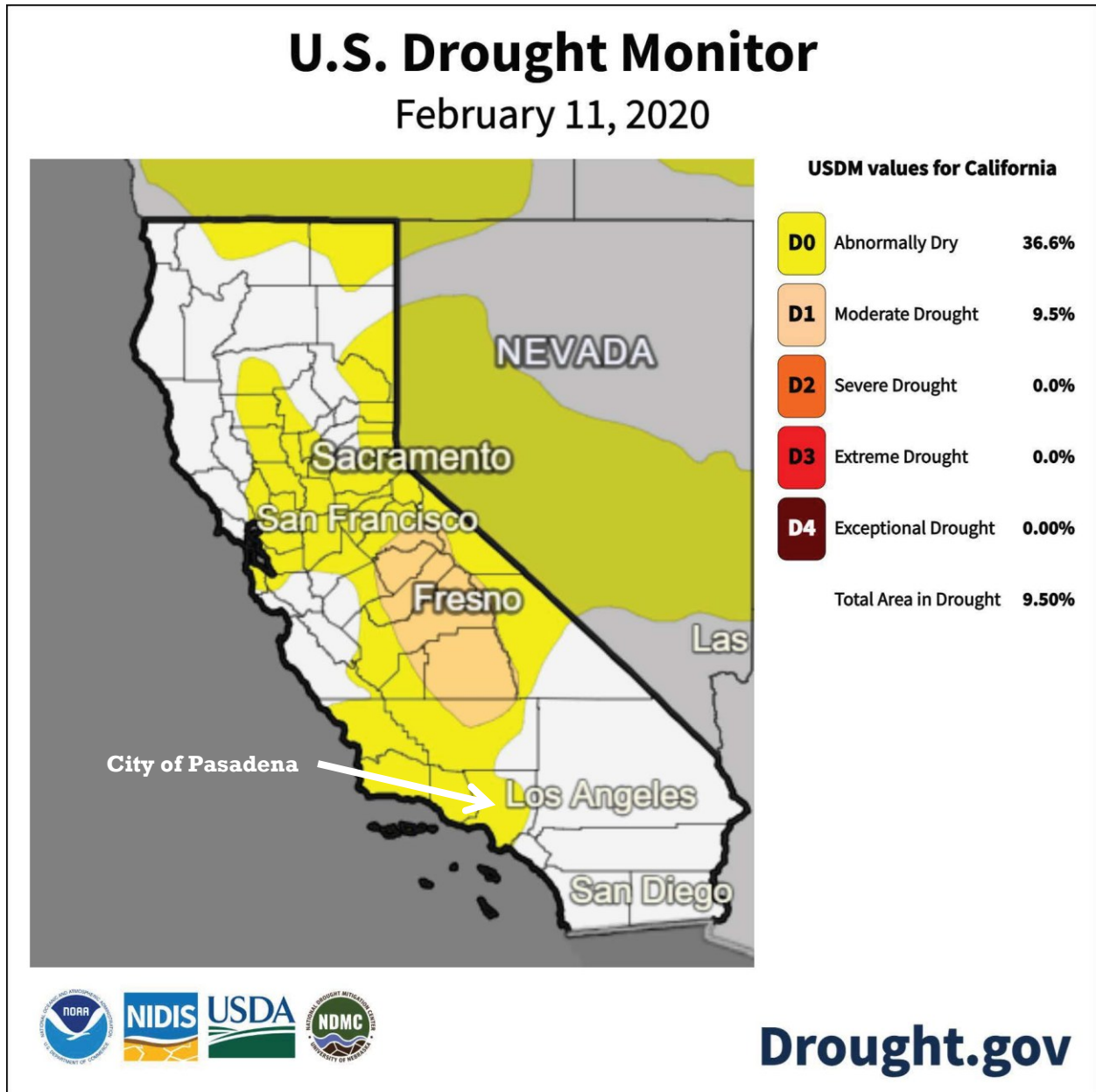


Figure 4.9: California Drought Monitor February 2020

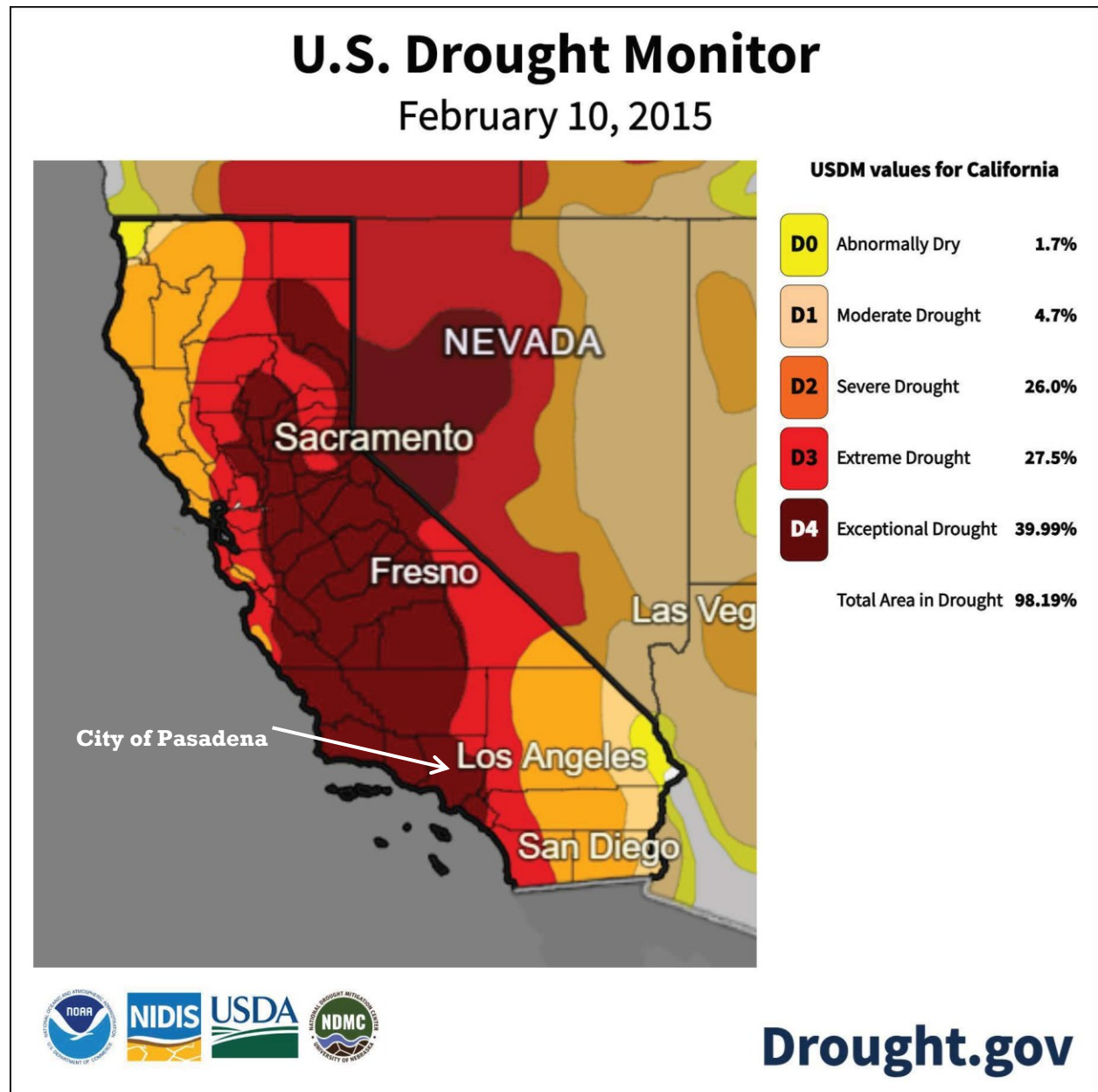


Figure 4.10: California Drought Monitor February 2015

*Location*

*The entirety of the City is affected by all drought conditions affecting Southern California.*

*Extent*

The National Integrated Drought Information System (NIDIS) Act of 2006 (Public Law 109-430) prescribes an interagency approach for drought monitoring, forecasting, and

early warning.<sup>5</sup> The NIDIS maintains the U.S. Drought Portal,<sup>6</sup> a centralized, web-based access point to several drought-related resources, including the U.S. Drought Monitor (USDM) and the U.S. Seasonal Drought Outlook (USSDO).

The primary indicators for these maps for the Western U.S. are the Palmer Hydrologic Drought Index and the 60-month Palmer Z-index. The Palmer Drought Severity Index (PSDI) is a commonly used index that measures the severity of drought for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture. However, the Palmer Index is not considered consistent enough to characterize the risk of drought on a nationwide basis. Commonly used drought severity classifications are depicted in **Figure 4-11**.

Drought Severity Classification							
Category	Description	Possible Impacts	Ranges				
			Palmer Drought Index	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought; short-term dryness slowing planting, growth of crops or pastures. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

**Figure 4-11: Commonly Used Drought Severity Classifications**

*Probability of Future Events*

As this HMP is being developed, California is not experiencing severe drought. Extreme drought persisted from 2012 to 2016. After an extremely wet winter during 2017 – 2018, drought conditions returned in 2021 and lasted to 2024.

Drought in California is a common occurrence that can last for multiple years. It is often associated with the El Niño Southern Oscillation (ENSO), when La Niña conditions result in decrease winter precipitation. The regional climate is characterized by a distinct dry season (approximately May to September) and wet season (approximately October to April) defined by a few large precipitation events, though additional peaks in precipitation can occur. There is a high probability that multi-year drought will occur during any 25-year period.

### *Impact of Climate Change*

Climate change is already profoundly impacting California's water resources, as evidenced by changes in snowpack, sea level, and river flows. These changes are expected to continue, and more precipitation will likely fall as rain instead of snow. This potential change in weather patterns will add additional challenges to water supply reliability.

The mountain snowpack provides as much as a third of California's water supply by accumulating snow during wet winters and releasing it slowly during the spring and summer when the need is the greatest. Warmer temperatures will cause snow to melt faster and earlier, making it more difficult to store and use.

By the end of this century, the Sierra snowpack is projected to experience a forty-eight percent (48%) to sixty-five percent (65%) loss from the historical April 1st average. This loss of snowpack means less water will be available for Californians.

Climate change is also expected to result in more variable weather patterns throughout California. More variability can lead to longer and more severe droughts. In addition, rising sea levels will continue to threaten the Sacramento-San Joaquin Delta, the heart of the California water supply system and the source of water for twenty-five (25) million Californians and millions of acres of prime farmland.

### *Regulatory Context*

The State Water Resources Control Board (State Water Board) and the nine (9) Regional Water Quality Control Boards (Regional Boards) protect water quality and allocate surface water rights. The Legislature created the State Water Board in 1967. The mission of the Water Board is to ensure the highest reasonable quality for waters of the State while allocating those waters to achieve the optimum balance of beneficial uses. The joint authority of water allocation and water quality protection enables the Water Board to provide comprehensive protection for California's waters. Regional Boards are semi-autonomous and have broad responsibilities within the framework of State regulatory guidance. The Department of Water Resources manages water usage,

including water delivery to two-thirds of California's population through the State Water Project.

*Impacts and Vulnerabilities*

Within the City, severe drought may result in water rationing and loss of public and private landscaping. Region-wide, drought results in large-scale tree die-off, increasing the likelihood and severity of wildland fires.

Surrounding communities, also in drought conditions, could increase their demand for water supplies relied upon by the planning partnership, causing social and political conflicts. If such conditions persist for several years, mandatory water rationing could impact residents and City businesses.

Low-income communities are most vulnerable to drought due to potential increases in the cost of water.

#### 4.5.4 Earthquake/Geological Hazards

##### *Hazard Description*

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of the crust or by a volcanic eruption. Most destructive quakes are caused by dislocation of the crust. The crust may first bend and then, when the stress exceeds the strength of the rocks, break and snap to a new position. In the process of breaking, vibrations called "seismic waves" are generated. These waves travel outward from the source of the earthquake at varying speeds.

The City is located in a high seismic risk zone. This region is one of the most seismically active in the world, marked by the number of large, damaging earthquakes that have occurred in the past. The following geologic hazards are associated with earthquakes and may be caused by seismic activity, increasing the resulting damage:

##### **Ground Shaking**

Ground shaking caused by a strong earthquake is probably the most important seismic hazard that can be expected anywhere in the City and larger Southern California area. The amount of earthquake shaking at a site is associated with the earthquake magnitude; the type of earthquake fault; the distance between the site and the earthquake source; the geology of the site; and how the earthquake waves decrease or increase as they travel from their source to the site in question. Shaking from the earthquake intensifies with a greater magnitude and closer distance to the epicenter. Softer soils and topographic ridges can also amplify seismic ground motions.

##### **Liquefaction**

Soil liquefaction is a phenomenon in which soil's strength and stiffness are reduced by earthquake shaking or other rapid loadings. Liquefaction and related phenomena have been responsible for tremendous amounts of damage in historical earthquakes around the world. Liquefaction can result in the settling and compacting of unconsolidated sediment in the event of a major earthquake. Liquefaction may increase as the ground acceleration and duration of shaking increase.

Areas subject to liquefaction in the City are shown in **Figure 4-12**.

##### **Surface Fault Rupture**

Surface rupture is an offset of the ground surface when fault rupture extends to the Earth's surface. Fault rupture almost always follows preexisting faults, which are zones of weakness. Any structure built across the fault is at risk of being torn apart as the two (2)

sides of the fault slip past each other. Normal and reverse surface fault ruptures have vertical motion while strike-slip surface fault ruptures produce lateral offsets.

### **Subsidence**

Land subsidence is defined as the lowering of the land surface. Many different factors can cause the land surface to subside, such as a sinkhole or underground mine collapse, or during a major earthquake. Land subsidence can also occur when large amounts of groundwater have been excessively withdrawn from an aquifer. The clay layers within the aquifer compact and settle, resulting in lowering the ground surface in the area from which the groundwater is being pumped. Over time, as more water is removed from the area, the ground drops and creates a cone. Once the water has been removed from the sediment, it cannot be replaced.

Land subsidence can occur in various ways during an earthquake. Movement that occurs along faults can be horizontal or vertical or have a component of both. As a result, a large area of land can subside drastically during an earthquake. Land subsidence can also be caused during liquefaction. Liquefaction can result in the settling and compacting of unconsolidated sediment in the event of a major earthquake. This can result in the lowering of the land surface.

### **Expansive Soils**

Expansive soils contain mixed-layer clay minerals that increase and decrease in volume upon wetting and drying, respectively. Expansive soil is common throughout California and can damage foundations and slabs unless properly treated during construction.

### **Landslides**

Some soil materials, such as clay minerals, can absorb water, resulting in a reduction of shear strength. The force of gravity can cause landslides when the shear strength of saturated clay is reduced below its minimum stability threshold. Earthquake-induced landslides of steep slopes can occur in either bedrock or soils. Areas at risk from landslides typically have steep slopes (15% or greater), unstable rock or soil characteristics, or other geologic evidence of instability. The City does not have slopes of this steepness.

While ground shaking, liquefaction, surface fault rupture, subsidence, expansive soils, and landslides may all result from an earthquake, the City has taken the approach of developing mitigation activities that address earthquakes as a single hazard. This is based upon the fact that the sub-hazards of landslide and surface fault rupture are unlikely in the City, and that ground shaking, liquefaction, subsidence, and expansive

soils result in damage to structures and facilities. Mitigation actions will be designed to address the sub-hazards as a single hazard.

For this planning cycle, the City has chosen not to develop any mitigation actions specific to these sub-hazards.

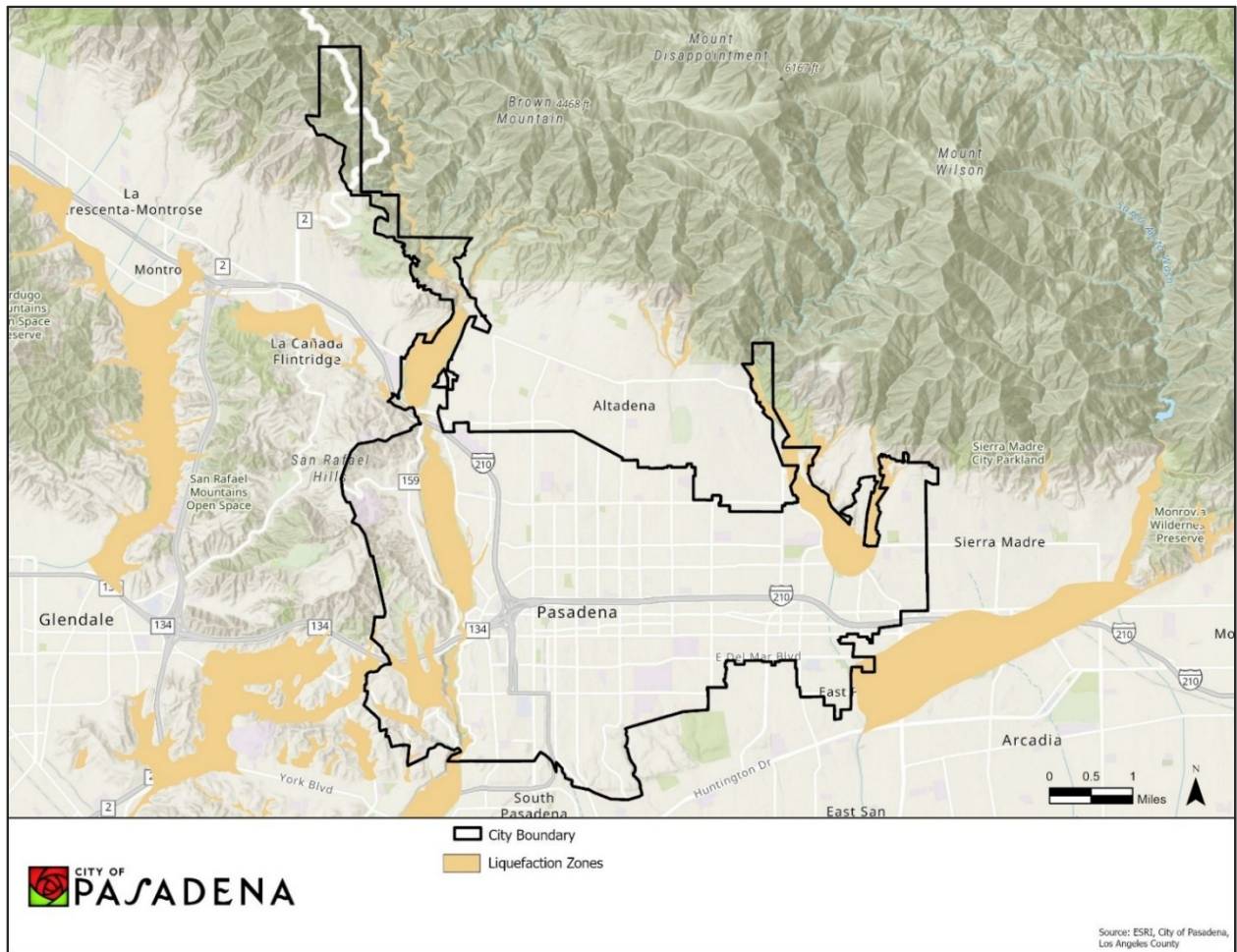


Figure 4-12: Areas Subject to Liquefaction

### *History*

Southern California is one of the most seismically active areas in the U.S. The region has experienced at least 9 earthquakes of Magnitude 6.5 or higher since 1812. Pasadena has not been included in any federal disaster declarations or state emergency proclamations related to earthquake/geological hazards. **Table 4-7** includes historical earthquakes recorded in Southern California greater than magnitude 6.5.

**Table 4-7: Historical Earthquakes Recorded in Southern California**

Date	Magnitude	Fault Name (Incident Name)
7/5/2019	7.1	Garlock (Ridgecrest)
1/17/1994	6.7	Northridge Thrust (Northridge Earthquake)
2/9/1971	6.5	San Fernando (San Fernando Earthquake)
7/21/1954	7.5	White Wolf
5/18/1949	6.9	Imperial (Imperial Valley Earthquake)
11/4/1927	7.1	Unknown (Lompoc Earthquake)
4/21/1918	6.8	San Jacinto
1/9/1857	7.9	San Andreas (Fort Tejon Earthquake)
12/8/1812	7.5	San Andreas (Wrightwood Earthquake)

### *Location*

The two (2) largest faults in the Pasadena area are the Sierra Madre Fault, a reverse fault on the north boundary of the City, and the Raymond Fault, a left lateral strike-slip fault that extends into the southern and eastern areas of the City. A rupture of either fault would result in major damage to the entire City. Other nearby faults include the Verdugo, Hollywood, Whittier, and Elysian Park fault zones. Any of these faults have the potential to cause serious damage to Pasadena. Fault locations in the City are shown in **Figure 4-14**.

Landslides are not common and affect a small portion of the West and North of the City. Areas subject to landslides in the City are shown in **Figure 4-13**.

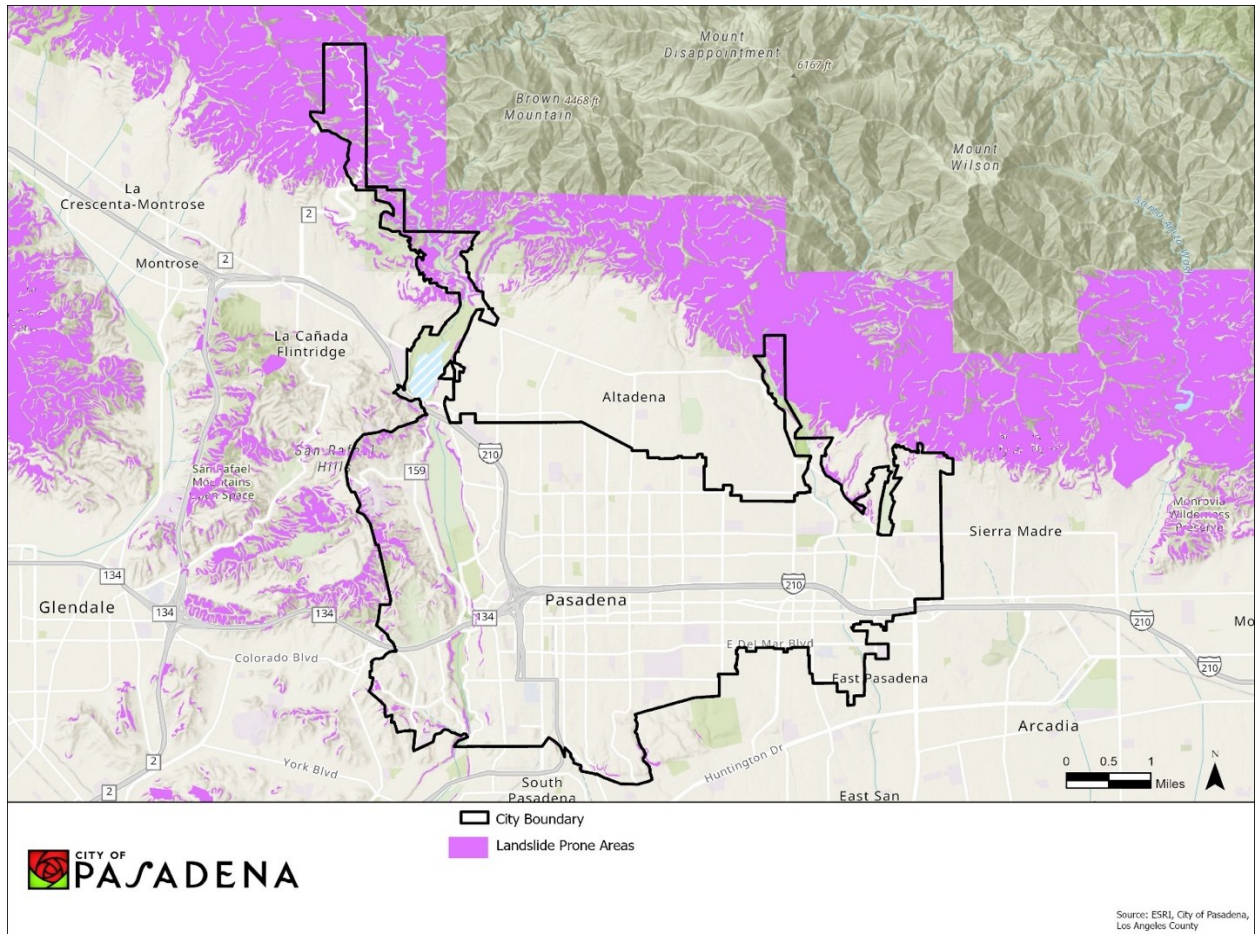


Figure 4-13: Areas Subject to Landslides

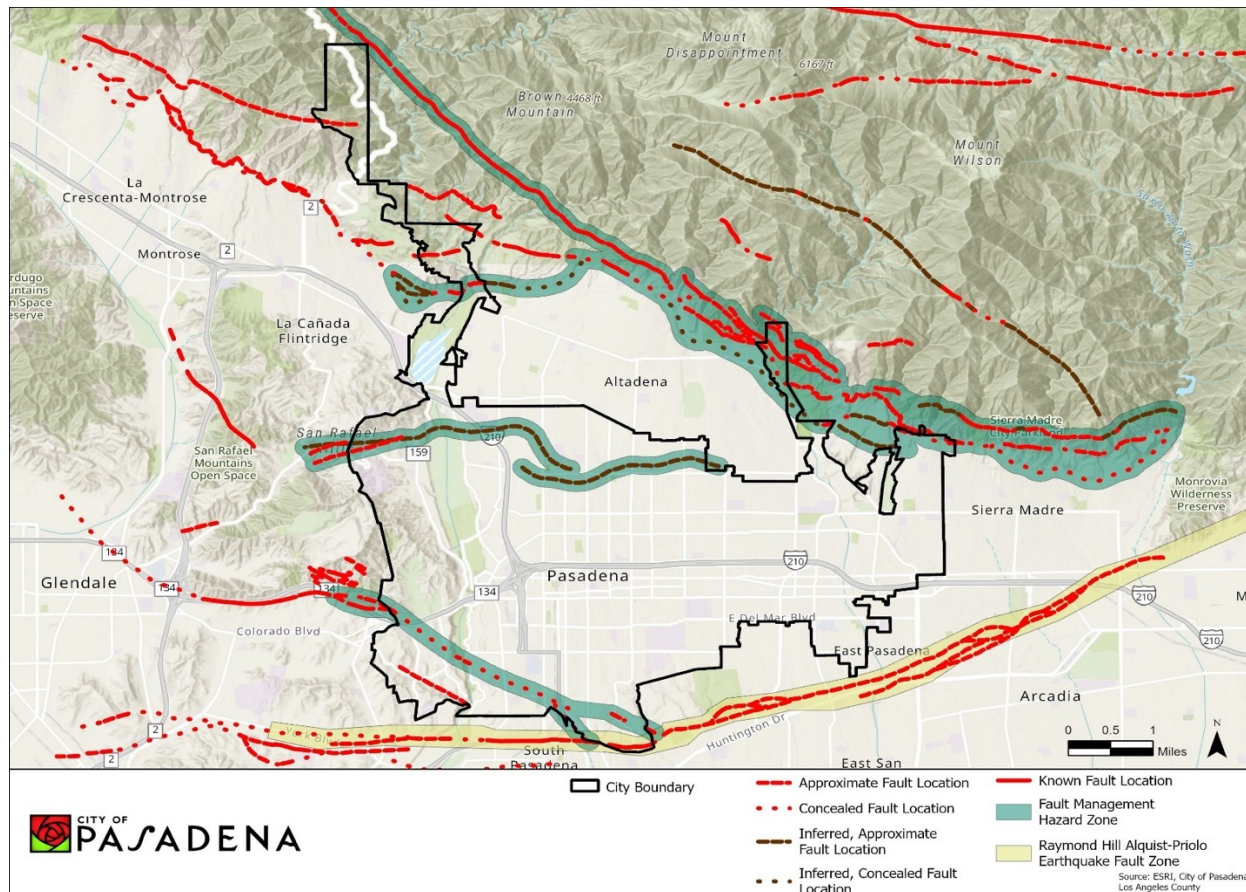


Figure 4-14: Major Faults near the City

*Extent*

**Earthquake**

Two (2) scales are used to measure the severity and intensity of an earthquake. The Modified Mercalli Intensity (MMI) Scale measures the ground shaking intensity in terms of acceleration, velocity, and displacement. The Moment Magnitude (Mw) Scale measures the severity of the earthquake by the amount of energy released at the source of the earthquake. The Mw scale, based on the concept of seismic moment, is uniformly applicable to all sizes of earthquakes. The extent of damage from an earthquake is determined by the magnitude of the earthquake, distance from the epicenter, and characteristics of surface geology. **Table 4-8** shows an approximate correlation between the Moment Magnitude (Mw) and the Modified Mercalli Intensity (MMI) Scale and its effects.

**Table 4-8: Severity (Mw) and Intensity (MMI) Comparison**

<b>Magnitude (Mw)</b>	<b>MMI Scale: Intensity</b>	<b>Abbreviated MMI Scale: Effects</b>	<b>Abbreviated MMI Scale: Effects</b>
<b>1.0 - 3.0</b>	<b>I</b>	<b>I.</b> Not felt except by a very few under especially favorable conditions.	
<b>3.0 - 3.9</b>	<b>II – III</b>	<b>II.</b> Felt only by a few people at rest, especially on upper floors of buildings.	<b>III.</b> Felt quite noticeably by people indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations like the passing of a truck. Duration estimated.
<b>4.0 - 4.9</b>	<b>IV – V</b>	<b>IV.</b> Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound—a sensation like heavy truck striking building. Standing motor cars rocked noticeably.	<b>V.</b> Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
<b>5.0 - 5.9</b>	<b>VI – VII</b>	<b>VI.</b> Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster—damage slight.	<b>VII.</b> Damage negligible in buildings of good design and construction; light to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.

Magnitude (Mw)	MMI Scale: Intensity	Abbreviated MMI Scale: Effects	Abbreviated MMI Scale: Effects
6.0 - 6.9	VIII – IX	VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage greatly in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	IX. Damage considerably in specially designed structures; well-designed frame structures thrown out of plumb. Great damage in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0 and higher	X - XI	X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.	XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
7.0 and higher	XII	XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.	

Source: US Geological Survey (USGS): [http://earthquake.usgs.gov/learn/topics/mag\\_vs\\_int.php](http://earthquake.usgs.gov/learn/topics/mag_vs_int.php)

### Landslide

Landslides are not common in Pasadena but can occur. They are most likely to occur during and immediately after storms when water saturation of the soil is at highest levels or during a significant earthquake.

There is no standardized classification for size or damage of landslides. The National Atmospheric and Space Administration (NASA) uses these definitions based on the exponential increase in the mass of the landslide:

- **Small:** Less than 10 cubic meters of debris. These minimally impact infrastructure, and roads though may still hold enough mass to kill a human.
- **Medium:** Between 10 and 1,000 cubic meters of debris. These can block roads for days, damage houses and facilities, and easily kill humans.

- **Large:** Between 1,000 and 100,000 cubic meters of debris. Often cover wide areas with substantial impact to roads and infrastructure, likely displacing people and causing tens to hundreds of casualties.
- **Very Large:** Between 100,000 and 1,000,000 cubic meters of debris. These landslides cover extremely large areas that can cover entire towns and neighborhoods.
- **Catastrophic:** Over 1,000,000 cubic meters of debris. Multiple towns, neighborhoods, and boroughs may be impacted or completely covered. Fatalities might be over 1,000.

### *Probability of Future Events*

Pasadena is in a seismically active area with many faults in the surrounding area and region-at-large. There will be an ever-present danger, of course, posed by any seismic shaking, which could potentially cause damage to buildings and/or infrastructure. It is almost inevitable that an earthquake will occur along one of the adjacent or regional fault lines and cause a major seismic event.

There is 75% likelihood that the City will experience a significant earthquake from one of the known major faults in the next 30 years. In 2015, the Working Group on California Earthquake Probabilities (WGCEP) issued its third Uniform California Earthquake Rupture Forecast (UCERF3), which determined the likelihood for magnitude 6.7 and larger earthquakes within the next 30 year, somewhere in the region remains near certainty (greater than 99 percent). Within the next 30 years, the probabilities of earthquakes in Southern California are:

- 60% that an earthquake measuring magnitude 6.7
- 46% that an earthquake measuring magnitude 7
- 31% that an earthquake measuring magnitude 7.5

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 different locations for various plausible earthquake scenarios.

Although not a significant risk to the city, landslides can occur during periods of extreme weather after a large earthquake. FEMA's risk index currently lists Los Angeles County as Relatively High.

*Impact of Climate Change*

Climate change is not expected to have any direct influence on the likelihood, size, and/or severity of any future seismic-related event. Landslides and other geological hazards can be more common with the impacts of climate change due to more extreme weather events causing greater water saturation of soils, such as during the 2023 atmospheric river events. More extreme El Niño weather events could also increase the amount of water dumped during each event despite the area becoming dryer on average.

#### 4.5.5 Extreme Weather (Sever Wind, Extreme Heat, Winter Storm)

##### *Severe Wind (Hazard Description)*

Windstorms are generally short-duration events involving straight-line winds or gusts of over 50–60 mph, strong enough to cause property damage. Damage from such winds accounts for half of all severe weather reports in the lower 48 states. Wind speeds can reach up to 100 mph and can produce a damaged path extending for hundreds of miles. The Beaufort Wind Chart (**Table 4-9**) provides terminology and a description of potential wind impacts at different levels.

The following types of damaging winds represent a hazard within the planning area:

- **Santa Ana Winds**—In Southern California, strong, dry, gusty winds known as Santa Ana winds form when air from a region of high pressure over the desert region of the southwestern U.S. flows westward toward low pressure areas off the California coast. As the wind flows over the Sierra Nevada and Santa Ana mountains, dropping from high elevation to sea level, it becomes compressed and heats up, and its relative humidity drops. Gaps in mountains form wind tunnels that strengthen these winds as they pour warm air east to west through the canyons. Santa Ana winds may occur year-round but are most common from September through March. A Santa Ana wind event can yield sustained winds of 40 miles per hour; isolated wind gusts of over 80 miles per hour have been recorded.
- **Downdrafts**—A downdraft is a small-scale column of air that rapidly sinks toward the ground.
- **Downbursts**—A downburst is a strong downdraft with horizontal dimensions larger than 2.5 miles, resulting in an outward burst or damaging winds on or near the ground. Downburst winds may sometimes produce damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can occur with showers too weak to produce thunder.
- **Microbursts**—Microbursts are small, concentrated downbursts that produce an outward burst of damaging winds at the surface. Microbursts are generally less than 2.5 miles across and short-lived, lasting only 5 to 10 minutes, with maximum wind speeds up to 168 mph.
- **Tornados**—Tornados are formed by the turbulent mixing of layers of air with contrasting temperature, moisture, density, and wind flow. Tornados have occurred in the planning area but are not common.

Windstorms can result in collapsed or damaged buildings, damaged or blocked roads and bridges, damaged traffic signals, streetlights, and parks, and other damage. Wind speeds as low as 32 mph can cause structural damage, and winds of 100 mph can destroy wood-frame structures. They can also cause direct losses to buildings, people, and vital equipment. There are direct consequences to the local economy resulting from windstorms and the associated physical damage and interrupted services.

#### *Extreme Heat (Hazard Description)*

In most of the United States, extreme heat is defined as a period (two [2] to three [3] days) of high heat and humidity with temperatures above 90 °F. In extreme heat, evaporation is slowed, and the body must work extra hard to maintain a normal temperature, which can lead to death by overworking the human body. Extreme heat can cause heat exhaustion, in which the body becomes dehydrated, resulting in an imbalance of electrolytes. Without intervention, heat exhaustion can lead to collapse and heatstroke. Heatstroke occurs when perspiration cannot occur, and the body overheats. Without intervention, heatstroke can lead to confusion, coma, and death.

Extreme heat often results in the highest number of annual deaths among all weather-related hazards. Older adults, children, and sick or overweight individuals are at greater risk from extreme heat. According to the California Climate Adaptation Strategy, heat waves have claimed more lives in California than all other declared disaster events combined. It can take several days of oppressive heat for a heat wave to have a significant or quantifiable impact. Heat waves do not strike victims immediately, but their cumulative effects slowly cause harm to vulnerable populations.

Excessive heat is the primary weather-related cause of death in the United States, claiming over 100 lives each year. In a 30-year record of weather fatalities across the nation (1990-2019), excessive heat claimed more lives each year than floods, lightning, tornados, and hurricanes (Erdman 2021). Extreme heat events do not typically impact buildings; however, losses may be associated with the urban heat island effect and overheating of heating, ventilation, and air conditioning systems. These extreme heat events can lead to drought, impact water supplies, and lead to an increase in heat-related illnesses and deaths.

Legislation has been introduced in California to rate and name heat waves. The categorization would help communities take measures to reduce the number of heat-related fatalities (Washington Post 2021).

#### *Winter Storm (Hazard Description)*

During severe weather events such as strong storms, rain can fall at such a high rate that it cannot drain away fast enough. The resulting heavy rain can cause flooding,

leading to inundation and potential damage to buildings, road networks, public areas, utilities, and other critical pieces of infrastructure. In California, heavy rainfall events are often short, intense bursts of rain, but in some cases, heavy rain can persist for multiple days.

### *History*

**Table 4-10** summarizes search results from the National Center for Environmental Information Storm Events Database for Los Angeles County storm events over the 20-year period from 2002 through 2025. Based on these results, wind events are likely to happen every year, significant heat events occur multiple times a year. Pasadena has not been included in any federal disaster declarations or state emergency proclamations related to Extreme Weather.

**Table 4-10: Los Angeles County Severe Weather Events, January 2002 – August 2025**

Event Types Include	Total Number of Events
High Wind, Thunderstorm Wind, Strong Wind, Tornado	423
Excessive Heat	10
Heavy Rain, Lightning, Winter storm	15

### *Location*

Extreme weather events have the potential to happen anywhere in the planning area. Wind events are most damaging to areas where trees and power lines can be knocked down. Extreme heat events may be exacerbated in the City where reduced air flow, reduced vegetation, and temperatures that are several degrees higher than in surrounding less urbanized areas. Additionally, Extreme Heat can lead to loss of power in the planning area. Winter storms can impact the entire planning area, bringing heavy rain which can cause localized flooding.

### *Extent*

#### **Windstorms**

Generally, winds are measured using the Beaufort scale, developed in 1805, which categorizes wind events on a force scale from 0 to 12 using their speed and impacts. Any wind classified as force nine (9) or above is generally considered a severe wind event. **Table 4-11** identifies the Beaufort scale, which classifies wind events in detail.

**Table 4-11: Beaufort Scale**

Force	Speed (mph)	Description
0	0 to 1	Calm: Smoke rises vertically
1	1 to 3	Light air: The direction of the wind is shown by smoke drift but not wind vanes.
2	4 to 7	Light breeze: Wind is felt on the face, leaves rustle, and wind vanes are moved.
3	8 to 12	Gentle breeze: Leaves and small twigs are in motion, and light flags are extended.
4	13 to 18	Moderate breeze: Dust and loose paper become airborne, and small branches are moved.
5	19 to 24	Fresh breeze: Small trees begin to sway
6	25 to 31	Strong breeze: Large branches are in motion, and using an umbrella becomes difficult.
7	32 to 38	High wind: Whole trees are in motion and walking against the wind can be hard.
8	39 to 46	Strong wind: Walking is difficult, and twigs break off trees.
9	47 to 54	Severe wind: Slight structural damage.
10	55 to 63	Storm: Trees are uprooted and considerable damage to structures.
11	63 to 72	Violent storm: Widespread damage.
12	73 and above	Hurricane: Devastating damage.

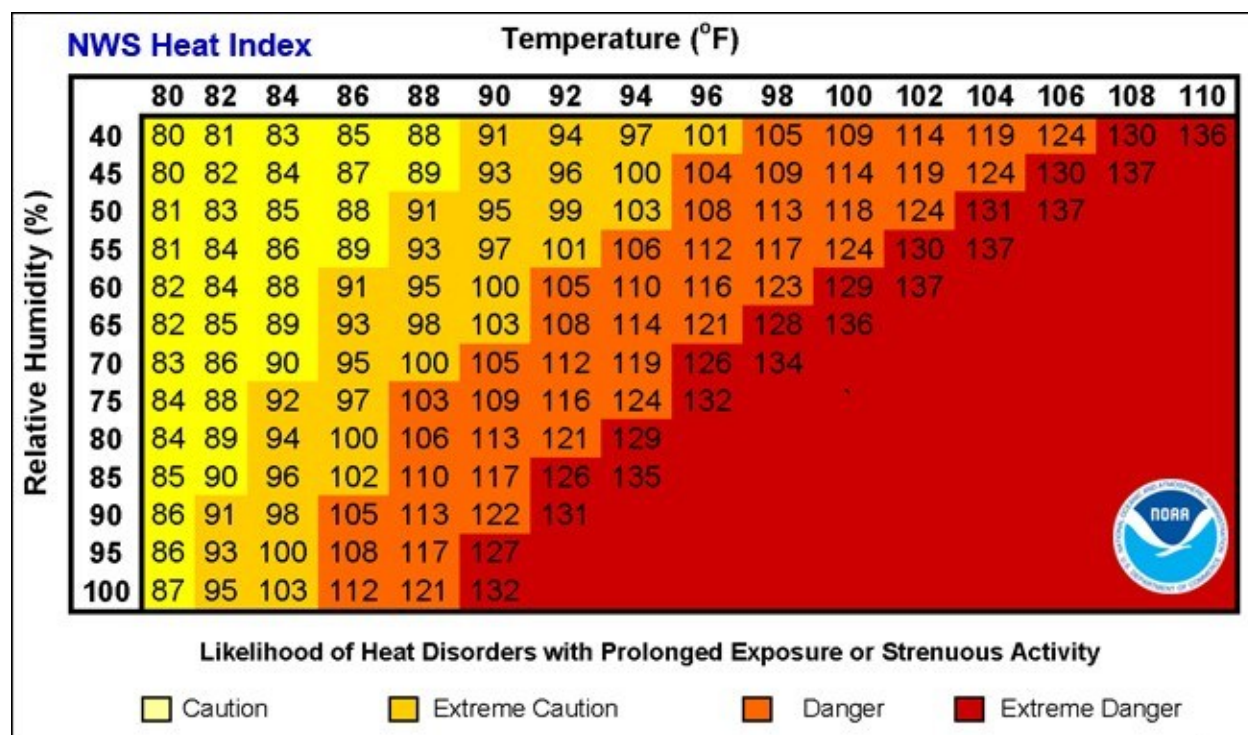
Source: <https://www.weather.gov/mfl/beaufort>

### Extreme Heat

Extreme heat events will feel different from region to region since different areas have different historic high temperatures. For example, an extreme heat day on the coast will

feel different than an extreme heat day in the High Desert. The reason for this is how humidity affects the perceived heat that people feel. Humid conditions will make a day feel hotter than non-humid conditions, even though the temperature may be the same. The difference between the perceived and actual temperatures is known as the “heat index.” To illustrate the effect of the heat index, a 90-degree day with 50 percent humidity feels like 95°F, whereas a 90°F Day with 90 percent humidity feels like 122°F. **Figure 4-15** illustrates the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service Heat Index.

Extreme heat events are not limited to any part of the City. They occur with the same intensity and duration at the same time across all locations in Pasadena. For Pasadena, an extreme heat day involves a temperature that exceeds **103.2°F**. These thresholds are based on a 2% probability event.



**Figure 4-15: NOAA's National Weather Service Heat Index**

Winter Storm

California’s precipitation varies from year to year, depending on how much moisture the state receives from atmospheric rivers. Atmospheric rivers are corridors along which wet air travels from the tropics to continents. When the moisture arrives in California, it may precipitate as rain or snow. One of California's most known atmospheric rivers is the “Pineapple Express,” which brings moist air from the ocean surrounding Hawaii to

California. An immense amount of moisture may be transported along the atmospheric rivers that cross over California during certain years, leading to severe rains.

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

Rain events are usually measured by the amount of precipitation that falls. **Table 4-12** categorizes rain events by the amount of precipitation per hour.

**Table 4-12: Measuring Heavy Rain Events**

Rain Type	Description
<b>Heavy Rain</b>	More than 4 mm per hour but less than 8 mm per hour
<b>Very Heavy Rain</b>	Greater than 8 mm per hour
<b>Moderate Shower</b>	Greater than 2 mm, but less than 10 mm per hour
<b>Heavy Shower</b>	Greater than 10 mm per hour, but less than 50 mm per hour
<b>Violent Shower</b>	Greater than 50 mm per hour

Source: <https://water.usgs.gov/edu/activity-howmuchrain-metric.html>

#### *Probability of Future Events*

Based on history, extreme weather events, including Santa Ana winds or microburst tornadic activity can be expected, perhaps annually, across widespread areas of Los Angeles County. In the U.S., average surface temperatures have risen more quickly since the late 1970s (0.36 to 0.55 degrees F per decade), with seven (7) of the top 10 warmest years on record since 1998. This will lead to more days of extreme heat every year.

There is no indication that rainfall or severe rain hazards will abate either in Pasadena or the greater region of Southern California in the future. There is a 70% chance that Pasadena will experience a severe weather event in the next year.

*Impact of Climate Change*

Climate change is a key driver of severe weather events, including extreme heat and winter storms. Climate change has led to an increase in the earth's surface temperature which has caused hotter days and warmer nights. Winter storms have the possibility of becoming more frequent with the climate temperatures increasing, and the atmosphere becoming more convective.

### 4.5.6 Flooding

#### *Hazard Description*

Floods are a common hazard in many parts of California, including Pasadena. Ultimately, a flood occurs when there is too much water on the ground to be held within local water bodies, causing water to accumulate in naturally dry areas. They are often caused by heavy rainfall, though floods can also occur after a long period of moderate rainfall or if unusually warm weather causes mountain snow to melt faster than expected. Floods that develop quickly, known as flash floods, are especially dangerous because there may be little warning that one is occurring, but floods can also build over a more extended period.

A flood, as defined by FEMA's NFIP, is: "A general and temporary condition of partial or complete inundation of two (2) or more acres of normally dry land area or of two (2) or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters, or
- Unusual and rapid accumulation or runoff of surface waters from any source, or
- Mudflow, or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels."

Floods can be slow or fast rising but generally develop over a period of hours or days. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in mitigation measures now, such as: engaging in floodplain management activities, constructing barriers such as levees, and purchasing flood insurance will help reduce the amount of structural damage and financial loss from other types of property damage should a flood or flash flood occur.

Floods are dangerous for several reasons. The floodwater can be deep enough for people to drown and move fast enough to sweep people away. The moving water can damage buildings with its force (in extreme cases, it may move entire structures) or carry large debris that damages objects with which it collides. When water gets into buildings, it can cause extensive damage to personal property, ruining building materials, furniture, electronics, and numerous other items. Both standing and moving water can be barriers to movement, isolating people and hindering evacuation, rescue, or relief efforts.

### *History*

Pasadena has had serious floods throughout its history. Several canyons near the Pasadena area, including Eaton, Zachau, Rubio, and Shields canyons, have flooded in recent recorded history. The continued threat for flooding led the County of Los Angeles and the City to develop a flood management strategy for the Arroyo Seco wash area. The first step was building the Devil's Gate Dam, completed in 1920. While the dam and other flood infrastructure has helped address flooding, it has not eliminated flooding.

**Table 4-13** lists these notable floods, detailing the dates, names, affected acres, and the number of deaths or lost structures associated with each event. This historical record underscores the persistent threat of flooding in the region and the importance of ongoing flood management and preparedness measures.

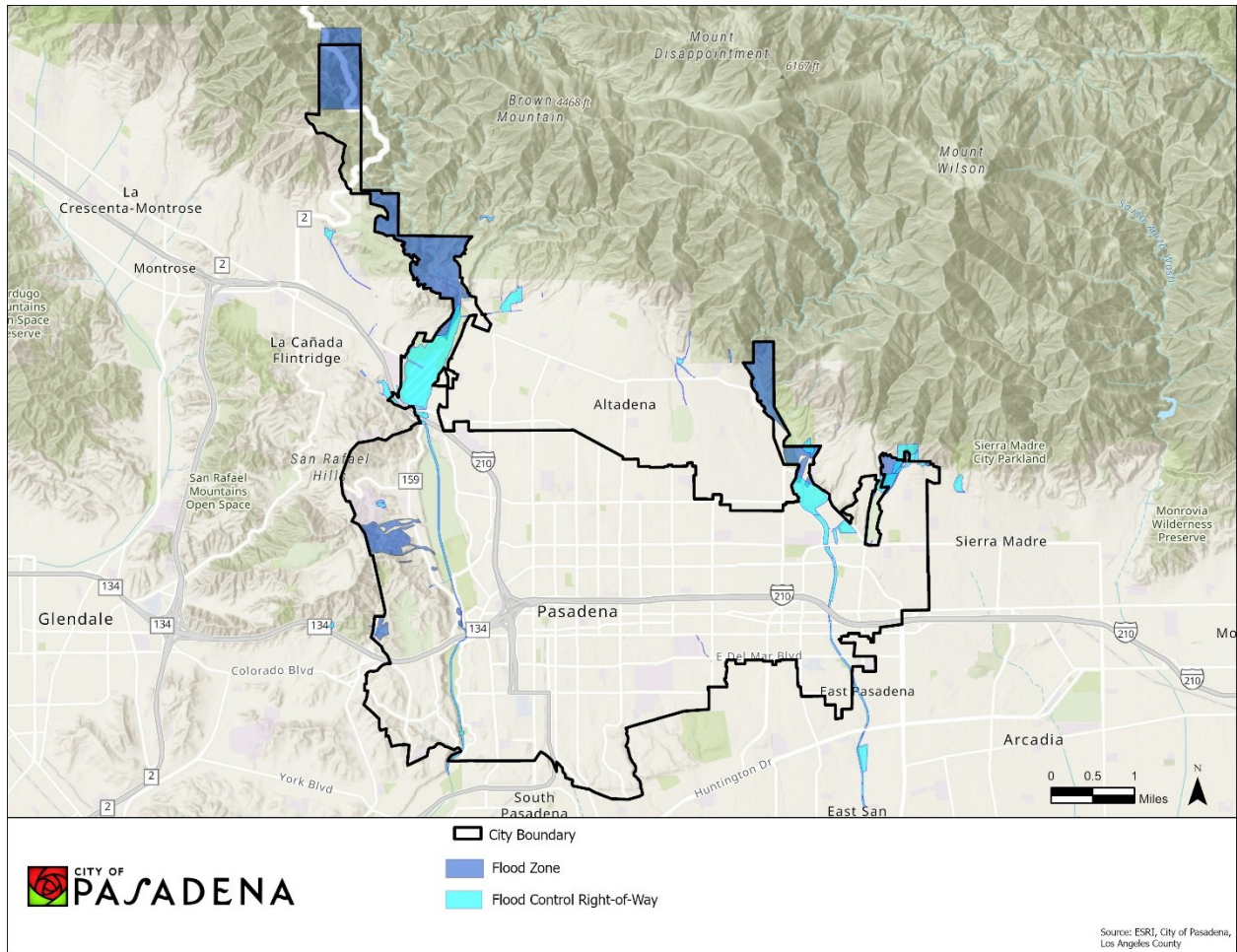
**Table 4-13: Historical Records of Large Floods in Pasadena**

Date	Description
<b>February 2023</b>	The February 2023 flood was one of the most significant in recent years. Persistent heavy rainfall over a week led to widespread flooding across Pasadena. The total rainfall exceeded 10 inches, making it one of the wettest periods in the City's history. Many residents reported basement flooding and water damage to their properties. The City had to deploy additional resources to manage the situation and provide relief to the affected areas.
<b>November 2023</b>	A less severe but still notable flooding event occurred in November 2023. The region experienced a sudden storm that brought about 4 inches of rain in a single day. While not as devastating as the previous floods, this event caused significant inconvenience, particularly in traffic and public transportation.
<b>March 2020</b>	Intense rainfall in March resulted in temporary road closures and minor property damage.
<b>2017</b>	A series of winter storms caused minor flooding, with Arroyo Seco once again posing a risk to nearby properties.
<b>December 2010</b>	Heavy rains in December led to localized flooding, impacting several neighborhoods.

Date	Description
<b>1997-1998</b>	The El Niño weather phenomenon of 1997-1998 brought unprecedented amounts of rainfall to Pasadena. The heavy rains caused significant flooding, particularly affecting the low-lying areas and homes along riverbanks. Impacts included displacement of hundreds of residents., severe property damage, particularly in flood-prone zones, and Infrastructure strain due to sustained heavy rainfall.
<b>February 1969</b>	In January and February of 1969, Pasadena and surrounding areas were hit by a series of powerful storms that brought heavy rains, leading to significant flooding. The storms caused rivers and streams to swell, inundating neighborhoods and leading to evacuations.

### *Location*

The geographical location, climate, and topography of Pasadena make the City prone to flooding. In Pasadena, floods usually occur during the winter “wet” season, the time of year with the highest precipitation totals or heavy rainfalls. During significant rainfall years, the season is characterized by high intensity rainfalls and rapid runoffs or discharge. These storm events have inundated streams, flooded areas, created debris flows (i.e., sediment, rock, dead trees) that have plugged culverts and damaged bridges/overpasses, and/or eroded or scarred the landscape. Two (2) types of flooding primarily affect the City: Riverine Flooding and Urban Flooding. While the entire City is subjective to Urban Flooding, the northern and western parts of the City are the most prone to riverine flooding due to its proximity to the San Gabriel Mountains. Two (2) main north-to-south flowing stream systems drain in the Pasadena area: Arroyo Seco and Eaton Wash. The Arroyo Seco runs along the western edge of the City, while Eaton Wash drains the eastern side of the City. A dam and reservoir system protect both streams, but they are still prone to flooding during significant events. Discussion of the dams (and reservoirs) are presented under the Dam Failure hazard. **Figure 4-16** depicts areas in Pasadena prone to flooding.



**Figure 4-16: City Flood Zones**

Below are the FEMA 100/500 Year Flood Maps produced by the FEMA Maps Service Center (MSC) in support of the NFIP.





*Extent*

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

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

The three (3) most common designations are:

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

Pasadena, California, like many cities, has areas that are subject to flooding. The Federal Emergency Management Agency (FEMA) provides detailed maps and categories to help communities understand and manage their flood risk. These floodplain designations are crucial for City planning, construction, insurance, and emergency preparedness. **Table 4-14** shows these detailed floodplain categories. FEMA classifies Pasadena under five (5) floodplain categories: A, AE, AH, AO, and X; the location of these floodplains can be seen on the FEMA Flood Hazard Zone Maps.

**Table 4-14: FEMA Floodplain Categories**

Category	Description
<b>A</b>	Within a 100-year floodplain, but the water height of the 100-year flood is not known.
<b>A1-30 or AE</b>	Within a 100-year floodplain and the water height of the 100-year flood is known.
<b>AO</b>	Within a 100-year floodplain, the water height of the 100-year flood is

Category	Description
	between one and three feet (3 ft.) but not specifically known.
<b>A99</b>	Within a 100-year floodplain, it is protected by flood protection infrastructures such as dams or levees.
<b>AH</b>	Within a 100-year floodplain, and the water height of the 100-year flood is between one and three feet (3 ft.) and is specifically known.
<b>AR</b>	Within a 100-year floodplain, it is protected by flood protection infrastructure that is not currently effective but is being rebuilt to provide protection.
<b>V</b>	Within a 100-year floodplain for coastal floods, but the height of the flood is not known.
<b>V1-30 or VE</b>	Within a 100-year floodplain for coastal floods and the water height of the flood is known.
<b>VO</b>	Within a 100-year floodplain for shallow coastal floods with a height between one and three feet (3 ft.).
<b>B</b>	Within a 500-year floodplain, or within a 100-year floodplain with a water height less than one foot (found on older maps).
<b>C</b>	Outside of the 500-year floodplain (found on older maps).
<b>X</b>	Outside of the 500-year floodplain (found on newer maps).
<b>X500</b>	Within a 500-year floodplain or within a 100-year floodplain with a water height less than one foot (found on newer maps).
<b>D</b>	Within an area with a potential and undetermined flood hazard.
<b>M</b>	Within an area at risk of mudslides from a 100-year flood event.
<b>N</b>	Within an area at risk of mudslides from a 500-year flood event.
<b>P</b>	Within an area at risk of mudslides from a potential and undetermined flood event.
<b>E</b>	Within an area at risk of erosion from a 100-year flood event.

*Probability of Future Events:*

The major causes of flooding in the City are short-duration and high-intensity storms. Water courses in the City can flood in response to a succession of intense winter rainstorms, usually between early November and late March. A series of such weather events can cause severe flooding in the City due to the large percentage of impervious area and the age and capacity of the drainage system.

A worst-case scenario is a series of storms that flood numerous drainage basins in a short time, such as those projected by USGS in the CAARkStorm Scenario (USGS 2018). This could overwhelm response and floodplain management capabilities within the City. Major roads could be blocked, preventing critical access for many residents and critical functions. Additionally, as the grounds become saturated, groundwater flooding issues typical for the City would be significantly enhanced. Due to its low impacts that flooding has in the City, there is a 25% chance that flooding will impact the City within the next year.

*Impact of Climate Change*

Climate change acts as an amplifier of existing flood hazards. Extreme weather events have become more frequent over the past 40 to 50 years and this trend is projected to continue. Rising sea levels and shifting weather patterns (temperature, winds) are expected to have a significant impact on rainfall frequency, intensity and distribution, which in turn will have a significant impact on the frequency of flood occurrences.

Climate Change can also increase the frequency and/or intensity of mudflows. Changes in precipitation, specifically the increased frequency of intense precipitation, can result in a water content the ground cannot tolerate, and may cause mudflows. These mudflows may happen more frequently due to the increased number of heavy rainfall events.

#### 4.5.7 Public Health Incidents: Pandemics, Epidemics/Infectious Diseases

##### *Hazard Description*

Widespread public health emergencies, i.e. pandemics, occur when a disease emerges to which the population has little immunity. Public health experts worry about a pandemic potential of diseases that spill over to humans from other species and are capable of spreading human-to-human. Depending on the nature of such a disease, depending on the nature of the disease a large proportion of the population can become ill. This level of disease activity would disrupt all aspects of society and severely affect the economy.

Vaccines, antibiotics, and improved living conditions resulted in dramatic declines in communicable diseases in the latter part of the 20th Century. However, infectious diseases have become an increasing threat to all people in Los Angeles County due to a variety of factors such as:

- Population growth—Overcrowding, aging, migration
- Methods of food production—Large scale, wide distribution, importation
- Environmental changes—Drought, encroachment of humans on wild areas, global warming
- Microbial adaptation—Resistance to antibiotics, re-assortment of genetic material
- Changes in health care—Drugs causing immunosuppression, widespread use of antibiotics
- Human behavior—Travel, diet, sexual behavior, compromised immune systems

The Pasadena Public Health Department (PPHD) is responsible for public health in the City. PPHD will coordinate with Los Angeles County Department of Public Health (LAC DPH) during a public health emergency, whether in the City or throughout the county or state. Pasadena Public Health will serve as the lead agency for a pandemic response in Pasadena and would work closely with the County to ensure that:

- Planning efforts are consistent throughout the county
- Official information is provided to cities in a timely manner
- Pharmaceutical distribution is conducted across the county

Outbreaks of infectious diseases following floods, tornados, earthquakes, and other disasters are common in the developing world but are rare in developed countries. Most

post-disaster diseases are produced by poor sanitation, a lack of safe drinking water and contaminated food.

Below are the known risks to the City:

*Coronaviruses* - The current (2020) COVID-19 pandemic is spread by a coronavirus. Coronaviruses cause a large percentage of colds and upper respiratory infections. Coronaviruses are a large family of viruses that usually cause mild upper respiratory infections, including some cases of the common cold. However, three coronaviruses have caused more serious disease in people: SARS coronavirus, MERS coronavirus, and COVID-19. (NIH) severe acute respiratory syndrome (SARS) is a viral respiratory disease caused by a SARS-associated coronavirus. It was first identified at the end of February 2003 during an outbreak that emerged in China and spread to four (4) other countries.

*Influenza* - Flu epidemics occur routinely, typically in the fall and winter. Because flu seasons fluctuate in length and severity, a single estimate cannot be used to summarize influenza-associated deaths. The U.S. Centers for Disease Control and Prevention (CDC) estimates that from the 1976-1977 flu season to the 2006-2007 season, flu-associated deaths ranged from a low of about 3,000 to a high of about 49,000.

There have been four flu pandemics in the last 100 years (1918, 1957, 1968, and 2009). (CDC) A flu pandemic is a global outbreak of a new flu A virus in people that is very different from current and recently circulating seasonal flu A viruses.

*Insect/Tick-Borne Disease* - Insects such as mosquitos and ticks can transmit a variety of diseases. Diseases that can be contracted through an insect bite include:

- Lyme disease
- Malaria
- West Nile virus
- Zika virus
- Typhus Fever
- Dengue Fever

*Plague* - Plague is caused by the bacteria *Yersinia pestis*, a zoonotic bacterium usually found in small mammals and their fleas. Plague is transmitted between animals and humans by the bite of infected fleas, direct contact with infected tissues, and inhalation of infected respiratory droplets. There are two (2) primary clinical forms of plague

infection: bubonic and pneumonic. Bubonic plague is the most common form and is characterized by painful swollen lymph nodes or 'buboes.'

Plague can be a very severe disease in people, with a case-fatality ratio of 30% to 60% for the bubonic type and is always fatal for the pneumonic kind when left untreated.

*Anthrax* - Anthrax is a serious infectious disease caused by gram-positive, rod-shaped bacteria known as *Bacillus anthracis*. Although it is rare, people can get sick with anthrax if they come in contact with infected animals or contaminated animal products. Anthrax has the potential for and has been used as a biological weapon.

*Hemorrhagic Fevers* - Viral hemorrhagic fevers are a group of illnesses caused by several distinct families of viruses. In general, the term “viral hemorrhagic fever” is used to describe a severe multisystem syndrome. Characteristically, the overall vascular system is damaged, and the body’s ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhage (bleeding); however, the bleeding is itself rarely life-threatening. While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life- threatening diseases. Hemorrhagic fevers include Ebola and Yellow Fever.

### *History*

Pasadena has been included in any federal disaster declarations or state emergency proclamations related to Public Health Incidents. The most recent was the COVID-19 pandemic. The Los Angeles County Health Alert Network issued the following recent public health alerts:

- September 17, 2024 - LAC DPH Health Alert: Baylisascaris procyonis (raccoon roundworm)
- September 9, 2024 – LAC DPH Health Alert: Locally Acquired Case of Dengue
- May 10, 2024 – Local Outbreak of Hepatitis A among Persons Experiencing Homelessness
- February 1, 2024 – First LA County Measles Case
- October 3, 2023 – First Locally Acquired Case of Dengue in California Detected in Pasadena
- November 29, 2022 – Reminder to Prescribe COVID-19 Therapeutics
- May 27, 2022 – Contaminated Ecstasy and Accidental Drug Overdoses
- December 2, 2021 – Outbreaks of Flea-Borne Typhus
- November 30, 2021 – SARS-CoV-2 Virus Variant of Concern B.1.1.529 (Omicron)

- March 5, 2021 – Ebola Virus Disease Outbreaks in the Democratic Republic of Congo and Guinea
- March 3, 2021 – Wound Botulism Cases Associated with Heroin Injection
- February 26, 2021 – SARS-CoV-2 virus variants of concern identified in CA
- February 7, 2021 – Measles Outbreak in LA County
- July 23, 2020 – Ebola Virus Disease Outbreak in the Democratic Republic of Congo.
- April 22, 2020 – Measles Outbreak in LA County
- February 19, 2020 – Increase in Clusters of Pertussis in 11 to 18-Year-Olds in LA County

### *Location*

Pandemics occur worldwide. Smaller-scale public health incidents or epidemics may be localized, such as the Ebola outbreak in a region of Africa. All locations are susceptible to pandemics and local public health hazard incidents.

### *Extent*

The World Health Organization pandemic phases were developed in 1999 and revised in 2005. The phases are applicable to the entire world and provide a global framework to aid countries in pandemic preparedness and response planning. Phases 1-3 correlate with preparedness, including capacity development and response planning activities, while Phases 4-6 clearly signal the need for response and mitigation efforts. Below is a description of each phase.

- **Phase 1:** no viruses circulating among animals have been reported to cause infections in humans.
- **Phase 2:** an animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans and is therefore considered a potential pandemic threat.
- **Phase 3:** an animal or human-animal influenza reassorting virus has caused sporadic cases or small clusters of disease in people but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver. However, limited transmission under such restricted circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic.

- **Phase 4:** is characterized by verified human-to-human transmission of an animal or human-animal influenza reassorting virus able to cause “community-level outbreaks”. The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk of a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed and a decision made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.
- **Phase 5:** is characterized by human-to-human spread of the virus into at least two (2) countries in one (1) WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.

#### *Probability of Future Events*

Although the timing of the outbreak of a pandemic or other public health emergency is difficult to predict, they will continue to occur continually and have a greater than one percent chance of occurring in any year. There is a 15% chance of a significant public health hazard impacting the City.

#### *Impacts of Climate Change*

There are several ways that climate hazards aggravate infectious diseases, both directly and indirectly. These include the slow rise in temperature; changes in environmental conditions that increase the dispersal of disease vectors such as mosquitoes, rodents, and ticks; and the sudden appearance of extreme events such as floods, which contaminate drinking-water sources and trigger the displacement of humans and animals, which can carry and transmit pathogens. According to the CDC, climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways. Some existing health threats will intensify and new health threats will emerge.

## 4.5.8 Fire

### *Hazard Description*

#### **Wildfire**

As defined in the California Fire Protection (CAL FIRE) 2010 Strategic Fire Plan, a wildfire event is an unwanted wildland fire including unauthorized human-caused fires, escaped wildfire use events, escaped prescribed wildfire projects, and all other wildfires.

Wildfire hazard is a significant and recurrent threat in the Valley District service area and has the potential to destroy buildings, cause damage to vital infrastructure, injure people, and can result in loss of life, agricultural land, and animals. Wildfire season commences in early spring through late fall every year during the hotter, dryer months. Highly flammable vegetation and warm, dry summers create the potential for wildland fires in Vacaville. The risk of wildland fires is related to a combination of factors, including winds, temperatures, humidity levels, and fuel moisture content. Of these four (4) factors, wind is the most crucial. Steep slopes also contribute to fire hazards by intensifying the effects of wind and making fire suppression difficult. Where there is easy public access to dry vegetation, fire hazards increase due to greater chances of human carelessness. High hazard areas include outlying residential parcels and open lands adjacent to residential areas. Such development has also moved the urban wildland interface (the area where human development meets undeveloped wildland) closer to higher-risk, wildfire hazard areas, increasing the number of people and buildings at risk as illustrated in **Figure 4-19** Pasadena Fire Hazard Severity Zones.

#### **Wildland Urban Interface Fire (WUI)**

A WUI fire includes situations in which a wildland fire enters an area that is developed with structures and other human developments. In WUI fires, the fire is fueled by both naturally occurring vegetation and the urban structural elements themselves. According to the National Fire Plan issued by the U.S. Departments of Agriculture and Interior, the wildland-urban interface is defined as "...the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels."

The WUI fire can be subdivided into three (3) categories (NWUIFPP, 1998): 1) classic wildland-urban interface; 2) the mixed wildland-urban interface; and 3) the occluded wildland-urban interface. The classic wildland-urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas. The mixed wildland-urban interface is characterized by isolated homes, subdivisions, and small communities situated predominantly in wildland settings. The occluded wildland-urban interface exists where islands of wildland vegetation occur inside a

largely urbanized area. Generally, many of the areas at risk within the City fall into the classic wildland-urban interface category.

Certain conditions must be present for a wildfire hazard to occur; a large source of fuel must be present, the weather must be conducive (generally hot, dry, and windy), and fire suppression sources must not be able to easily suppress and control the fire. The cause of a majority of wildfires is human-induced or lightning; however, once burning, wildfire behavior is based on three (3) primary factors: 1) fuel; 2) topography; and weather. Fuel will affect the potential size and behavior of a wildfire depending on the amount present, its burning qualities (e.g. level of moisture), and its horizontal and vertical continuity. Topography affects the movement of air, and thus the fire, over the ground surface. The terrain can also change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather as manifested in temperature, humidity and wind (both short and long term) affect the probability, severity, and duration of wildfires. Other factors that create concern are drought conditions and development (the built environment). Drought conditions bring on contributing concerns in that it can lead to relatively drier conditions and leave reservoirs and water tables lower; thus, creating hotter fires and less water to fight the fires. The expansion of the built environment into previously unoccupied areas introduces more people to the hazard and in some cases make response actions more challenging.

### *History*

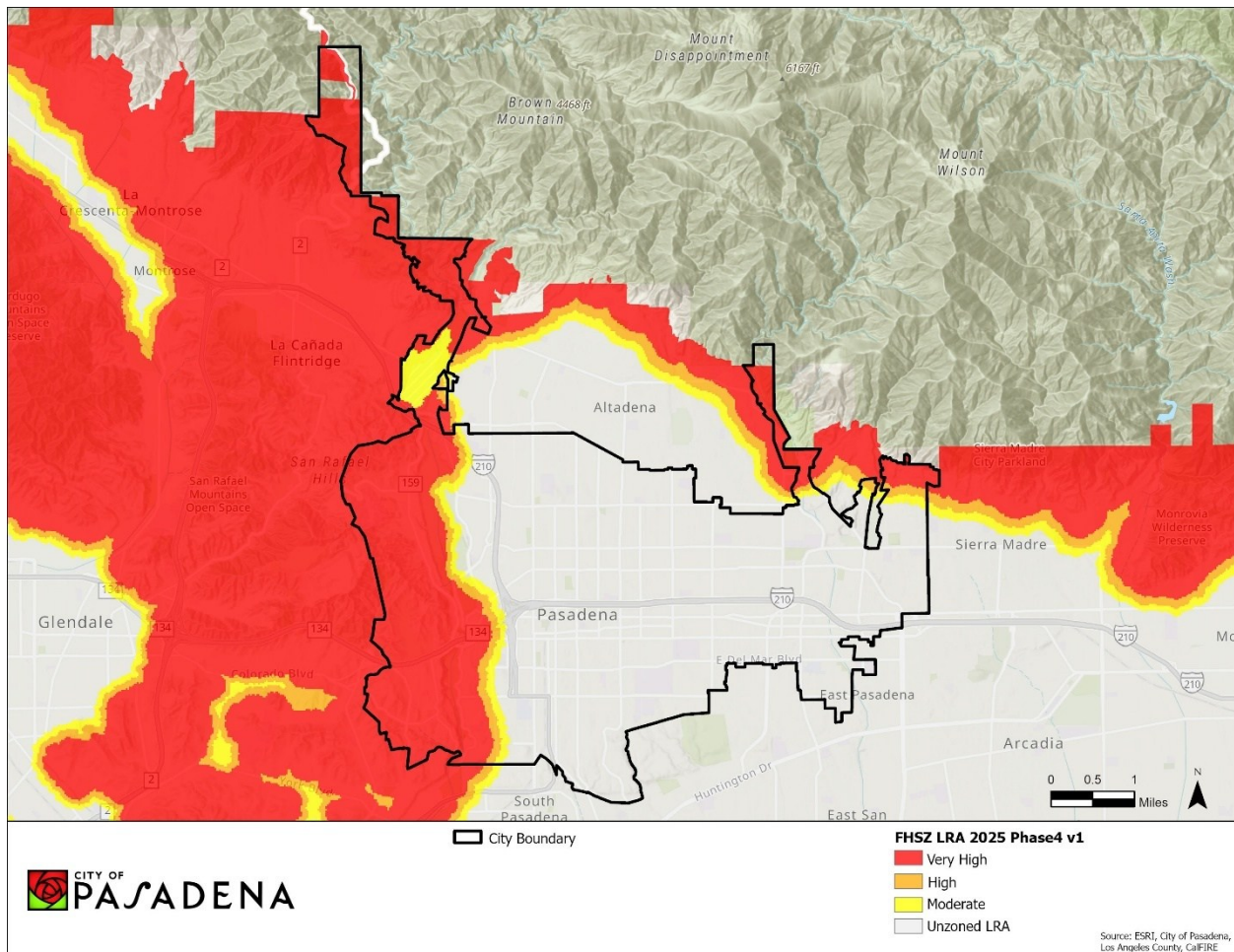
Pasadena has recently been included in federal disaster declaration for fire, as recently as 2025. Below is a list of the most notable fires that have impacted Pasadena and Southern California.

- January 7, 2025 – The Eaton Fire began on the evening of January 7, 2025, in Eaton Canyon in the San Gabriel Mountains. It burned over 14,100 acres and destroyed 9,414 structures and resulted in 17 civilian fatalities.
- January 2025 – The Palisades Fire started in the Santa Monica Mountains of Los Angeles County in Southern California which burned over 23,448 acres, destroying large areas of Pacific Palisades, Topanga, and Malibu. The fire destroyed 6,837 structures and caused 12 fatalities.
- September 6, 2020 – The Bobcat Fire started in the Los Angeles National Forest and burned almost 116,000 acres.
- September 5, 2020 – The El Dorado Fire wildfire in Southern California ignited by a gender reveal party. It burned 22,744 acres, destroyed 20 structures, and killed one firefighter.

- November 8, 2018 – The Woolsey Fire started in Los Angeles County and spread north to neighboring Ventura County. The fire burned 96,949 acres of land, destroyed 1,643 structures, and killed three (3) people,

*Location*

The City is located along the foothills of the San Gabriel Mountains. These mountains are known for its steep topography and extensive vegetation. The area is also intermittently impacted by Santa Ana winds, the hot, dry winds that blow across southern California in the spring and late fall. Because of these characteristics, wildfire is a significant threat to the City. **Figure 4-17** below depicts the mapping within the City limits susceptible to wildfires.



**Figure 4-19: City Fire Hazard Severity Zones**

The climate, topography, and vegetation in Pasadena are conducive to annual wildfire events. Wildland fires may spread to urban areas resulting in urban fires. Structures within the City are primarily single-family dwellings away from the wildland/urban interface. The areas with the highest risk of wildfire are the Western and northern portions of the City. The remainder of the City is urban or not zoned.

*Extent*

The State Fire Marshal classifies wildfire hazard lands within state responsibility areas into fire hazard severity zones. Each zone shall embrace relatively homogeneous lands and shall be based on fuel loading, slope, fire weather, and other relevant factors present, including areas where winds have been identified by the department as a major cause of wildfire spread. The State Fire Marshal shall identify areas in the state as moderate, high, and very high fire hazard severity zones based on consistent statewide criteria and based on the severity of fire hazard that is expected to prevail in those areas. Moderate, high, and very high fire hazard severity zones shall be based on fuel loading, slope, fire weather, and other relevant factors including areas where winds have been identified by the Office of the State Fire Marshal as a major cause of wildfire spread.

Urban fires are classified by the number of alarms. The Pasadena Fire Department uses the alarm system below to describe the type and number of resources committed to the incident.

Units Assigned	1st Alarm fire / Box Alarm	1st Alarm fire/ "All Hands" Box Alarm	2nd Alarm fire	3rd Alarm fire	4th Alarm fire	5th Alarm fire
<b>Engine Companies</b>	1 Engine or 1 Truck	4 Engines 2 Trucks 1 ALS 2 BCs	7 Engines 3 Trucks 1 ALS 1 Air Utility 3 BCs	10 Engines 4 Trucks 1 ALS 1 Air Utility 4 BCs	13 Engines 5 Trucks 1 ALS 1 Air Utility 5 BCs	16 Engines 6 Trucks 1 ALS 1 Air Utility 6 BCs

*Probability of Future Events*

Fires will continue to occur on an annual basis in the City. The size and intensity of future fires and the impacts on City operations are difficult to predict. There is a 85% chance that wildfires will impact the City within the next year.

*Impact of Climate Change*

Climate change and the associated warmer weather, reduced snowpack, and earlier snowmelt can be expected to increase wildfire risk through fuel hazards and ignition risks. These changes can also increase plant moisture stress and insect populations, both of which affect forest health and reduce forest resilience to wildfires. An increase in wildfire intensity and extent will increase public safety risks, property damage, fire suppression and emergency response costs to government, watershed and water quality impacts, vegetation conversions and habitat fragmentation.

## 4.5.9 Human-Caused Hazards

### *Cyber Security Threats*

#### **Cyber Security Threats (Hazard Description)**

Cyberterrorism and cyberattacks are terms for cybersecurity threats that are often used interchangeably, though they are not the same. All cyberterrorism is a form of cyberattack, but not all cyberattacks are cyberterrorism.

Public and private computer systems can experience a variety of cyberattacks, from blanket malware infection to targeted attacks on system capabilities. Cyberattacks specifically seek to breach information technology security measures designed to protect an individual or organization. The initial attack is followed by more severe attacks to cause harm, steal data or for financial gain. Organizations are prone to different types of attacks that can be automated or targeted.

Any facility that relies on computers, computer systems and programs for their operations could be a target. Generally, attacks can last minutes to days, but large-scale events and their impacts can last much longer. As information technology continues to grow in capability and interconnectivity, cyber threats become increasingly frequent and destructive. Cyber threats differ by motive, attack type and perpetrator profile. Motives range from the pursuit of financial gain to political or social aims. Cyber threats are difficult to identify and comprehend. Types of threats include using viruses to erase entire systems, breaking into systems and altering files, using someone's personal computer to attack others, or stealing confidential information. The spectrum of cyber risks is limitless, with threats having a wide range of effects on the individual, community, organizational, and national threat.

#### **Ransomware**

The FBI defines ransomware as a type of malicious software, or malware, which prevents you from accessing your computer files, systems, or networks and demands you pay a ransom for their return. Businesses should have a business continuity plan in case of a ransomware attack.

#### **Cyberterrorism**

The FBI is the lead federal agency for investigating cyberterrorism. In order for a cyberattack to be considered terrorism, the attack must be premeditated and politically motivated against information, computer systems, computer programs, or data. "Cyberterrorism may be carried out by state and non-state actors which have the capability to steal, alter, or destroy the nations sensitive data and, in the worst of cases, to manipulate from afar the process control systems that are meant to ensure the proper

functioning of portions of the nations' critical infrastructure" (FBI, The Cyber Threat and the FBI's Cyber Program). Critical infrastructure and the nation are becoming more vulnerable to cyberattacks as their dependency on computer networks and systems grows.

### Cyber Security Threats (History)

Cyberattacks on U.S. companies occur daily, and the quantity and quality of information being hacked, stolen, destroyed, or leaked is becoming an increasing problem for consumers, government entities, and businesses.

The following list is of recent cyber-attacks that affected government agencies:

- April 2023 – The San Bernardino County Sheriff's Office reported a security breach that encrypted its systems and reduced operations for over two (2) weeks. A member of the Sheriff's Office clicked on a phished link and downloaded ransomware, disrupting emails and dispatching computers. The ransom cost \$1.1 million in cryptocurrency.
- February 8, 2021 – A hacker exploited a vulnerability in a desktop sharing platform to access a water utility's treatment plant industrial control system. The hacker increased the quantity of chemicals used in the water treatment process to a dangerous level. An employee of the utility noticed inconsistencies and immediately reduced the chemical levels to normal and notified the IT department.
- December 11, 2021—UKG Kronos was a victim of a ransomware attack that incapacitated Long Beach Fire Department Staffing Program, Telestaff, for approximately 2 months.
- April 30, 2018—In Pasadena, City employee email accounts were compromised through a phishing scheme. Hackers used access to accounts to send out fraudulent emails to City contacts. The City immediately disabled accounts and changed passwords of all City employees and advised residents and associates to take caution when opening emails from City.
- November 22, 2017— 500 Los Angeles Superior Court employees received fraudulent emails leading to fake websites asking for account credentials. Less than a dozen employees fell for the phishing scam. A 31-year-old Texas resident was found to be responsible for the hacking.
- June 27th, 2017—The Los Angeles County Board of Supervisors website homepage displayed pro-ISIS propoganda. The website was one of four (4) U.S. websites hacked the same way.

- December 2016—A virus locked the Los Angeles Community College District’s computer network as well as its email and voicemail systems. After consulting with cyber-security experts and law enforcement, the District paid a \$28,000 cyber-ransom in bitcoin. The district had a cyber-security insurance policy to cover such attacks.

### Cyber Security Threat (Location)

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

Globally, cyber threats are increasing and becoming more sophisticated. The most common types of threats include:

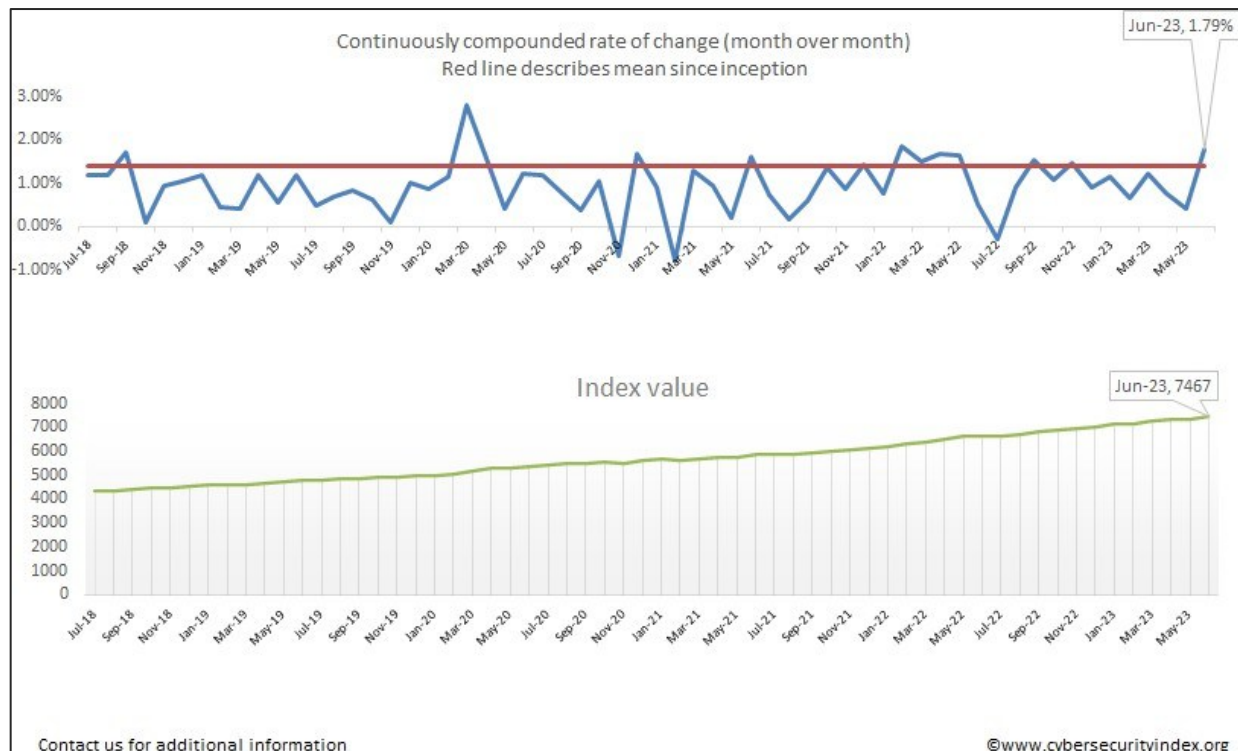
- Phishing
- Ransomware
- Intellectual Property Theft
- Spyware/Malware
- Unpatched Software

Common types of cyber-attacks include:

- Exploitation of vulnerable software
- Distributed Denial of Service
- MFA fatigue/push notification spamming

### Cyber Security Threat (Extent)

The Index of Cyber Security (**Figure 4-20**) can be referenced to understand the status of cyber threats, which identifies the measure of perceived risk. Since 2015, this index has trended upward and appears to have doubled in this timeframe.



**Figure 4-20: Index of Cyber Security**

Cyber threats are not measured on any scale, but they can be assessed by determining the following:

- The type of incident (website defacement, denial of service, unauthorized surveillance)
- The use of malicious software
- The level of security counter measures that failed to prevent the cyber threat
- The duration of the cyber threat (a few hours, a few days, several weeks, etc.)
- The number of identified ransomware gangs
- The rapid rise of Ransomware as a Service (Raas) and other "as a service" cybercriminal ventures
- The growing technical sophistication of cyber criminals

### **Cyber Security Threat (Possibility of Future Occurrence)**

Due to the integrated nature of technology into the everyday lives of Pasadena's residents, businesses, and government operations, it is possible that a cyber threat could emerge in the future. While no cyber threats are publicly known

to have disrupted the City's normal operations in the past, the likelihood of a cyber threat affecting the residents, businesses, and/or governmental operations in the future is increasing.

### ***Civil Disturbance***

#### **Civil Disturbance (Hazard Description)**

Civil Disturbance is defined as civil disorder, a broad term that is typically used by law enforcement to describe disruption of typical social order; it may involve a strike or protest, and it can be peaceful or involve violence. Both riots and rebellions are forms of civil unrest. Incidents of civil unrest often occur after national or local events incite anger in the populace and may be triggered by various causes such as political protests, racial strife, or sporting events. Civil disorders and disturbances are human-caused events with the potential for endangering life and damaging property.

The Bay Area experienced past episodes of civil unrest. Civil disturbances may be mitigated through planning; mitigation activities for civil disturbance are not solely a police function but are a shared responsibility of elected officials, community leaders, business leaders, service organizations, and community residents.

While basic constitutional rights guarantee free assembly, civil unrest associated with such events can result in injuries, loss of life, and destruction of property. Heightened vigilance, strategic organization, and training on the part of law enforcement can mitigate damage and casualties from civil disturbances.

#### **Civil Disturbance (History)**

City police departments in Los Angeles region have often dealt with civil unrest. Recent examples include the October 2014 Major League Baseball San Francisco Giants World Series victory riots, the November 2014 unrest in Oakland following the Ferguson verdict, and Black Lives Matter protestors blocking traffic on the San Francisco-Oakland Bay Bridge on Martin Luther King Jr. Day 2016. Today the combination of professional protestors, anarchists, demonstrations, and counterdemonstrations at many public gatherings has created the potential for civil unrest. Often events deemed to be celebrations can cause civil disturbances and create loss. When dealing with events that have the potential to become incidents of civil unrest, the police departments' most

important goal is safeguarding citizens and property. The following are recent incidents of civil unrest in the Bay Area region:

- George Floyd Killing Protests: At 6:30 p.m. on May 30, protesters gathered at Colorado Blvd and Fair Oaks Avenue. The City proclaimed a local state of emergency and ordered an 8:00 p.m. curfew. On June 6, hundreds of protesters gathered at a Black Lives Matter rally to denounce police violence against Black people and to stamp out systemic racism.
- In January 2025, Pro-Palestinian protesters disrupted the 135th annual Rose Parade for about 20 minutes. A dozen or so protesters sat down on the street at the intersection of Lake Ave. and Colorado Boulevard at the start of the parade.

#### Civil Disturbance (Location)

The entire region is vulnerable to civil unrest. While no specific hazard zones can be identified or predicted for civil unrest, dense population centers in highly urban areas such as central Los Angeles and Pasadena are more likely to experience this hazard.

#### Civil Disturbance (Extent)

Civil unrest may result from a wide variety of causes, ranging from local to international. All regional assets are susceptible to being at risk from civil disturbances. Local government facilities, including Pasadena, are considered most at risk since past demonstrations or rallies have originated in these locations. Other police and fire facilities have also been targeted during past events.

Previous experience indicates that Critical Response (police stations, fire stations) also are at risk during periods of civil unrest. In addition, Critical Operating Facilities are at risk of damage or destruction and may be rendered temporarily inoperative for some period of time. Depending upon the nature of the event, communities and any assets owned by local government organizations/agencies may be considered vulnerable to damage or destruction due to civil unrest.

#### Civil Disturbance (Probability of Future Events)

While it is not possible to make long-term predictions of civil unrest events, it is highly probable that such events will occur in Southern California jurisdictions from time to time. Because of the extreme unpredictability of civil unrest events, no specific estimates can be made concerning potential losses.

### *Natural Gas Incidents*

#### **Natural Gas Incidents (Hazard Description)**

The United States is heavily dependent on transmission pipelines to distribute energy and fuel sources. Virtually all-natural gas, which accounts for about 28% of energy consumed annually, is transported by transmission pipelines. Energy demand in the United States continues to increase. Although California is a leader in exploring and implementing alternative energy sources such as wind and solar, the expansion of traditional energy sources, such as natural gas, continues.

Most of the natural gas used in California comes from out-of-state natural gas basins. It is delivered to California via the interstate natural gas pipeline system. In 2012, California customers received 42% of their natural gas supply from basins in the Southwest, 22% from Canada, 23% from the Rocky Mountains, and 12% from California.

Generally speaking, transmission lines are large-diameter steel pipes carrying natural gas at high pressure and compressed to provide higher carrying capacity. Transmission lines are both interstate and intrastate, with the latter connecting to smaller distribution lines delivering gas directly to homes and businesses.

#### **Natural Gas Incidents (History)**

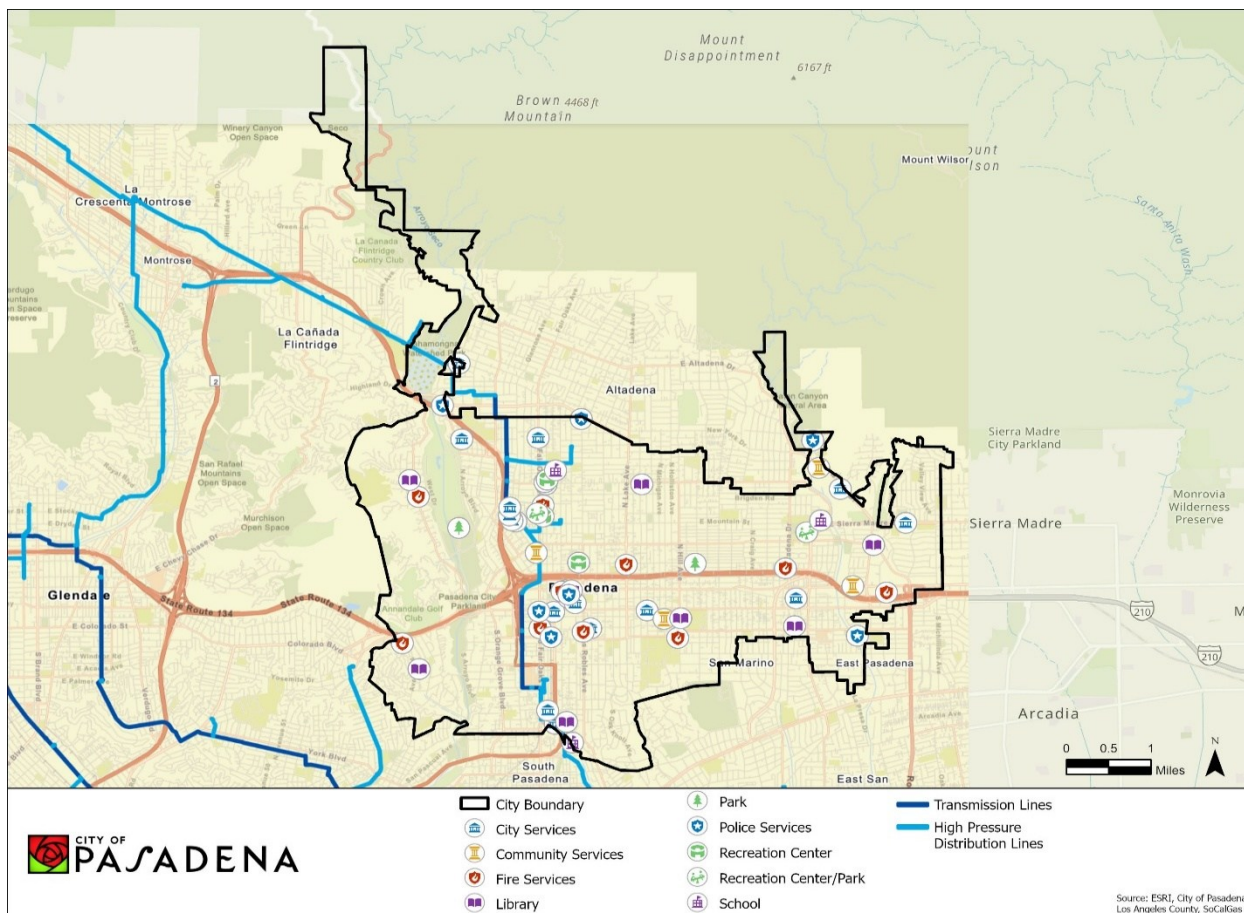
No significant historical events to report to date.

#### **Natural Gas Incidents (Location)**

Natural gas transported via interstate pipelines, and some of the California-produced natural gas, is delivered into the Pacific Gas & Electric (PG&E) and Southern California Gas (SoCalGas) intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. SoCalGas own and operate several natural gas storage fields that are located in Northern and Southern California. SoCalGas operates a natural gas storage field, Aliso Canyon, located in the north end of the San Fernando Valley area.

Data compiled by the Pipeline and Hazardous Materials Safety Administration (PHMSA) report a total of 115,292 miles of gas pipelines in California, of which 12,414 miles are classified as gas transmission lines, 403 miles are gas-gathering lines, and the majority, 102,475 miles, are for gas distribution. Nearly 40% of gas transmission lines are located in Los Angeles, Kern, and San Bernardino counties. **Figure 4-21** shows the location and

ownership of the natural gas pipeline system. Many of the pipelines are in areas with high seismic activity, crossing the San Andreas and other active faults.



**Figure 4-21: Natural Gas Transmission Lines in Pasadena**

**Natural Gas Incidents (Probability of Future Occurrence)**

Increased urbanization is resulting in more people living and working closer to existing gas transmission pipelines that were placed prior to government agencies adopting and implementing land use and other pipeline safety regulations. Compounding the potential risk is the age and gradual deterioration of the gas transmission system due to natural causes. Significant failure, including pipe breaks and explosions, can result in loss of life, injury, property damage, and environmental impacts. Causes of and contributors to pipeline failures include construction errors, material defects, internal and external corrosion, operational errors, control system malfunctions, outside force damage, subsidence, and seismicity. Growth in population, urbanization, and land development near transmission pipelines, together with addition of new facilities to meet new demands, may increase the likelihood of pipeline damage due to human activity and the

exposure of people and property to pipeline failures. Because of this, natural gas pipeline/storage facility failure can occur anytime during the year.

#### **Natural Gas Incidents (Climate Change Consideration)**

Climate change will not have a direct effect on natural gas pipelines; however, climate change could increase the demand for natural gas. This increase in demand may require the development of new pipelines, which could increase potential complications.

#### **Natural Gas Incidents (Regulatory Requirements)**

The Federal Energy Regulatory Commission (FERC) is the primary regulatory body overseeing the interstate transmission of natural gas. It is responsible for approving pipeline projects, setting tariffs, and ensuring compliance with safety and environmental standards. FERC also enforces the Natural Gas Act and the Natural Gas Policy Act.

Pipeline and Hazardous Materials Safety Administration (PHMSA) under the U.S. Department of Transportation, regulates the safety of pipelines transporting natural gas and other hazardous materials. It develops and enforces safety standards, conducts inspections, and investigates incidents.

#### ***Power Outage***

##### **Power Outage (Hazard Description)**

A power outage is the loss of the electricity supply to an area. In addition to natural hazards, power failure can result from a defect in a power station, damage to a power line or other part of the distribution system, a short circuit, or the overloading of electricity mains.

A power outage may be referred to as a blackout if power is lost completely or as a brownout if some power supply is retained, but the voltage level is below the minimum level specified for the system, and a short circuit indicates a loss of power for a short amount of time (usually seconds). Some brownouts, called voltage reductions, are made intentionally to prevent a full power outage.

Power failures may also be intentionally induced due to high power demand that exceeds supply or due to actions taken by utility companies to de-energize power lines when there is the possibility of energized power lines being downed during fire Red Flag warnings and causing fires.

##### **Power Outage (History)**

Following devastating fires in California in 2017 and 2018, utility companies sought regulatory actions to allow them to de-energize power lines when conditions might result in downed lines causing wildfires. The California Public Utilities Commission developed

guidelines for public safety power shutoffs (PSPS) that have affected numerous areas of the State for up to several days.

August 2020 saw the first California electricity providers institute rolling blackouts since 2001. Hundreds of thousands of people experienced brief power outages through the several evenings after the body that manages most of the state's electric utilities declared a Stage 3 emergency to help reduce stress on the larger grid. Electricity demand surged through the day as temperatures topped the triple digits in many parts of the state, and people cranked up fans and air-conditioning units to try to stay cool. The emergency order was rescinded before midnight, and power was fully restored to all affected households

The 2011 Southwest blackout, sometimes referred to as the Great Blackout of 2011, was a widespread power outage that affected the San Diego–Tijuana area, southern Orange County, the Imperial Valley, Mexicali Valley, and Coachella Valley, and parts of Arizona. It occurred on Thursday, September 8, 2011, beginning at about 3:38 pm PDT and was the largest power failure in California history.

The 2000-2001 California electricity crisis brought to light many critical issues surrounding the State's power generation and distribution system, including its dependency on out-of-state resources. Although California has implemented effective energy conservation programs, the State continues to experience both population growth and weather cycles contributing to a heavy demand for power. The 2000 and 2001 blackouts occurred due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption.

#### Power Outage (Location)

Power outages can occur throughout the City service area and affect the entire region.

#### Power Outage (Extent)

Power outages are typically measured by the number of customers without power. This number is two (2) to three (3) times lower than the number of people affected.

#### Power Outage (Probability of Future Occurrence)

While the location, duration, and number of people affected cannot be predicted, power outages in the City service area are likely to occur on a continual basis with the likelihood of an incident greater than 10 percent in any year.

#### Power Outage (Impact of Climate Change)

Climate change may affect the number and severity of power outages. The August 2020 rolling blackouts resulted from high energy usage during record-setting heat throughout

the state. As hotter conditions result in more and longer Red Flag warnings and concomitant PSPS, more power outages will occur.

#### *Power Outage (Regulatory Context)*

The California Public Utilities Commission (CPUC) plays a pivotal role in regulating privately-owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. It ensures safe, reliable utility service at reasonable rates and protects against fraud.

#### *Hazardous Material Release*

##### *Hazardous Material Release - Pipeline Failure, Transportation Accidents, Oil Spills (Hazard Description)*

A hazardous material is any material that, due to its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released. Hazardous materials include but are not limited to hazardous substances, hazardous waste, and any material that a business or local implementing agency has a reasonable basis to believe would be injurious to the health and safety of people or would be harmful to the environment if released.

The LHMP does not focus on the hazards contained in everyday products but rather on the hazards associated with potential releases of hazardous substances from transportation corridors and fixed facilities within the City.

Exposure to hazardous materials can cause injury, illness, or death. Effects may be felt over seconds, minutes, or hours (short-term effects) or not emerge until days, weeks, or even years after exposure (long-term effects). Some substances are harmful after a single exposure of short duration, but others require long episodes of exposure or repeated exposure over time to cause harm.

Hazardous materials in the City service area primarily consist of paints, solvents, adhesives, gasoline, household cleaners, batteries, pesticides and herbicides. The Department of Water and Power has various facilities that use chemicals that if not appropriately contained or during a natural hazard can potentially be released into the air. The toxicity of a specific substance is one important factor in determining the risk it poses, but other factors can be just as important, if not more so. Factors affecting the severity of hazardous material release include:

- Toxicity
- Quantity
- Dispersal characteristics

- Location of release in relation to population and sensitive environmental areas
- Efficacy of response and recovery actions

Mobile incidents include those that occur on a roadway or a railroad. These incident-related releases are dangerous because they can occur anywhere, including near human populations, critical facilities, or environmentally sensitive areas. Mobile incident-related releases can also be more difficult to mitigate because of the great area over which any given incident might occur and the potential distance of the incident site from response resources.

The release of hazardous substances from stationary sources can be caused by human error, equipment failure, intentional dumping, acts of terrorism, or natural phenomena. Earthquakes pose a particular risk because they can damage or destroy facilities containing hazardous substances. The threat posed by a hazardous-material event can be amplified by restricted access, reduced fire suppression and spill containment capability, and cutoff of response personnel and equipment.

The Los Angeles County Fire Department Health Hazardous Materials Division is the designated Certified Unified Program Agency (CUPA) for the City. The CUPA was created by the California legislature to minimize the number of business inspections and fees imposed on businesses associated with the handling of hazardous materials.

#### Hazardous Material Release (History)

Los Angeles County, with its vast industrial landscape and densely populated urban areas, faces numerous environmental challenges, including the release of various hazardous materials. These releases can originate from industrial facilities, transportation accidents, and other sources, posing significant risks to public health and the environment. Below is a list of the most recent hazardous materials releases

- Aliso Canyon Gas Leak (2015-2016) - One of the most significant environmental disasters in Los Angeles County was the Aliso Canyon gas leak, which released massive amounts of methane, a potent greenhouse gas. The leak lasted several months, causing health problems for nearby residents and contributing to climate change.
- Exide Technologies Plant (2013) - The Exide Technologies battery recycling plant in Vernon was found to have released hazardous levels of lead and arsenic into the air and soil. This led to the plant's closure and extensive cleanup efforts to protect public health and the environment.

- Refugio Oil Spill (2015) - Although not in Los Angeles County directly, the Refugio Oil Spill off the coast of Santa Barbara impacted the region's environment. Thousands of gallons of crude oil spilled into the ocean, affecting marine life, coastal ecosystems, and local economies.

#### Hazardous Material Release (Location)

The City like many urban areas, handles and stores various hazardous materials essential for industrial, commercial, and public health applications. The following provides a list of potential sources for hazardous materials releases within the City planning area.

- California Institute of Technology (Caltech)
- Jet Propulsion Laboratory (JPL)
- Huntington Hospital
- Kaiser Permanente Pasadena Medical Offices
- Pasadena Water and Power

#### Hazardous Material Release (Extent)

The extent of a hazardous material spill may vary from significant impacts causing injuries and evacuation to minor impacts requiring minimal cleanup. Hazardous materials releases can be harmful in the following ways:

- Chemical, biological, and radiological agents can cause significant health risks to those exposed to them; biological agents can be additionally dangerous if they are infectious. Flammable and explosive materials also present life safety concerns when exposed to heat.
- Oil spills can present an immediate fire hazard and can contaminate drinking water supplies. Any release of hazardous material requires a thorough and careful clean-up of the site and decontamination of those exposed. Clean-up and recovery are time and cost consuming.
- Delays caused by hazardous materials releases and the ensuing evacuation and cleanup processes could lead to significant economic losses due to traffic delays (mobile releases) or operational shut-down (fixed facilities).
- Overall, hazardous materials can cause death, serious injury, long-lasting health effects, and damage to buildings, the environment, homes, and other property.

### Hazardous Material Release (Probability of Future Occurrence)

Based on previous occurrences, the likelihood of small hazardous materials releases is high and can occur at any time.

### Hazardous Material Release (Regulatory Environment)

To address the release of hazardous materials, Los Angeles County has implemented several regulatory measures and public health initiatives. These efforts aim to minimize risks, ensure compliance with environmental laws, and promote community awareness.

- The South Coast Air Quality Management District (SCAQMD) is responsible for regulating air quality in the region. It sets emissions standards, monitors air pollution, and enforces regulations to reduce the release of hazardous air pollutants.
- The Los Angeles County Department of Public Health (DPH) works to protect public health by monitoring environmental hazards, conducting health assessments, and providing information to the community about potential risks and safety measures.
- The California Environmental Protection Agency (CalEPA) oversees environmental protection efforts statewide, including in Los Angeles County. It enforces regulations related to hazardous waste, water quality, and toxic substances, and provides funding for cleanup and mitigation projects.

### *Terrorism*

#### Terrorism (Hazard Description)

Terrorism is the use or threat of force to achieve a particular social or political outcome.

The goals of terrorism may sometimes be overturning a government, the reversal of a public policy, political prisoners' release, and other such motives. Acts of terror may overlap with acts of war or hate crimes. Generally, terrorism involves an attempt to kill or seriously harm people or disrupt civil society by destroying property or infrastructure, attacking government operations at all levels, interrupting essential public services, creating chaos, or a combination of some or all these goals. Firearms and explosives are the most common weapons used among terrorists. In extreme situations, terrorists may gain access to mass destruction weapons, including bioweapons, chemical agents, radioactive materials, or high-yield explosives. It should be noted that these events are infrequent. While incidents of terror caused by foreign individuals or groups receive significant media and public attention, most acts of terror in the United States have been caused by domestic terrorists.

A mass casualty incident describes an incident within the United States where emergency medical service resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties. The more commonly recognized events of this type include building collapses, train and bus collisions, plane crashes, earthquakes, and other large-scale emergencies. The most common types are generally caused by terrorism, mass transportation accidents, or natural disasters. Events such as the Oklahoma City bombing in 1995, the September 11 attacks in 2001, and the 2017 Las Vegas Shooting are well-publicized examples of mass casualty incidents.

### **Terrorism (History)**

The City has been fortunate not to have experienced any acts of terrorism directly.

However, the following acts of terrorism/mass casualty incident events have occurred in California and the Country:

- **August 1999** – On August 10, 1999, an American white supremacist walked into the lobby of the Jewish Community Center in Granada Hills and opened fire with an Uzi sub machine gun, firing 70 bullets into the complex. The gunfire wounded five (5) people.
- **July 2002** – A man opened fire at the ticket counter at Los Angeles International Airport, killing two (2) people and injuring several others before being shot dead by security personnel.
- **May 2015** - Two (2) Anaheim-based men were arrested at a Transportation Security Administration checkpoint at the Los Angeles International Airport who had reportedly sworn allegiance to the Islamic State of Iraq and Syria (ISIS). One of these men, Muhanad Badawi, was a student at Fullerton College.
- **December 2015** - A mass shooting and terrorist attack committed by a married couple who had reportedly sworn allegiance to ISIS killed 14 people at a medical facility in the City of San Bernardino.
- **April 2019** – The Poway synagogue shooting occurred on April 27, 2019, at Chabad of Poway synagogue in Poway, California on the last day of the Jewish Passover holiday, which fell on a Shabbat. Armed with an AR-15–style rifle, the gunman, fatally shot one woman and injured three (3) other people, including the synagogue's rabbi.

### **Terrorism (Location)**

Mass Casualty Incidents can occur anywhere, although public spaces and locations

where many people congregate (parks, schools, places of worship, government facilities, shopping centers, and public gathering areas) are most common. Critical locations in Pasadena may be the Rose Bowl, shopping centers, governmental facilities (i.e., City Hall), colleges, medical facilities, parks, and large employers within the City (i.e., Jet Propulsion Laboratory). Acts of terrorism may be located at the locations listed above; however, the perpetrators may also choose high-value targets such as electric-generating facilities, water treatment plants, dams or reservoirs, railroads, highways, and other facilities that could impact governmental operations and services.

#### **Terrorism (Extent)**

Mass Casualty Incidents and acts of terrorism are typically measured by the fatalities, injuries, and destruction they cause, but there is no universally used scale for measuring these events.

#### **Terrorism (Probability of Future Occurrence)**

Given that mass casualty incidents and acts of terrorism stem from a variety of factors: economics, societal pressures, mental health, global geopolitics, warfare, religion, etc. it is impossible to predict when and where an incident could occur. The Rose Bowl is a significant facility with state and national importance. While important, it is anticipated that any future incidents would likely originate domestically and are less likely to attract the attention of international terrorist groups. Incidents of these types are more likely to be conducted by smaller organizations or individuals aligned with greater-known organizations, although the effects may be no less significant. Given the presence of this facility as well as large shopping center, numerous schools, and large employers within the City, the potential does exist for mass-casualty incidents/acts of terrorism.

## 4.6 Capability Assessment

A capability assessment was conducted of the City's authorities, policies, programs, and resources. From the assessment, goals, and mitigation actions were developed. The planning team also developed a plan to prioritize, implement, and administer the mitigation actions to reduce risk to existing buildings and new development.

## 4.7 Existing Authorities, Policies, Programs, and Resources

An assessment of authorities, policies and programs, and resources was conducted to identify capabilities that reduce vulnerability to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, fiscal resources, and staff (e.g., technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, floodplain managers, surveyors, personnel with GIS skills, and staff with expertise of the hazards in the planning area). The planning team also considered ways to expand on and improve these existing policies and programs to integrate hazard mitigation into the day-to-day activities and programs of the City. **Tables 4-15, 4-16, 4-17, and 4-18** summarize the existing authorities, policies, programs, and resources to implement mitigation actions and projects.

### 4.7.1 Planning and Regulatory Capabilities

Planning and regulatory capabilities include local ordinances, policies, and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes, and zoning ordinances. These capabilities may be used to inform and support mitigation planning or may be modified as mitigation action. **Table 4-1** lists City planning and regulatory capabilities. Under the Description column is an explanation of the City's ability to use the LHMP to expand on and improve these existing policies and programs.

**Table 4-15: Local Planning and Regulatory Capabilities**

Name/Version Date	Hazards Addressed	Description (Effect on Hazard Mitigation)
<b>Arroyo Seco Flood Hazard Warning and</b>	Flooding	Mitigate flooding risk and effects to population.  <u>Expansion and Improvement:</u> The HMP and the

Name/Version Date	Hazards Addressed	Description (Effect on Hazard Mitigation)
<b>Contingency Plan (2018)</b>		Arroyo Seco Flood Hazard Warning and Contingency Plan should be closely correlated. As both plans are updated, mitigation measures should be incorporated.
<b>Pasadena Water and Power Integrated Resource Plan (2021)</b>	Climate Change	Reduce City carbon footprint and minimize cost of service to ratepayers.  <u>Expansion and Improvement:</u> The HMP and this plan should correlate, specifically in regard to Climate Change and the mitigation measures associated with the HMP.
<b>Pasadena Adopted Budget (2025)</b>	All	City's Budget  <u>Expansion and Improvement:</u> Future budget will include hazard mitigation projects as part of the general fund budget.
<b>Capital Improvement Program (2025- 2028)</b>	All	A compilation of infrastructure and major maintenance projects designed to expand, enhance and/or preserve the foundation of this great City.  <u>Expansion and Improvement:</u> Future iterations of the CIP will incorporate hazard mitigation activities.
<b>Capital Improvement Program Water System (2022- 2026)</b>	Earthquake, Drought,	A compilation of infrastructure and major maintenance projects designed to expand, enhance, and preserve the water system.  <u>Expansion and Improvement:</u> Future iterations of the plan will ensure projects align with the hazard mitigation activities.
<b>Pasadena Climate Action</b>	Climate Change,	This is a Greenhouse Gas Reduction document for the City to help achieve its goals of reducing

Name/Version Date	Hazards Addressed	Description (Effect on Hazard Mitigation)
Plan (2018)	Drought, Extreme Weather, Fire,	<p>greenhouse gases that contribute to climate change impacts.</p> <p>The plan may be found at the following link:  <a href="https://www.cityofpasadena.net/planning/planning-division/community-planning/climate-action-plan/">https://www.cityofpasadena.net/planning/planning-division/community-planning/climate-action-plan/</a></p> <p><u>Expansion and Improvement:</u> The HMP and Climate Action Plan should be closely correlated. As the Climate Action Plan is updated, mitigation measures from the new HMP can be incorporated.</p>
Pasadena Economic Strategic Plan (2025)	Flooding, earthquake, Fire	To provide Pasadena with a five (5)-year economic development strategic plan that guides priorities, policies, programs, and services.
Pasadena General Plan Land Use Element (2015)	All	The Land Use Element designates the general distribution, location, and extent (including standards for population density and building intensity) of the uses of land for housing, business, industry, agriculture, open space, public facilities, and other categories of public and private uses.
Pasadena General Plan Safety Element (2002)	Natural Hazards	<p>Addresses these safety issues, with emphasis on the naturally occurring conditions that pose a hazard to Pasadena, and provides goals, policies, and programs aimed at reducing the City's risk from these hazards.</p> <p><u>Expansion and Improvement:</u> Align the HMP with the future iteration of the Safety Element.</p>

Name/Version Date	Hazards Addressed	Description (Effect on Hazard Mitigation)
<b>Pasadena Code of Ordinances</b>	Multiple	<p>Local laws enacted by Pasadena, created to address matters of local concern that are not covered by state or federal laws.</p> <p>The codes itemized below have been adopted and may have been amended by the City of Pasadena.</p> <ul style="list-style-type: none"> <li>• 2022 California Building Code (Volume 1 &amp; 2)</li> <li>• 2022 California Residential Code</li> <li>• 2022 California Electrical Code</li> <li>• 2022 California Mechanical Code</li> <li>• 2022 California Plumbing Code</li> <li>• 2022 California Energy Code</li> <li>• 2022 California Green Building Standards Code</li> <li>• 2022 California Fire Code</li> </ul> <p><u>Expansion and Improvement:</u> Ensure ordinances align with industry standards and look at the implications of adding additional restrictions that improve mitigation City wide.</p>
<b>City Urban Water Management Plan (UWMP)</b>	Drought, Climate Change	<p>The UWMP provides urban water suppliers (including the City) with a planning document for long-term resource planning to ensure adequate water supplies are available to meet existing and future water supply needs. In addition, the UWMP incorporates water supply reliability determinations resulting from potentially prolonged drought, regulatory revisions, and/or changing climatic conditions.</p> <p><u>Expansion and Improvement:</u> The UWMP and HMP will be aligned in describing and developing mitigation actions to address climate change and drought. Water demand reduction strategies contained in the UWMP should be considered for inclusion as mitigation activities in the HMP.</p>

Name/Version Date	Hazards Addressed	Description (Effect on Hazard Mitigation)
<b>Wildfire Mitigation Plan (2020)</b>	Wildfire	<p>Identifies and puts into action wildfire prevention strategies.</p> <p><u>Expansion and Improvement:</u> The Wildfire Mitigation Plan and HMP will be aligned in describing and developing mitigation actions to the impacts of wildfire.</p>
<b>Cybersecurity Strategic Plan</b>	Cybersecurity	The cybersecurity strategic plan identifies and puts into action initiatives that improve overall City cybersecurity awareness, practices, and controls.

### 4.7.2 Administrative and Technical Capabilities

Administrative and technical capabilities include community (including public and private) staff and their skills and tools that can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Some communities may rely on other government entities such as counties or special City's for resources. These capabilities may be used when planning mitigation activities to support project feasibility studies, designs, estimates, and construction.

**Table 4-16: Administrative and Technical Capabilities**

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Communications</b>	City Manager's Office	<p>The City's Public Information Office provides outreach and information to the public, creative services to all internal departments, and videography for the City; also handles all website administration.</p> <p><u>Expansion and Improvement:</u> Strengthen ties with community organizations and businesses to ensure key content and information is timely and relevant. Create additional communications platforms to ensure information and content reaches community members.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>City Clerk's Office and Records Management</b>	City Manager's Office	<p>The City Clerk / Records Management Department Supervises and coordinates City elections; serves as Filing Officer for City appeals as designated by various sections of the Pasadena Municipal Code; prepares and updates the City's Conflict of Interest Code, and serves as Filing Officer for the Fair Political Practices Commission; receives and opens all sealed bids and formally releases bid bonds; receives, processes and maintains claims, public record requests, special event applications, summonses and complaints; assists the public and City staff by providing information and research assistance; and directs the retention and destruction of official records in accordance with applicable laws and regulations.</p> <p><u>Expansion and Improvement:</u> Prioritize new initiatives that support mitigation activities within the City.</p>
<b>Code Compliance</b>	Planning and Community Development	<p>Code Compliance is responsible for enforcement of the city's zoning and housing and environmental codes. The Pasadena Municipal Code regulates parking on private property, zoning, property maintenance, weed abatement on undeveloped lots and other substandard conditions on residential, commercial, and industrial properties.</p> <p><u>Expansion and Improvement:</u> Utilize code compliance as a means of incorporating mitigation into structures and improvements conducted by residents and businesses.</p>

<b>Engineering</b>	Public Works	<p>The department is charged with overseeing, planning, designing, and implementation of infrastructure projects. Some of the department's functions include:</p> <ul style="list-style-type: none"> <li>• Act as the lead agency for construction and public works contracts within the Right-of- Way.</li> <li>• Program, plan, design and administer the construction of the annual Capital Improvement Program.</li> <li>• Issue encroachment and traffic control permits for any work within the Right-of-Way.</li> <li>• Inspect construction within the Right-of-Way to verify conformance with the permit conditions and compliance with the latest City codes.</li> <li>• Review all proposed residential, commercial and industrial development projects and provide engineering input as well as conditions of approval for proposed projects.</li> <li>• Plan to check all development plans including those that impact other department functions.</li> <li>• Manage the NPDES program activities, such as business inspection, construction site inspection, public education, and outreach, etc.</li> <li>• Manage traffic engineering and transportation planning activities.</li> <li>• Provide support for other departments working within the Right-of-Way.</li> </ul> <p><u>Expansion and Improvement:</u> Work with Engineering to identify soft structures within the City boundary and develop mitigation strategies to make improvements.</p>
<b>Public Works</b>	Public Works	The City of Pasadena Public Works

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
		<p>Department is responsible for maintaining and improving the City's vital infrastructure, including streets, sidewalks, parks, landscaping, sewers, storm drains, and public facilities. Services are divided into three (3) subdivisions: Integrated Waste (provides refuse collection services to residents and businesses), Municipal Services (maintains City and community facilities and provides City fleet services), and Parks and Street Maintenance. These services include maintenance of public buildings and facilities, landscaping and park upkeep, street and sidewalk maintenance and repair, storm drain and sewer servicing, and graffiti abatement.</p> <p><u>Expansion and Improvement:</u> Improve understanding of the role that daily activities play in hazard mitigation. Develop hazard mitigation projects that aid in mitigation.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Information Technology</b>	Information Technology	<p>The role of the IT Department is to support the operational departments with reliable systems and information daily. The most critical support required of IT being network, communications and applications support. The IT department provides short- and long-term directions in planning, researching, selecting and deploying future technologies. IT strives to accommodate improved business process automation, self-service and quality customer service through a variety of hardware and software solutions. The IT Department also leads cybersecurity efforts, including increasing cybersecurity awareness in staff through training and assessments, risk assessment of procurements involving IT systems or technologies, recommendations for improvements, internal IT audits, and the development of policies and standards supporting confidentiality, integrity and availability of information systems.</p> <p><u>Expansion and Improvement:</u> Increase system redundancy and resiliency through improvements to technologies and connectivity.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Utilities</b>	Water and Power	<p>Pasadena Water and Power is a community enterprise that has always been essential to the health, economy and quality of life in the City. Today, PWP provides electricity to more than 65,000 customers within Pasadena and delivers water to almost 38,000 households and businesses in Pasadena and adjacent communities in the San Gabriel Valley.</p> <p><u>Expansion and Improvement:</u> Increase system redundancy and resiliency through enhanced systems operations and additional connections within and outside of the City.</p>
<b>Public Safety</b>	Police Department	<p>Pasadena Police Department is tasked with protecting life and property while preserving peace. This department is responsible for conducting public safety activities, investigating criminal activity, and directing traffic.</p> <p><u>Expansion and Improvement:</u> Provide training to Officers to better enable them to see potential hazards and take action to report them.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Public Health</b>	Public Health Department	<p>Pasadena Public Health Department is responsible for helping protect, maintain and improve the health of the Pasadena community. The City of Pasadena is one of only three (3) cities in the state of California that maintains its own independent local health jurisdiction with responsibility for a wide variety of services that support the three (3) core public health functions of assessment, policy development and assurance.</p> <p><u>Expansion and Improvement:</u> Increase coordination and collaboration with Fire, Police and County agencies to mitigate future public health hazards from spreading.</p>
<b>Emergency Management</b>	Fire	<p>Develops, coordinates, and manages programs that prevent, prepare for, respond to, recover from, and mitigate natural and human-caused disasters and emergencies.</p> <p><u>Expansion and Improvement:</u> Increase coordination and collaboration with other City departments, especially during annual budgeting.</p>
<b>Fire Department</b>	Fire	<p>Pasadena Fire Department has 202 authorized positions comprised of 172 sworn personnel and 30 non-sworn.</p> <p><u>Expansion and Improvement:</u> Proactively identify opportunities to coordinate and collaborate with neighboring jurisdictions to increase City and region-wide capabilities.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Housing</b>	Housing	<p>The Housing Department administers funds the City receives from the United States Department of Housing and Urban Development (HUD). These funds are authorized under HUD's Community Development Block Grant (CDBG) program and used to benefit low- and moderate-income families and aid in the rehabilitation and development of blighted areas within the City.</p> <p><u>Expansion and Improvement:</u> Integrate mitigation actions and strategies into low- and moderate-income areas to reduce the slight and potentially spur further investment.</p>
<b>Planning</b>	Planning and Community Development	<p>The Planning and Community Development Department plays a critical role in achieving the City Council's goals and objectives related to land use, urban design, and the quality and sustainability of the built environment.</p> <p><u>Expansion and Improvement:</u> Provide opportunities for continued education to Community Development staff to maintain state-of-the-art knowledge of new code and regulatory requirements.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Building</b>	Planning and Community Development	<p>The Planning and Community Development Department provides professional plan review and inspection services to ensure buildings and projects are built and developed in compliance with all applicable municipal and state code requirements.</p> <p><u>Expansion and Improvement:</u> Provide opportunities for continued education to Community Development staff to maintain state-of-the-art knowledge of the new code and regulatory requirements.</p>
<b>Financial Services</b>	Finance	<p>The Finance Department is tasked with maintaining reliable accounting records, payment of approved demands against the City treasury, financial statement reporting, preparation of the annual budget, prudent fiscal planning, payroll processing, and debt administration.</p> <p><u>Expansion and Improvement:</u> Assist with key mitigation activities associated with cost tracking hazard events and disasters, identifying grant funding opportunities, grant reporting and administration, and establishing financial risk calculations that can help assist with budgeting of operations, maintenance, and capital improvements.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Human Resources</b>	Human Resources	<p>The Human Resources Department plans, coordinates and administers a comprehensive human resources management program for the City of Pasadena and its employees. This includes the recruitment and retention of highly qualified employees, maintenance of a competitive employee compensation program, implementation and use of current technology for the City's human resources, organizational and employee development, and employee/labor relations. Identifies, evaluates and manages the City's risk and liability programs. This includes claims administration, the maintenance of liability/insurance coverage as well as the compliance with governmental regulation. In addition, the department administers the City's workers' compensation and employee safety programs.</p> <p><u>Expansion and Improvement:</u> Increase knowledge and information through better data collection and tracking.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<b>Floodplain Manager</b>	Planning and Community Development Department	<p>The duties and responsibilities of the Floodplain Administrator shall include, but not be limited to:</p> <ul style="list-style-type: none"> <li>• Permit review</li> <li>• Flood hazard reduction</li> <li>• NFIP program administration</li> <li>• Construction inspections</li> </ul> <p><u>Expansion and Improvement:</u> The Floodplain Administrator supports compliance with NFIP requirements, advocates for appropriate development in flood hazard areas, and provides technical expertise on effective flood mitigation activities. This can support mitigation activities.</p>
<b>Planning Commission</b>	Planning and Community Development Department	<p>The Planning Commission is responsible for reviewing proposed residential and commercial development projects, subdivisions, and land use requests on private property, to determine their compliance with applicable City regulations. The Commission has the authority to approve various development project addition. The Commission makes recommendations to the City Council with respect to the City's General Plan, Zoning Code, Specific Plans and other matters related to development within the City. The Commission may be responsible for implementing mitigation items pertaining to the Commission's scope.</p> <p><u>Expansion and Improvement:</u> Provide opportunities for continued education to members of the Planning Commission to maintain state-of-the-art knowledge of new code and regulatory requirements.</p>

Resource Name	Lead Department	Description (Effect on Hazard Mitigation)
<p><b>City Attorney</b></p>	<p>City Manager's Office</p>	<p>Reviews and approves resolutions and ordinances.</p> <p><u>Expansion and Improvement:</u> Provide opportunities for the City Attorney to review updates to regulatory information to provide expert review of City resolutions and ordinances that may address hazard mitigation</p>
<p><b>GIS</b></p>	<p>Department of Information and Technology</p>	<p>Provides complex mapping and data management of City facilities, land use, and potential hazards. Supports visualization of complex data sets using geo-location and data correlation.</p> <p><u>Expansion and Improvement:</u> Acquire and conduct training for GIS technicians on the latest versions of ArcGIS.</p>

### 4.7.3 Financial Capabilities

Financial capabilities include grants, general funds, property sales, income taxes, development impact fees, or stormwater utility fees. Based on procedures for each resource, these financial resources may be used to support mitigation activities.

**Table 4-17: Financial Capabilities**

Resource Name	Administrator	Description (Effect on Hazard Mitigation)
<b>General Fund</b>  <a href="https://www.cityofpasadena.net/finance/general-fund/">https://www.cityofpasadena.net/finance/general-fund/</a>	Department Specific	<p>Program operations and specific projects. Consists of property tax, sales tax, transient occupancy tax, and franchise tax that can be used for general purposes.</p> <p><u>Expansion and Improvement:</u> Hazard mitigation projects may be considered during the annual budgeting process for funding from the general fund.</p>
<b>Enterprise Funds</b>	Fund specific	<p>The City operates a variety of Special Revenue Funds. Special Revenue Funds are used to account for revenue derived from specific taxes or other revenue sources that are restricted by law or administrative action to be expended for specified purposes.</p> <p><u>Expansion and Improvement:</u> Where permissible, Special Revenue Funds may be considered during the annual budgeting process for funding mitigation projects.</p>

Resource Name	Administrator	Description (Effect on Hazard Mitigation)
<b>Community Development Block Grants (CDBG)</b>	Fund Specific	<p>The CDBG program provides funding for eligible senior activities such as in-home care, art classes, counseling, and home-delivered meals. HUD also provides Disaster Recovery Assistance in the form of flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to the availability of supplemental appropriations.</p> <p><u>Expansion and Improvement:</u> Where applicable, CDBG grants should be used to fund mitigation projects that enhance the resiliency of low-income and underserved communities.</p>
<b>Hazard Mitigation Grant Program (HMPG)</b>	Emergency Management	<p>Provides support for pre-and post-disaster mitigation plans and projects.</p> <p><u>Expansion and Improvement:</u> Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.</p>
<b>Flood Mitigation Assistance grant program (FMA)</b>	Grant Funding	<p>Mitigates structures and infrastructure that have been repetitively flooded.</p> <p><u>Expansion and Improvement:</u> Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.</p>

#### 4.7.4 Education and Outreach Capabilities

These capabilities include fire safety programs, hazard awareness campaigns, and public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

**Table 4-18: Education and Outreach Capabilities**

Resource Name	City Leads	Description (Effect on Hazard Mitigation)
<b>Public Information Officer</b>	City Managers Officer	Develops and delivers outreach and engagement programs that promote hazard awareness.  <u>Expansion and Improvement:</u> Provide additional information to the community about hazard mitigation activities.
<b>City Web Sites</b> <a href="https://www.cityofpasadena.net">https://www.cityofpasadena.net</a> <a href="https://www.cityofpasadena.net/fire/">https://www.cityofpasadena.net/fire/</a>	Various	Provides easily accessed information about the City. Used for LHMP public outreach and engagement.  <u>Expansion and Improvement:</u> Use the City website to provide additional information to the community about hazard mitigation activities.

Resource Name	City Leads	Description (Effect on Hazard Mitigation)
<p><b>City Social Media Accounts</b></p> <p><a href="https://www.instagram.com/cityofpasadena">https://www.instagram.com/cityofpasadena</a></p> <p><a href="https://x.com/pasadenagov">https://x.com/pasadenagov</a></p> <p><a href="https://www.facebook.com/cityofpasadena">https://www.facebook.com/cityofpasadena</a></p> <p><a href="https://www.instagram.com/pasadenafiredepartment/">https://www.instagram.com/pasadenafiredepartment/</a></p> <p><a href="https://www.facebook.com/PasadenaFD">https://www.facebook.com/PasadenaFD</a></p>	Various	<p>Provides easily accessed information about the City. Used for LHMP public outreach and engagement.</p> <p><u>Expansion and Improvement:</u> Use the City social media platforms to provide additional information to the community about hazard mitigation activities.</p>

## 4.8 National Flood Insurance Program Participation

The City of Pasadena adopted the Model Floodplain Management Ordinance within the City to maintain eligibility within the National Flood Insurance Program. **Table 4-19** contains information from the FEMA Community Status Book Report for communities participating in the NFIP.

**Table 4-19: City of Pasadena NFIP Information**

CID	Community Name	County	Initial FHBM Ident	Initial FIRM Ident	Current Eff Map	Date Reg-Emer Date
065050C	City of Pasadena	Los Angeles	05/02/1972	09/26/08	(NSFHA)	09/07/1984

Since 1968 the NFIP has provided federally funded flood insurance to homeowners, renters, and businesses in communities that adopt and enforce floodplain management ordinances to reduce future flood damage. The adoption of Pasadena Municipal Code (PMC) Chapter 14.27, passed in 2006, allows residents of the City to remain eligible to purchase flood insurance through the National Flood Insurance Program. The Ordinance meets the minimum standards set forth in Title 44, Section 60.3 of the Code of Federal Regulations. The City of Pasadena participates in the Community Rating System.

The Floodplain Management Ordinance's effect is limited to requiring that any new construction or substantial improvement to existing structures will have to comply with the standards of construction identified in the Ordinance. The City's continued involvement in NFIP supports this plan. Currently, the City of Pasadena implements a floodplain management program designed to protect the people and property of the City and implements activities such as public information and outreach activities, mapping and regulatory activities, and flood damage reduction activities.

The floodplain administrator (City Manager or designee shall obtain, review, and reasonably utilize any base flood data available from federal or state agencies or other source to identify flood-prone areas within the boundaries of the city of Pasadena. This data will be on file at the city of Pasadena Department of Planning and Community Development, 175 North Garfield Avenue, Pasadena, California 91101.

The City does not have any repetitive loss properties.

## SECTION 5: RISK ASSESSMENT

A risk assessment involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard. The intention of a risk assessment is to help the community understand the greatest risks facing the City. The risk assessment defines and quantifies vulnerable staff, buildings, critical facilities, and other assets at risk from hazards and is based on the best available data and the significance of the hazard. The risk assessment further examines the impact of the identified hazards on the City, determines which areas of the City are most vulnerable to each hazard, and estimates potential losses to City facilities for each hazard.

### 5.1 Critical Facilities and Facilities of Concern

Critical facilities (CF) consist of properties and structures that play important roles in government operations and the services they provide to the community. Examples of CFs include local government offices and yards, community centers, public safety buildings like police and fire stations, schools, and other properties a city has deemed essential for its operations. Critical Facilities may also serve dual roles if a city designates them as public assembly points during an emergency. Critical Facilities are often owned by the City, but some may also be owned and operated privately, such as some utilities and telecommunication infrastructure. Facilities of Concern (FOC) are similar to critical facilities; however, the City may not own them, or their purpose and function are not as important to the function of the City after a disaster. These facilities are identified to ensure the City understands their potential vulnerability to the hazards of concern.

The HMPC identified a total of 157 facilities [107 CFs and 50 FOC] in Pasadena that fall into 4 categories based on their function or characteristics. **Table 5-1** shows the number of CFs and FOC in each category, the total estimated replacement value for these facilities, and examples of the type of facility in each category. **Figure 5-1** shows the locations of the mapped CFs and FOC in Pasadena.

The potential loss values identified in subsequent tables are based on the City's total insured value using the City's Insured Asset Inventory. It is intended to provide an estimate of the replacement cost if the property/ structure is completely or severely damaged. The actual costs of repair could be smaller or larger than the provided estimate. Since the data comes from the City's Insured Asset Inventory, no facilities not owned by the City will not have a replacement value listed. Where this occurs, "N/A" has been used within the table.

Based on the available data provided by the City, a minimum of \$1,261,099,373.00 worth of City-owned assets were analyzed. The total potential loss value of all City-owned and non-City-owned assets is much higher but is unknown due to data limitations.

The greatest potential for loss among City-owned assets comes from the Recreational Facilities category, which includes but is not limited to the Rose Bowl Stadium, libraries, cultural centers, community centers, and a museum located throughout the City. The next critical facility category with the greatest potential for loss would be City owned utilities, which include the power plant, reservoirs, substations, and pumpstations. The next category is Emergency Operations facilities which include Police and Fire Department facilities and equipment, while City owned residential property is the fourth highest potential loss among City owned facilities.

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 occur. It is reasonable to assume that impacts would not exceed 50% of the total asset value city-wide during a single event. The following are parameters to help understand how much a proposed investment/improvement compares to the existing assets within the City:

- 1% Impact - \$12,620,993
- 5% Impact – \$63,054,968
- 10% Impact – \$126,109,937
- 20% Impact - \$252,219,874
- 50% Impact - \$630,549,686

The possibility that all facilities will be completely damaged simultaneously is extremely rare. Based on the hazard, most impacts are anticipated to be isolated to certain locations. This estimate does not include the value of the City's underground infrastructure and surface drainage facilities.

**Table 5-1** lists the number of facilities and their associated potential replacement values.

**Table 5-1: Critical Facilities and Facilities of Concern in Pasadena**

Category	# of Facilities - Critical	# of Facilities - Concern	Examples	Potential Loss
<b>Government Operations, Modular</b>	18	13	City Hall, City Hall East, City Hall Annex, Support Buildings, Corporate Yard, Modular Buildings, Schools, Armory Building, Parking Garage, Train Station	\$459,064,100
<b>Emergency Operations</b>	11	0	Police Station, Fire Stations, Fire Equipment (Engines)	\$76,963,985
<b>Water and Wastewater Infrastructure, Power Distribution System</b>	57	0	Reservoirs, Holding Tanks, Pump Houses/Stations, Booster Stations, Pressure Reducing Systems, Power Plant, Substation	\$88,266,275
<b>Recreational, Cultural, and Community Centers</b>	5	37	Stadium, Museum, Libraries, Golf Courses, Parks, Community Centers, etc.	\$628,752,079
<b>Residential</b>	16	0	Rental Housing Units	\$8,052,934
<b>Total</b>	<b>107</b>	<b>50</b>	<b>---</b>	<b>\$1,261,099,373</b>

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

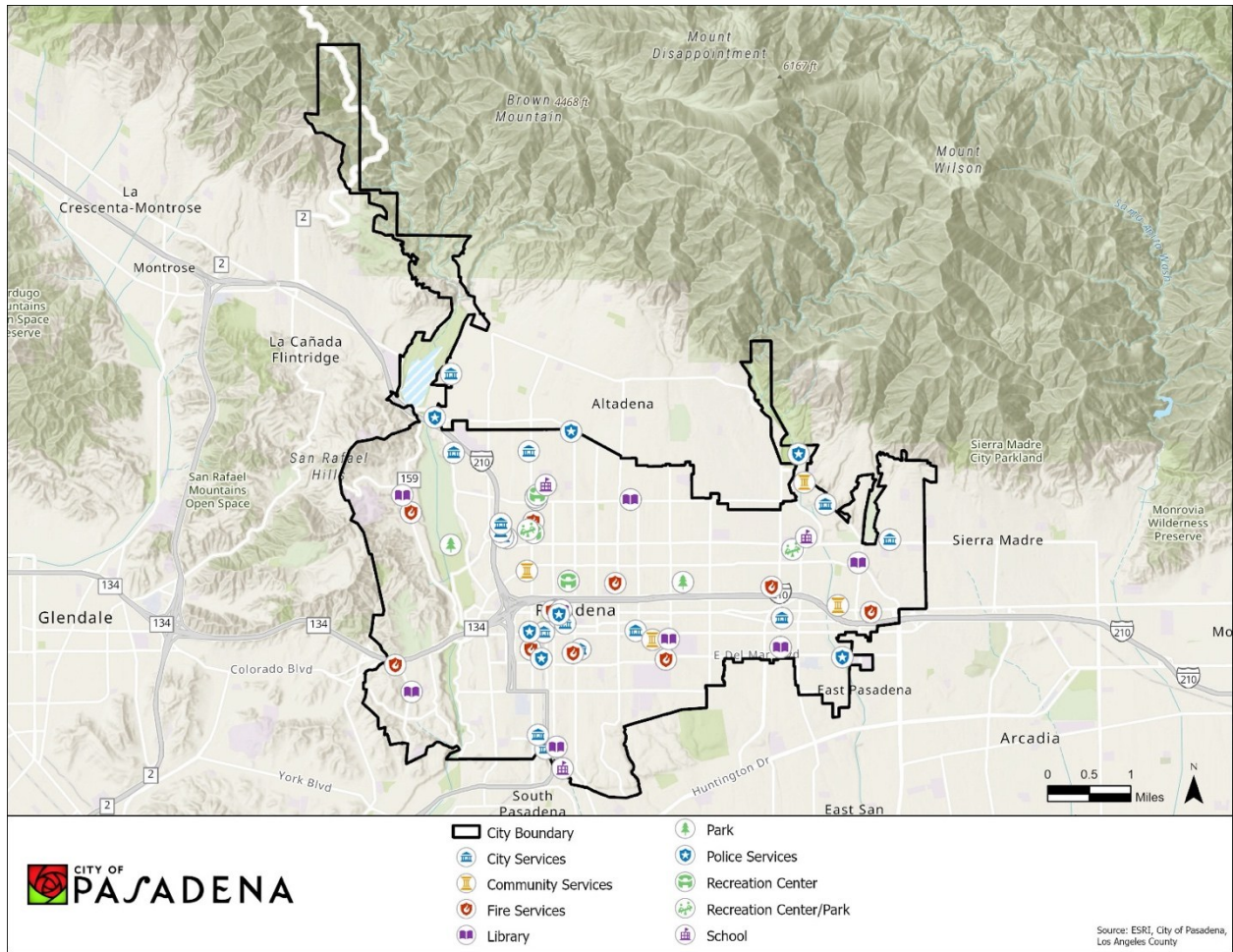


Figure 5-1: Critical Facilities and Facilities of Concern

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

- **Disability status:** Persons with disabilities may 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. **Figure 5-2** below demonstrates the total number of people with a disability by census tract in the City of Pasadena.
- **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 move to safer areas that are less at risk of being impacted by a hazard.
- **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.

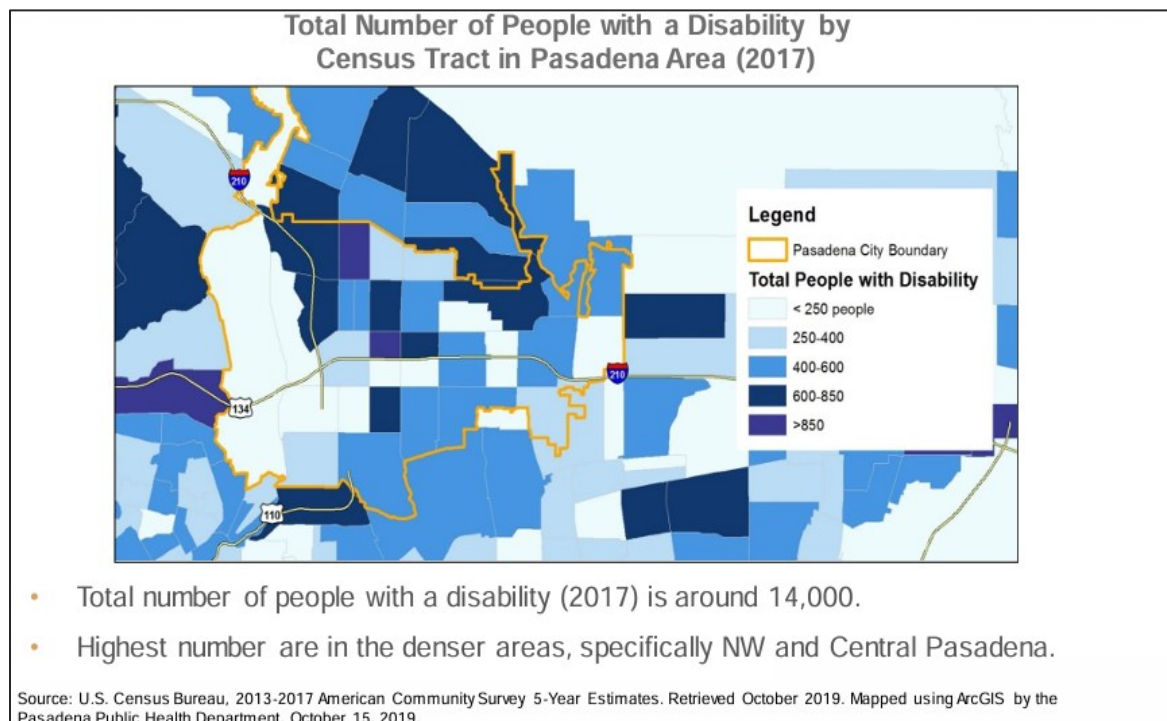
**Table 5-2** shows the number of people in Pasadena who meet at least one of the criteria for threatened or vulnerable populations. For more detailed demographic information, please refer to **Section 3. Figures 5-3 – 5-5** provide further information of vulnerable populations in the City of Pasadena.

The social threat analysis also shows the threat other populations may encounter. For example, people experiencing homelessness or people without access to lifelines (vehicles or communication networks) may experience greater hardship in evacuating or recovering from a disaster. Since data for these groups is 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 be affected on a general level.

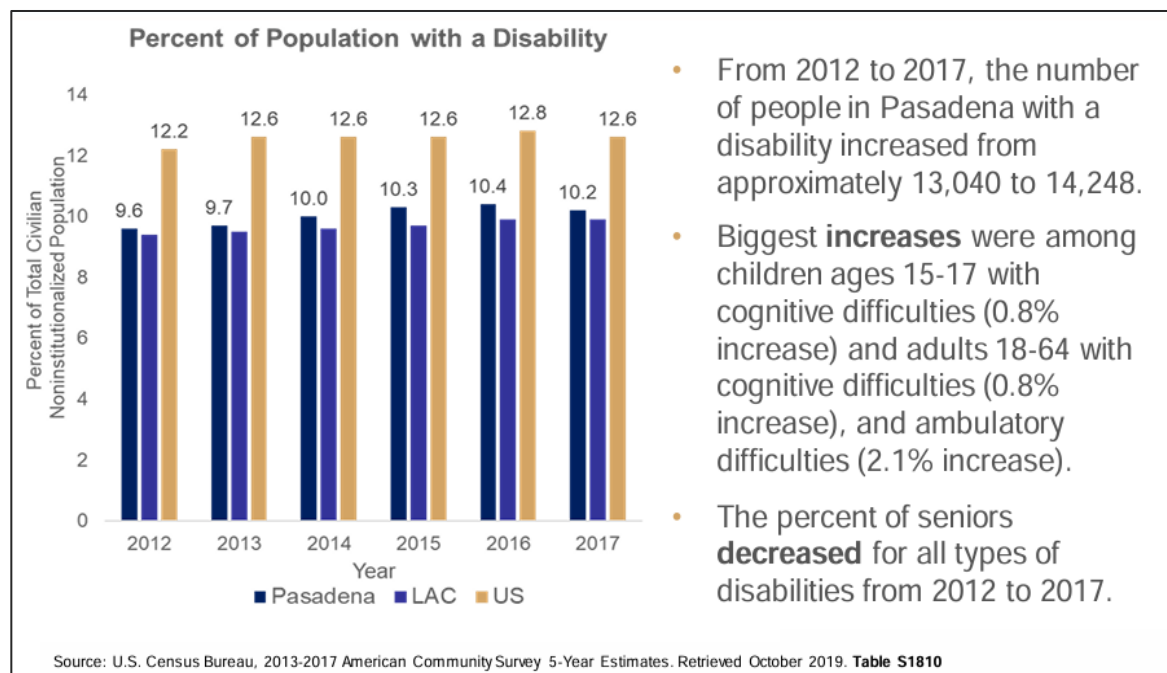
**Table 5-2: Pasadena Threatened-Population Metrics**

<b>Threatened Population Metric</b>	<b>Community-Wide Data</b>
<b>Population</b>	144,388
<b>Households</b>	57,226
<b>Median household income</b>	\$76,264
<b>Renter Households</b>	61%
<b>Percentage of households with at least one person living with a disability</b>	9.4%
<b>Percentage of households living under the poverty limit</b>	13.8%
<b>Percentage of households with one-member aged 65+</b>	9.1%

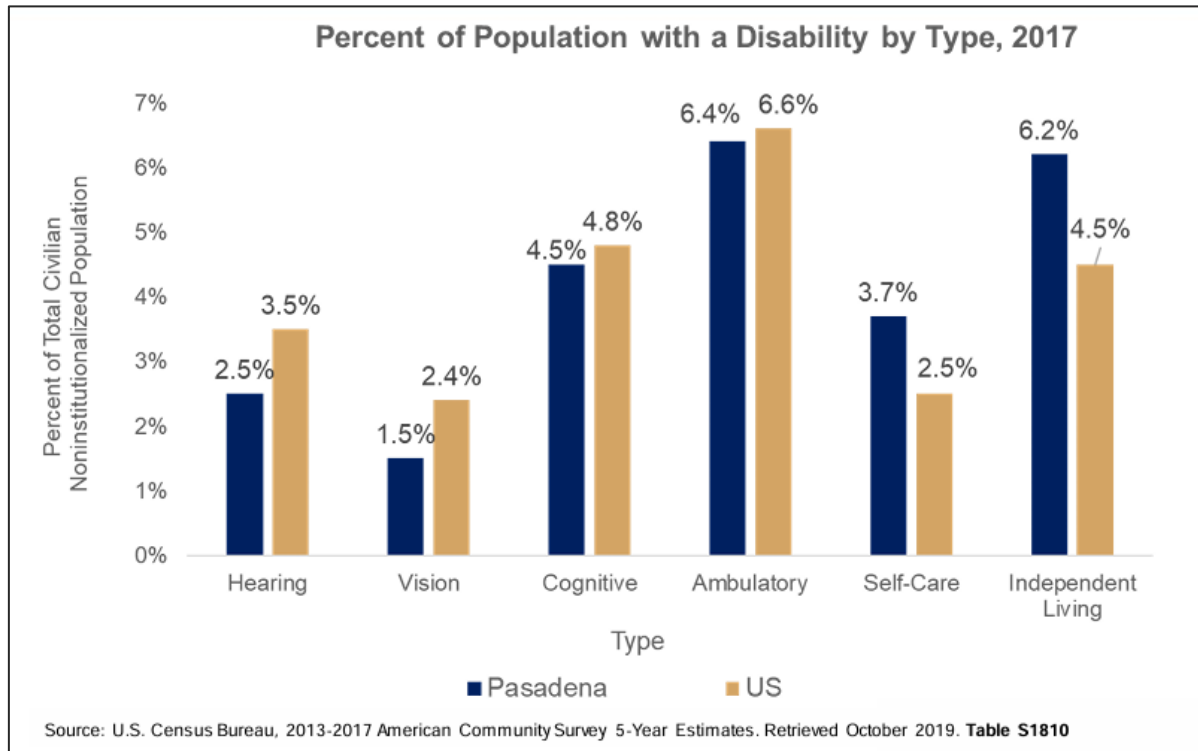
*Source: U.S. Census Bureau (2023), 2019 American Community Survey  
Pasadena Health Assessment for People Living with Disabilities (2019)*



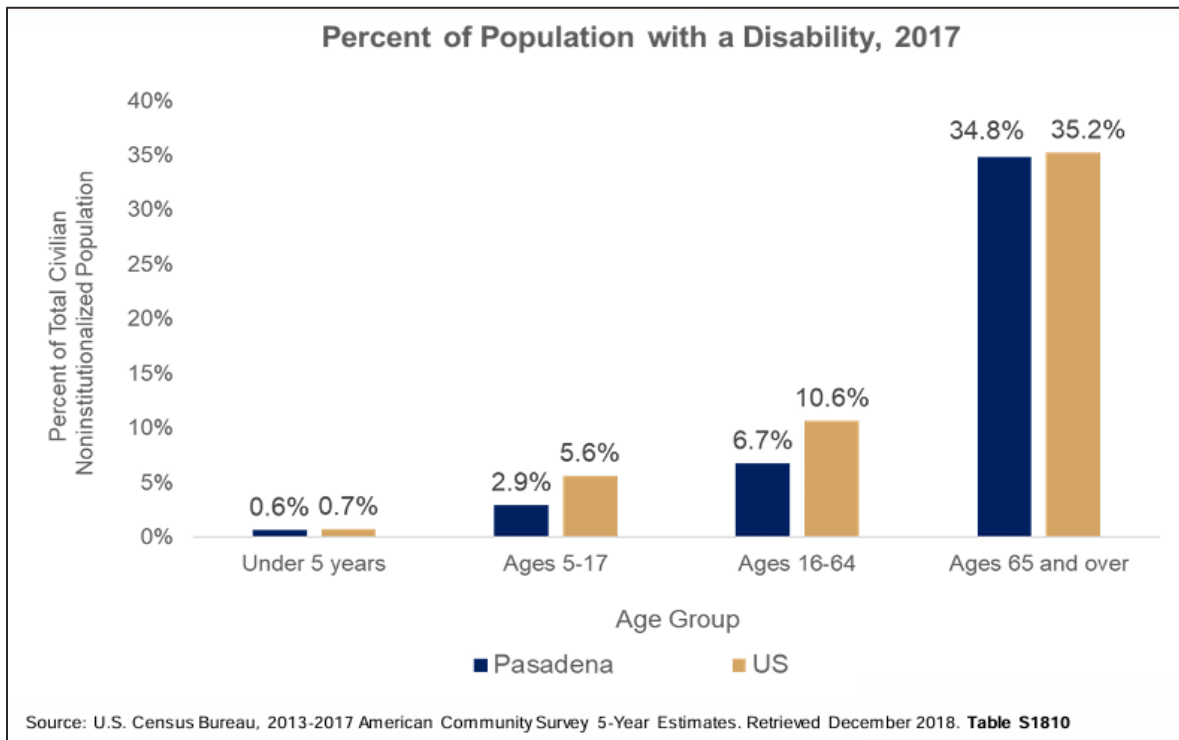
**Figure 5-2: Total Number of People with Disability by Census Tract in the City of Pasadena**



**Figure 5-3: Percent of People with a Disability in Pasadena**



**Figure 5-4: Percent of Population with a Disability by Type**



**Figure 5-5: Percent of Population with Disability by Age**

### *5.2.1 Data Limitations and Notes on Vulnerability Figures*

The planning team used City provided demographic data to determine the percentage of residents with a disability. This 2017 data (the latest available) showed that 10.2 % (percent) of the population had a disability. The team also considered using the 2020-23 U.S. census data for this purpose. The census data listed 5.3% (percent) of the population with a disability. Census data only provides information on disabilities for people under 65. The planning team selected the 2017 data point as being more inclusive. Both data sets used the Six Standard Questions Census criteria for determining a disability.

## **5.3 Identification of Critical Facilities and Assets**

The location and operations of high-risk facilities such as critical infrastructures and key assets in or near the City are a significant concern with respect to a disaster. The planning team used FEMA's "Public Assistance Guide" (FEMA 322) 22 that defines critical facilities like data centers, utility plants, or highly hazardous materials facilities. They also used the FEMA Hazard Mitigation Handbook, which describes three (3) categories of facilities for analysis to revise this list: critical facilities for City operations; high potential loss facilities and facilities with hazardous materials; and critical infrastructure such as police/fire stations, streets and bridges, reservoirs, and pump stations.

## **5.4 Other Assets**

In addition to the City's designated inventory of CFs/FOC and vulnerable populations, hazard events could threaten other important assets to Pasadena. 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.

## **5.5 Risk Assessment and Potential Loss**

The risk assessment and potential losses for physical damage for City facilities are listed in the tables below. Because the City provides a critical lifeline infrastructure support system, potential losses beyond physical damage must be considered. Loss of potable water service due to non-destructive events results in community hardship, economic loss, and reputational damage. Computing potential losses from these risks is beyond the scope of this LHMP and must be considered in the context of the impact on the entire City.

## 5.6 Analysis of Potential Losses by Hazard

### Dam Failure

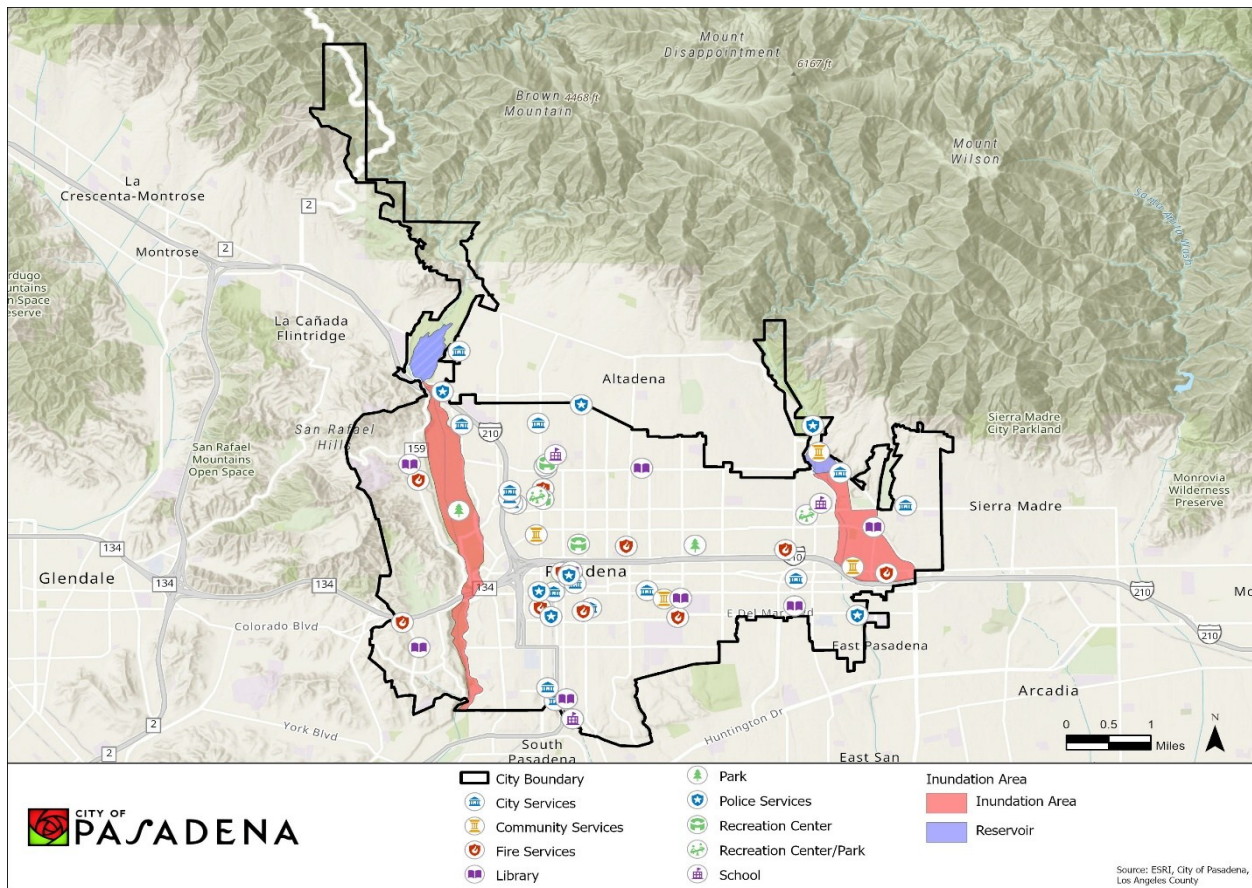
#### *Physical Threat*

Various factors, such as the amount of water released, the distance between the dam failure site, and the topography of the surrounding land, will influence the extent to which physical assets in Pasadena are threatened. Devils Gate Dam and Eaton Wash Dam have large storage capacities that could cause localized inundation in Pasadena if the reservoir waters are released due to a dam breach. **Table 5-3** identifies the physical assets in Pasadena that are threatened by the potential failure of Devils Gate and Eaton Wash Dam. Based on this analysis, dam inundation would affect 4 CFs and 2 FOCs within the City, with the potential to cause approximately \$437 million in damage, based on available information. **Figure 5-6** shows the location of the identified CFs and FOCs within these dam inundation zones.

**Table 5-3: Critical Facilities and Facilities of Concern (Dam Failure)**

Category	# of Facilities - Critical	# of Facilities - Concern	Potential Loss**
Government Operations, Emergency Operations	4	0	\$45,427,589
Recreational, Cultural, Community Centers	0	2	\$5,484,509
<b>Total</b>	<b>4</b>	<b>2</b>	<b>\$50,912,098</b>

\*\* Based on the City of Pasadena insured replacement values.



**Figure 5-6: Critical Facilities and Facilities of Concern in Dam Inundation Zones**

*Social Threat*

Dam failure hazards in the City would impact various downstream properties and the residents that live there. **Table 5-4** identifies these potential dam failure impacts caused by the Devils Gate and Eaton Wash Dam. Failure of the two (2) dams would affect almost 10% of the population and inundate 5% of the acreage in the City of Pasadena.

**Table 5-4: Dam Failure Threatened Populations**

Threatened Population Metric	Eaton Wash/ Devils Gate Dam	City
Population	14,438	144,388
Households	5,722	57,226

Threatened Population Metric	Eaton Wash/ Devils Gate Dam	City
Median household income	\$126,012	\$76,264
Percentage of households living under the poverty limit	3.54%	13.8%

*\* Percentages are estimates only, as exact values for some statistics were not available. Actual percentages might be greater than the estimate presented in this table.*

*\*\* Based on the City insured replacement values*

*Other Threats*

Dam failures are often triggered by other events (e.g., seismic shaking, intense rainstorms, etc.). There would most likely be service disruptions in Pasadena if this type of event occurred. Floodwater could quickly inundate the city, disrupting utilities such as water, power, and other services (communications or transportation infrastructure). Residents may find street lighting and traffic signals are temporarily disabled. Debris carried by the rapid inundation may result in injury or death, destroyed structures and facilities and damage to transportation systems.

*Changes in Population Patterns and Land Use and Development*

Population in the inundation zone may choose to move out of the City or out of the inundation area if the impacts of dam failure are great enough. Those renting homes within the City (61% of households within the City) have little control over the rebuilding process of a home that has been affected by inundation and, therefore, may be forced to move out of the inundation area or out of the City.

Dam failure is unlikely to affect land use and development because the development review process will take steps to mitigate or minimize flood-related impacts. Areas inundated within the City would not be significantly altered, requiring changes in land use and development patterns

## Drought

### *Physical Threat*

Since the primary threat from drought is reduced water supply and availability, there are no foreseeable threats to any of the City's physical assets. It is possible that any water delivery infrastructure not used or used less than usual may 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. Amenities within facilities, like water features and landscaping, could be affected by reduced watering. If dead or dying vegetation becomes a nuisance, the City may have to replace or retrofit locations affected.

### *Social Threat*

Droughts are unlikely to cause serious social threats to households in Pasadena, though residents and business owners in the City may experience financial impacts associated with water conservation efforts. Those with less access to financial resources, such as low-income households or seniors, could be harder hit if higher water rates or additional fees are imposed during a severe drought event.

### *Other Threats*

A typical drought is not anticipated to lead to any outages in service in Pasadena. However, an exceptional drought may lead to restricted water use for residents or businesses in the City. Trees that are not adequately adapted to lower irrigation levels could perish, altering the City's aesthetic appearance and long-term air quality. Any open spaces with extensive lawns may start to die, turning brown, which could discourage residents from using these parks and open spaces. In addition, long-term drought conditions can change and reduce soil's ability to absorb water. When this occurs, water runoff from these areas may increase, which could cause downstream flooding and erosion in some areas.

### *Changes in Population Patterns and Land Use and Development*

Droughts occur periodically (primarily during the Summer/Fall months) and generally do not affect populations to the degree that they would need to migrate in and out of the City. The anticipated population growth in Pasadena is unlikely to have any significant effect on population growth.

It is unlikely that drought will affect land use and development because the development review process will take steps to mitigate or minimize the impacts and vulnerability of drought in Pasadena.

## Earthquake

### *Physical Threat*

#### Seismic Shaking

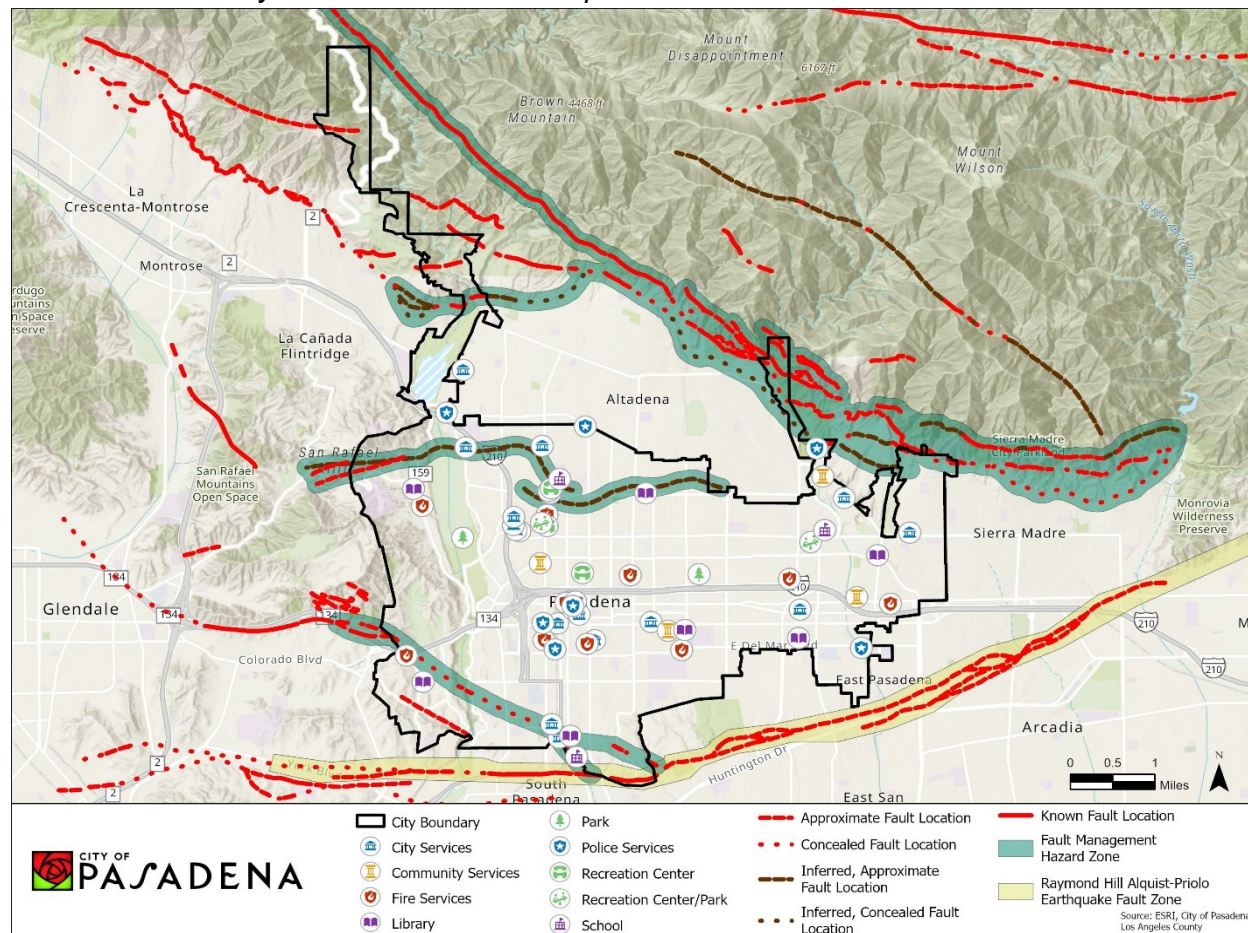
Many physical assets in the City are estimated to experience the same seismic shaking intensity, ranging from 85 to 95% (shaking intensity in relation to the earth's gravity). Therefore, all facilities could be damaged during a significant seismic event, which would be extremely costly for the City. If all facilities were damaged at the same time during a seismic shaking event, it can be assumed that the City would incur a percentage of the maximum potential loss of its physical assets. Assuming 20% of the City's assets are impacted, this potential loss could amount to over \$252 million. Underground physical assets, like pipelines or utilities, could be damaged if seismic shaking were strong enough to cause a rupture. In such a scenario, natural gas and water delivery service to Pasadena homes and businesses would be incapacitated until repairs are completed. **Table 5-5** displays these potential scenarios and losses that could incur should shaking reach the described threshold. **Figure 5-7** displays the CFs and FOCs within the City's seismic shaking potential hazard zones.

**Table 5-5: Critical Facilities and Facilities of Concern (Seismic)**

Category	# of Facilities - Critical	# of Facilities - Concern	Total Potential Loss**
Government Operations, Modular	18	13	\$459,064,100
Emergency Operations (Police, Fire)	11	0	\$76,963,985
Water and Wastewater Infrastructure, Pressure Reducing Systems	57	0	\$88,266,275
Recreational, Cultural, Community Centers	5	37	\$628,752,079
Residential (City Owned)	16	0	\$8,052,934
<b>Total</b>	<b>107</b>	<b>50</b>	<b>\$1,261,099,373</b>

\* 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.

**\*\* Based on the City of Pasadena insured replacement values**



**Figure 5-7: Earthquake Threat Map with City infrastructure**

**Subsidence**

Subsidence can influence both the built and natural environment. Because water lines are gravity-driven, a change in elevation due to subsidence could make the system more inefficient. Structures built in areas that experience subsidence may require retrofitting or relocation. Subsidence could also irreversibly decrease an aquifer’s capacity to store water. **Table 5-6** shows 107 CF, and 50 FOC could be affected by land subsidence in the City, resulting in a loss of almost \$1,261,099,373. **Figure 5-8** displays the CFs and FOC within the City’s land subsidence hazard zones.

**Table 5-6: Critical Facilities and Facilities of Concern (Land Subsidence)**

Category	# of Facilities - Critical	# of Facilities - Concern	Total Potential Loss**
Government Operations, Modular	18	13	\$459,064,100
Emergency Operations (Police, Fire)	11	0	\$76,963,985
Water and Wastewater Infrastructure, Pressure Reducing Systems	57	0	\$88,266,275
Recreational, Cultural, Community Centers	5	37	\$628,752,079
Residential (City Owned)	16	0	\$8,052,934
<b>Total</b>	<b>107</b>	<b>50</b>	<b>\$1,261,099,373</b>

\* 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.

\*\* Based on the City insured replacement values

### *Social Threat*

The risk of a seismic event is a danger to all groups in Pasadena 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 find themselves trapped if furniture or building components have fallen around them. Renters and low-income people 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 one be too damaged for occupancy. **Table 5-7** displays the threatened populations in Pasadena associated the seismic shaking scenarios.

### **Subsidence**

While subsidence can cause significant issues with physical infrastructure, many of the social impacts can be related to where people live and work. Subsidence can impact the safety of homes and businesses. Buildings could gradually sink due to subsidence, causing minor issues such as cracks or misalignments of doors and windows or more costly problems such as sinkholes. These issues could impact residents living in older homes, which may not have been built with foundations reinforced with steel. Because insurance companies may not cover damages caused by subsidence or other geologic hazards, lower-income households may find it financially difficult to cope with subsidence. **Table 4-26** displays the populations characteristics of those in Pasadena threatened by land subsidence. Approximately 80% of the City's residents live in an area with land subsidence and share similarities with the demographics of the entire City.

### *Other Threats*

#### **Seismic Shaking**

With early earthquake warning systems becoming operational, it can be expected that utilities will take advantage of these advance warnings to shut off gas, water, and power transmission to control any potential leaks following the seismic shaking. Authorities may have enough time to halt the use of infrastructure or move workers to safe locations away from hazardous conditions. Workers could cease their activity and take shelter until they can be safely evacuated. Therefore, all services could be non-operational during the shaking 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 or several days. The City and the region would experience reduced economic activity during the outage period, which would not be felt for weeks, months, or years later. Structures such as telephone poles or power transmission towers felled by the shaking could block roadways and prevent emergency response teams from reaching victims or evacuees who need assistance.

### **Subsidence**

If subsidence occurred in Pasadena, causing impacts to homes and businesses, the City would need to identify the locations of impact and potential triggering event. Damage to roads, rail lines, and underground pipes (water, wastewater, and natural gas) is likely to be impacted during a subsidence event. As a result, the areas impacted

by these effects could experience a loss of City services and potential congestion if roadways are impacted.

### *Changes in Population Patterns and Land Use and Development*

#### **Seismic Shaking**

It is not anticipated that population patterns will change over the next 20 years. While this may also be true concerning land use and development, if a strong earthquake impacts the City, there is the potential that older structures may be impacted more severely than newer structures in the City.

#### **Subsidence**

Although subsidence is being monitored throughout the City, its effects happen very slowly, and the impacts cause minor damage to structures that can be repaired. Because of this, subsidence is unlikely to cause changes in population patterns as well as land use and development. The City's development review process will identify steps to mitigate or prevent future subsidence.

### **Extreme Weather (Severe Winds, Extreme Heat, Severe Rainstorms)**

#### *Physical Threat*

#### **Severe Winds**

Intense winds likely present the greatest threat to physical structures, particularly from trees or branches that fall on buildings/vehicles, causing 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. Often utility poles and trees suffer impacts during high wind events if they occur after a significant rain event. During these events, saturated soils around the base of the tree/pole may be unable to hold up to the strains placed on it by strong winds causing it to fall over.

Trees, tree branches, and other objects have the potential to fall on powerlines and other electrical infrastructure during a severe windstorm, causing power outages throughout the City. Another physical threat of severe wind is wildfire impacts during the summer months.

#### **Extreme Heat**

Extremely high temperatures can cause roads to deform and buckle as the pavement expands in the heat, especially in areas that have not been maintained well. Power lines and other electrical grid components become less effective in higher temperatures and

may be damaged due to stress during extreme heat events. Urban heat islands occur when natural land cover is replaced with concentrations of pavement, buildings, or other surfaces that absorb and retain heat. Buildings with dark pavement will absorb more heat than surfaces with vegetation or lighter materials that are better at reflecting the sun's energy. This urban heat island effect is strongest during the summer when solar radiation is strongest.

### **Severe Rainstorms**

Physical threats associated with severe rainstorms are similar in nature to those identified in the Flood discussion below.

### *Social Threat*

#### **Severe Wind**

Severe wind events can harm people throughout Pasadena but have a greater effect on the safety of people experiencing homelessness and those working outdoors. Populations that work outside or have respiratory illnesses may be impacted by severe wind events as they can generate dust and other contaminants that can affect the health of residents and workers. Lower-income residents, who may not have the financial resources to purchase homes (or are renting homes) that are not built or retrofitted to withstand powerful winds, could also have difficulty recovering from wind events.

#### **Extreme Heat**

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

People living in homelessness are at a high risk of health complications during heat waves, especially if they are unsheltered. According to Pasadena homelessness count, in 2025, there were approximately 556 individuals experiencing homelessness in the City, with 57% percent unsheltered. This population is very vulnerable to heatstroke during a heatwave, especially if they cannot reach a cooling center.

Sudden spikes in heat can catch people by surprise. Stores can rapidly sell out of fans, air-conditioning units, or drinking water during a heatwave. Many lower-income households live in older, poorly insulated, and energy-inefficient housing and cannot

afford to run their air conditioning, which can be further compounded by the threat of power outages due to heat/rolling blackouts. During these events, extreme heat impacts may affect larger portions of the City and populations that would not be viewed as vulnerable under normal circumstances.

### **Sever Rainstorm**

Social threats associated with sever rainstorms are similar in nature to those identified in the Flood discussion below. The following populations are most vulnerable to severe weather:

- Households with financial instability.
- People that spend an extended amount of time outdoors.
- People with existing health conditions or limited mobility.
- People with language barriers and citizenship uncertainty.
- People living in mobile homes.
- Overcrowded households.

### *Other Threats*

#### **Severe Wind**

Southern California and the City all suffer from seasonal Santa Ana Winds and will for the near future. Extreme wind events can worsen other risks, such as wildfires.

#### **Extreme Heat**

Extreme Heat for any length of time can also affect other hazards and risks within the City. For example, it can create a spike in electricity demand leading to power loss/failure, food insecurities, and a rise in vector-borne disease transmission. Coupled with extreme wind, it can cause or spread urban fires and jeopardize additional neighborhoods/ communities.

#### **Severe Rainstorm**

Other threats associated with sever rainstorms are similar in nature to those identified in the Flood discussion below. Severe rain can lead to debris flows in wildfire affected areas of the City and cause significant property damage to areas of the City.

### *Changes in Population Patterns and Land Use and Development*

#### **Severe Wind**

Severe winds occur periodically (primarily during the Fall months) and generally do not affect populations to the degree that they would need to migrate in and out of the City.

It is unlikely that severe wind will affect land use and development because the development review process will take steps to mitigate or minimize the impacts of severe wind. There is the potential that older structures in the northern part of the City may be impacted more severely than newer structures in the southern part of the City. The northern part of the City has overhead powerlines and mature trees, and older structures may not comply with current building codes.

#### **Extreme Heat**

Based on the recent update to TOP 2050 (General Plan), it is not anticipated that population patterns will change over the next 20 years. There could be minor changes in population patterns due to extreme heat if people cannot continue to live in older structures with limited insulation and older cooling units.

It is unlikely that extreme heat will affect land use and development because the development review process will take steps to mitigate or minimize impacts from extreme heat. While it is unlikely that extreme heat will affect land use and development, it is possible that additional investment in older parts of the City will occur to modify structures to handle these conditions.

#### **Severe Rainstorm**

Severe rainstorms occur periodically (primarily during the winter months) and generally do not affect populations to the degree that they would need to migrate in and out of the City. However, in rare circumstances, there may be the need to evacuate households for a short period of time until the flooding recedes.

### Flooding

#### Physical Threat

No portions of the City are located within the 100-year flood zone (1.0% Annual Chance of Flooding) and the 500-year flood zone (0.2% Annual Chance of Flooding). Although not a “priority” hazard, it is worth to note aspects of the Flood hazard. Flooding in the City of Pasadena is generally related to urban flooding, not riverine flooding. Although the City has gone through several flood events in which properties have experienced repetitive loss, there are no properties that fall under the NFIP definition of Repetitive Loss Properties. The City of Pasadena has two (2) repetitive loss properties, both residential properties. One property has two (2) claims and is located on the southern boundary of Eaton Canyon Park; the other property has three (3) claims and is located just west of the Rose Bowl.

Any physical assets within these mapped boundaries can potentially be inundated if enough precipitation falls, exceeding the storm drain infrastructure design capacity in these areas. Electronic or mechanical equipment on the ground could be impacted causing it to fail. **Table 5-8** identifies that one (1) physical asset within the City is located in the 100-year flood zone. Table 5-8 - 5-9 identifies 3 physical assets within the City located in the 500- year flood zone. In total, these facilities are valued at over \$12 million. **Figure 5-9** depicts the locations of CFs and FOCs located in FEMA- designated flood zones, which include the 100-Year Flood Hazard (blue), 500-Year Flood Hazard (orange), and Areas with Reduced Flood Risk Due to Levee (yellow).

**Table 5-8: Critical Facilities and Facilities of Concern (100-Year Flood)**

Category	# of Facilities - Critical	# of Facilities - Concern	Total Potential Loss**
Government Operations Emergency Operations	1	0	\$10,000,000-
Recreational, Cultural, Community Centers	0	0	0-
<b>Total</b>	<b>1</b>	<b>0</b>	<b>\$10,000,000-</b>

\* Based on the City of Pasadena insured replacement values

\* Percentages are estimates only, as exact values for some statistics were not available. Actual percentages might be greater than the estimate presented in this table.

**Table 5-9: Critical Facilities and Facilities of Concern (500-Year Flood)**

Category	# of Facilities - Critical	# of Facilities - Concern	Total Potential Loss**
Government Operations, Emergency	1	0	\$10,000,000
Recreational, Cultural, Community Centers	0	2	\$2,000,000
<b>Total</b>	<b>0</b>	<b>0</b>	<b>\$12,000,000</b>

\* Based on the City of Pasadena insured replacement values

\* Percentages are estimates only, as exact values for some statistics were not available. Actual percentages might be greater than the estimate presented in this table.



Figure 5-9: Critical Facilities and Facilities of Concern in FEMA Flood Zones

### *Social Threat*

Floodwaters in both the 100-year zone and the 500-year zone are anticipated to rise to a depth of no more than one foot above the base flood elevation. Flooding of this type would likely inundate curb cuts and sidewalks to some extent. People who walk or bike as their primary form of transportation may encounter difficulties if they do not have access to an alternative means of transportation. Seniors, people with disabilities, and low-income people are also likely to be impacted during these events. **Figure 5-9** shows the proportion of Pasadena's vulnerable populations that face a greater threat from a flood event. Based on the information in **Table 5-10**, the median household income in both the 100-year and 500-year flood zones is higher than the citywide average.

People experiencing homelessness who are outside during flood conditions may experience property damage or be unable to access shelter. Though floodwaters in Pasadena are not expected to exceed a depth of one foot in many areas, six inches (6 in.) of floodwater may render any makeshift structures uninhabitable during a flood event. Possessions such as sleeping bags or electronic devices may be damaged or swept away by these floodwaters.

Additionally, the 2022 Vulnerability Assessment has identified the following populations as flood-threatened populations:

- Households with financial instability.
- People that spend an extended amount of time outdoors.
- People with existing health conditions or limited mobility.
- People with language barriers and citizenship uncertainty.
- People living in mobile homes.
- Overcrowded households.

### *Other Threats*

Flooding may temporarily stop any type of transportation in the City. Debris from floodwaters can block roadways, hinder vehicle access, and potentially affect emergency response services. One foot of rushing water is enough to carry small vehicles, depending on the velocity. A severe flood situation 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.

*Changes in Population Patterns and Land Use and Development*

It is unlikely that flooding will affect land use and development patterns in affected areas because the median income in impacted areas is higher than the City average. Additionally, the development review process ensures flood related impacts are mitigated or minimized.

**Table 5-10: Flood-Threatened Populations**

Threatened Population Metric	Flood Hazard	City
Population	4500	144,388
Households	1,700	57,226
Median household income	\$134,981	\$76,264
Renter Occupied Households	3%	10%
Percentage of households with at least one person living with a disability	3%	9.4%
Percentage of households living under the poverty limit	4.83%	13.8%
Percentage of households with one-member aged 65+		9.1%

\* Percentages are estimates only, as exact values for some statistics were not available. Actual percentages might be greater than the estimate presented in this table.

\*\* Based on the City insured replacement values

## Public Health Incidents: Pandemics, Epidemics

### *Physical Threat*

Public Health events will not harm buildings or infrastructure within the City. However, the regional or global nature of public health incidents might incur indirect costs through personnel death and disease, absenteeism, and reduced efficiency. Public health incidents will likely threaten the city's administrative and facilities operations, whereas automated services and infrastructure itself will not be significantly impacted.

### *Social Threat*

Pandemics can overwhelm healthcare systems, creating shortages of medical supplies and causing significant morbidity and mortality. In addition to the physical health impacts such as respiratory distress, organ failure, and long-term complications for survivors, healthcare workers face an increased risk due to their exposure to infected individuals. Beyond these immediate health impacts, pandemics disrupt daily life, leading to school closures, business interruptions, and economic downturns. The psychological toll on individuals and communities can be profound, with increased levels of anxiety, depression, and stress. These factors contribute to changes in population, influencing migration patterns, birth rates, and mortality rates, thereby altering the demographic landscape.

## Fire

### *Physical Threat*

#### **Wildland Fire**

The California Department of Forestry and Fire Protection has mapped Very High Fire Hazard Severity Zones (VHFHSZ) within the City's Local Responsibility Area (LRA). The LRA is a government-designated area where a local agency, City, or county, NOT the State, is responsible for fire protection. An SRA is the opposite, where the State has responsibility for wildland fire protection. **Figure 5-10** identifies these zones and the City's CFs and FOCs within the area. All structures within this fire zone are at an elevated risk of wildfire impacts.

All structures located within this zone are at an elevated risk of wildfire impacts. **Table 5-11** identifies 4 CFs and 7 FOC within the wildfire hazard zone, resulting in a potential loss of approximately \$145 million based on available replacement values. Additional losses associated with the loss of homes and schools in these areas could also occur resulting in a significant amount of cost.

While these areas have a high degree of vulnerability to wildfire, other areas of the City may also be susceptible to ember cast. These areas, typically referred to as the WUI

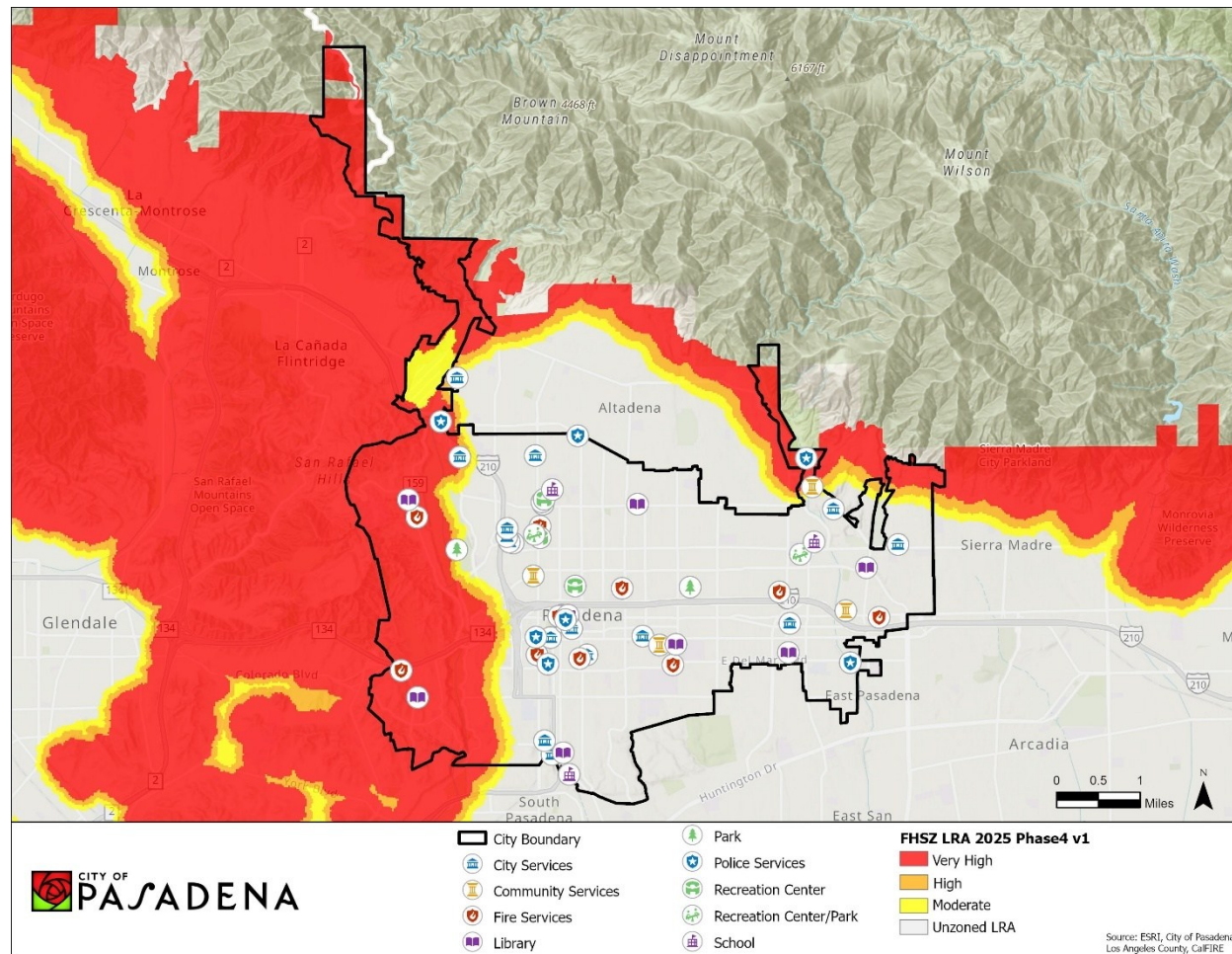
(Wildland Urban Interface), are vulnerable if the right conditions exist. Typically, the WUI is impacted if adequate fuels are combined with dry conditions and strong winds. Sometimes, the ignition of a wildfire may occur if power lines around overgrown trees cause a spark and catch the tree on fire.

**Table 5-11: Critical Facilities and Facilities of Concern (Wildfire)**

Category	# of Facilities - Critical	# of Facilities - Concern	Total Potential Loss**
Government Operations, Emergency Operations	4	4	\$130,424,000
Recreational, Cultural, Community Centers	0	3	\$15,000,000
Residential (City owned)	0	0	\$0
<b>Total</b>	<b>4</b>	<b>7</b>	<b>\$145,424,389</b>

\* Based on the City insured replacement values

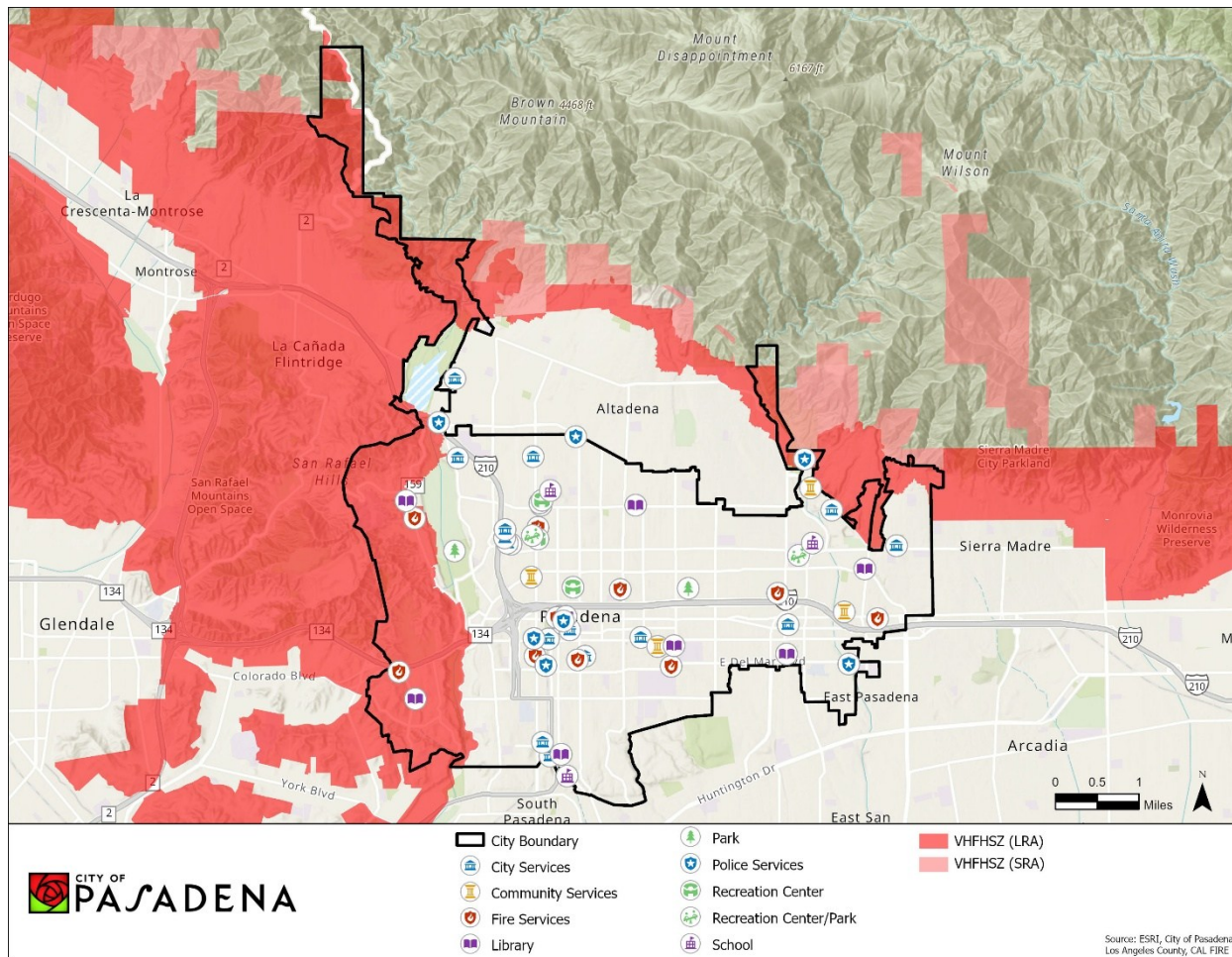
\*\*Percentages are estimates only, as exact values for some statistics were not available. Actual percentages might be greater than the estimate presented in this table.



**Figure 5-10: Critical Facilities and Facilities of Concern (2025 Map has not been adopted by City Council)**

### Urban Fire

Structures and physical assets in Pasadena that are not equipped with fire suppression technology or design features that mitigate fire vulnerability are at risk of fire. Generally, these buildings are older, may not be well maintained, or may not meet current code requirements and regulations. While all structures can be impacted by urban fire, older structures may have increased vulnerability to this hazard. Power lines located around overgrown trees, where the tree crown envelops part or all the power lines, are also at risk of catching fire. When the wires overheat, they may ignite a fire in the tree, spread back to the power lines themselves, and burn the power line infrastructure. Underground utilities, like water delivery systems, residential electrical systems, or natural gas pipelines, are not threatened by the occurrence of fire since any urban fires that emerge in Pasadena are likely to occur on the surface.



**Figure 5-11: Critical Facilities and Facilities of Concern  
(Previous adopted fire hazard map)**

*Social Threat*

A fire hazard most immediately threatens seniors and people with disabilities. These groups may have limited mobility and reduced environmental awareness. For example, a senior who lives alone may not be aware that a fire has been ignited in their house until the room begins to fill with smoke or even flashover, at which point escape may be more difficult or impossible. Therefore, a fire that starts in or spreads to any senior residences in Pasadena could be highly threatening to those populations. People with disabilities may require special mobility devices or caregiver assistance to go outside, which may not be readily available if a fire occurs. Other groups with increased threat levels include lower-income people and renters. These people may live in substandard housing with outdated materials known to be flammable. Renters and lower-income persons may also live in housing units with improperly designed or maintained electrical

or heating systems that could lead to a fire. Additionally, these groups may not possess enough financial resources to rebuild their homes or search for new homes after a fire occurs.

#### *Other Threats*

Fires can consume power lines and force utility operators to shut off electrical and gas transmission activity, leading to utility outages in Pasadena homes and businesses. Any streets surrounded by blazes or blocked by burning debris would hinder transportation, prevent people from evacuating, and block emergency response crews from reaching the source of the fire. Anyone living at the end of a cul-de-sac faces an elevated threat of being trapped if the fire occurs or spreads in a way that blocks evacuation. Fires that destroy trees or vegetation (especially within parks and open space areas) could limit or prevent the use of these areas, affecting future recreational opportunities for residents.

Outreach to residents and businesses to help them understand and prepare for these future events will become an important aspect of the City's overall hazard mitigation strategy.

#### *Changes in Population Patterns and Land Use and Development*

If a large urban fire were to occur, it is feasible that changes in population patterns could occur. Land use and development patterns could change if a large urban fire were to occur that impacted older parts of the City. After that type of event, the City would rely on a redevelopment process to determine how best to rebuild.

## Human-Caused Hazards

### *Physical Threat*

#### **Air Quality**

Air pollution exposure is associated with oxidative stress and inflammation in human cells, which may lay a foundation for chronic diseases and cancer. In 2013, the International Agency for Research on Cancer of the World Health Organization (WHO) classified air pollution as a human carcinogen. Short-term exposure to higher levels of outdoor air pollution is associated with reduced lung function, asthma, cardiac problems, emergency department visits, and hospital admissions.

Air pollution and climate change affect each other through complex interactions in the atmosphere. Air pollution is intricately linked with climate change because both problems come largely from the same sources, such as emissions from burning fossil fuels. Both are threats to people's health and the environment worldwide.

#### **Civil Disturbance**

Civil disturbance, depending on the cause and effect, could have a considerable impact on the population, built environment, lifeline infrastructure, economy, and the environment. Downtown Los Angeles is a frequent site of demonstrations due to its high profile and presence of government buildings. It is conceivable that a demonstration could turn to violence and begin spreading into neighboring communities. While the City does not have a history of riots, it also has a high profile and has several events which attract large crowds. This coupled with increased causes creating disharmony within society may provide opportunities for some individuals.

#### **Cyber Attack**

A significant cyber event could have considerable impact on the population, built environment, lifeline infrastructure, environment, and the economy. Most jurisdictions have several levels of security in place, dependent upon security levels of individuals and the geographical locations (onsite or remote). Many also have redundant dispatch centers with separate systems that can function if the primary center isn't functioning.

Cyber-attacks can infiltrate many institutions including banking, medical, education, government, military, and communication and infrastructure systems. Most of the effective malicious cyber- activity has become web based. Recent trends indicate that hackers are targeting users to steal personal information and targeting computers to cause system failures. The duration of a cyber-attack is dependent on the complexity of the attack, how widespread it is, how quickly the attack is detected, and the resources available to aid in restoring the system. A cyber-attack could be geared toward one

organization, one type of infrastructure and/or a specific geographical area. The affected area could range from small to large scale. Cyber-attacks generated toward large corporations can negatively affect the economy. A 2014 report from the McAfee Corporation stated that the annual global loss to the global economy is between \$375B and \$500B. Attacks geared toward critical infrastructure and hospitals can result in the loss of life and the loss of basic needs, such as power and water, to the public. Cyber-attacks can lead to the loss of operational capacity.

#### **Hazardous Materials Release (Pipeline Failure, Oil Spill, Transportation Incident)**

Hazardous materials can cause damage to physical assets in Pasadena if they are released into the environment. Corrosive hazardous materials can damage the exteriors of buildings or structures. Flammable hazardous materials can be ignited and cause damage to nearby structures. Generally, sites closer to the origin of the release of hazardous materials are more at risk than those further away.

The total potential losses associated with these assets are over \$59 million based on replacement costs.

Transportation incidents typically threaten infrastructure like roadways, bridges, and utilities that may be adjacent or co-located with these facilities. Depending on the nature of the event surrounding structures and uses may also be impacted; however, to what degree it is difficult to identify at this time. While many incidents within the City may be considered minor, if one were to occur at a key intersection or interchange, traffic, and commerce within the affected area could be impacted significantly for hours or days, depending on the severity of the incident.

#### **Power Outage**

Energy shortage/outages (disruptions) are considered a form of lifeline system failure and could have a significant impact on the population, built environment, infrastructure, and the economy. Disruptions can be the consequence of another hazard, or can be the primary hazard, absent of an outside trigger. Pasadena and Southern California as a whole have experienced population growth, coupled with changes to daily lifestyles and weather have contributed to a heavy demand for power over recent years.

There are two (2) factors to consider: 1) increased demand within the City; and 2) increased demand elsewhere. Because Pasadena is connected to the Southern Californian Edison (Edison) power grid, increases in other parts of the state could curtail the energy available to Pasadena. This vulnerability is compounded by the reality that our communities have become more reliant on power for gadgets and appliances to perform basic daily activities. This loss of power will not only be an inconvenience but

could become a life-threatening experience. Many citizens rely on power to operate medical machinery to survive (i.e., oxygen tanks, dialysis machines).

Climate change considerations indicate that as the weather conditions change, there could be an increase in energy needs. This could be from both the potential increase in heat and cold. These predicted increases will put ever greater strain on Pasadena's energy supply.

### **Terrorism**

There is no way to predict which of Pasadena's facilities or assets may be impacted by an act of terrorism since the motivation behind the incident is often complex and not easily understood. Generally, these incidents occur at places of political, economic, or cultural importance. If the perpetrator's motives are to shut down City or regional government activity for a period, they may instead target pieces of infrastructure, like water systems, utility delivery systems, or transportation networks. The financial losses that may result from this type of incident would depend on the degree of destruction associated with the activity. If the incident involves the destruction of physical assets, the cost to the City or property owners in Pasadena could be significant.

### ***Social Threat***

#### **Air Quality**

Air pollution exposure is associated with oxidative stress and inflammation in human cells, which may lay a foundation for chronic diseases and cancer. In 2013, the International Agency for Research on Cancer of the World Health Organization (WHO) classified air pollution as a human carcinogen. Many studies have established that short-term exposure to higher levels of outdoor air pollution is associated with reduced lung function, asthma, cardiac problems, emergency department visits, and hospital admissions. Mortality rates related to air pollution are also a concern. Exposure to the air pollutant PM2.5 is associated with an increased risk of death. Public health concerns related to high air pollution exposures include cancer, cardiovascular disease, respiratory diseases, diabetes mellitus, obesity, and reproductive, neurological, and immune system disorders.

#### **Civil Disturbance**

Since civil disturbance events can occur anywhere in the City, all groups are potentially threatened by the impacts of these incidents; however, the extent of the threat would be much greater to businesses. For example, in May of 2020, the George Floyd protest turned into civil disturbance and impacted hundreds of businesses in Southern California. Additionally, there have been isolated incidents of individuals ransacking businesses around the Country.

### Cyber Security Incident

Cities like Pasadena are an attractive target for criminals and cyber threat actors to exploit vulnerable systems to steal critical infrastructure data and proprietary information, conduct ransomware operations, or launch destructive cyberattacks. Successful cyberattacks against cities could lead to disruption of infrastructure services, significant financial losses, exposure of citizens' private data, erosion of citizens' trust in the smart systems themselves, and physical impacts to infrastructure that could cause physical harm or loss of life.

### Hazardous Materials Release (Pipeline Failure, Transportation Accidents, Oil Spills)

The threat of a hazardous materials release event affects those closest to a source of hazardous materials, including industrial sites, gas stations, gas transmission lines, sewer mains, and transportation incidents that produce hazardous material spills. **Table 4-14** shows the city's vulnerable populations living within 500 feet of a hazardous materials storage/waste site. The median household income in these locations is almost **\$25,000** less than the rest of the city. This suggests that lower-income populations may be living near locations that store or use hazardous materials. Pasadena residents living next to major transportation infrastructure such as highways or major roadways also face a greater risk of being affected by hazardous materials release if vehicles transporting these materials accidentally release their contents into the environment. Groups such as the elderly, low-income, and renters face a greater risk of exposure since they may not have the financial resources necessary to retrofit their homes against infiltration by hazardous materials or relocate to a home farther from the potential sources of hazardous materials.

Residents and businesses located near major transportation infrastructure may be at greater risk of impact from these types of incidents. For residents that rely on the transportation network to get to work, any closures or impacts to that network could have a negative impact on their daily lives and well-being. At the same time, businesses could be impacted if employees and customers are unable to reach their place of business due to an incident. While many incidents would be short-term, reducing impacts to the community, if a significant issue were to occur, the impact could be longer, which could have economic impacts for both residents and businesses.

### Power Outage

Power outages most immediately threaten seniors, people with disabilities, and those with home medical equipment. These groups often face the greatest threat during a power outage, during extreme heat.

### Terrorism

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

An incident that occurs at a government building or financial institution may be more likely to threaten seniors or lower-income individuals that rely on in-person transactions in place of online options. As such, their use of these in-person services may place them in harm's way. An incident at Pasadena City Hall or bank locations in the City can be expected to be more of a threat to these groups. Seniors and people with limited income may be challenged if there is a need to shelter in place or evacuate during an incident requiring additional services, assistance, and/or medical treatment.

### Changes in Population Patterns and Land Use and Development

The hazards identified under human-caused hazards will not affect population patterns or land use and development, as no connection can be drawn between these hazards and changes in population patterns or land use and development.

It is not anticipated that population patterns will change over the next 20 years. A change in population pattern would only occur if a hazardous materials release was severe enough to require people to move for a prolonged period of time due to soil contamination.

It is unlikely that hazardous materials release will affect land use and development because the development review process will take steps to mitigate or minimize impacts from a hazardous materials release event. Locations that store, produce, and dispose of hazardous materials are highly regulated within the City and monitored regularly. Through this process, as well as the development review process, it is not anticipated that land use and development patterns will change.

## SECTION 6: MITIGATION STRATEGY

Federal regulations require local mitigation plans to identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area (Section 201.6(c)(3)(i)).

A hazard mitigation plan's primary focus is the mitigation strategy. It represents the efforts selected by the City to reduce or prevent losses resulting from the hazards identified in the risk assessment. The strategy includes mitigation actions and projects to address the risk and vulnerabilities discovered in the risk assessment. The mitigation strategy consists of the following steps:

- Identify and profile hazards and risk within the City
- Identify projects and activities that can prevent or mitigate damage and injury to the population and buildings
- Develop a mitigation strategy to implement the mitigation actions
- Develop an action plan to prioritize, implement, and administer the mitigation actions
- Implement the LHMP mitigation action plan

A capability assessment was conducted of City authorities, policies, programs, and resources. Based upon this assessment and the hazard analysis and risk assessment, goals, and mitigation actions were developed. The planning team also developed a process to prioritize, implement, and administer the mitigation actions to reduce risk to existing facilities and new development

### 6.1 Hazard Mitigation Statement

The 2025 LHMP represents the City's commitment to create a safer, more resilient community by taking actions to reduce risk and by committing resources to lessen the effects of hazards on the people and property of the city.

### 6.2 Hazard Mitigation Goals and Objectives

Mitigation goals are guidelines that represent what the community wants to accomplish through the mitigation plan. Goals are broad statements that represent a long-term, community-wide vision. The planning team reviewed the example goals and objectives from the previous LHMP and determined which goals best met the City's objectives for mitigation. In addition to the overarching hazard mitigation goals, the City worked to

develop the strategies aligned with the CIP and other planning mechanisms that relate to hazard mitigation. Overall, mitigation priorities did not change for the City of Pasadena, the city continues to be very concerned about wildfire and earthquake risks. The 2025 LHMP was revised to focus on the communities' priorities as they relate to Climate Change, Wild/Urban Fire, and their commitment to involving vulnerable populations to the planning process. **Table 6-1** lists the goals for the 2020 LHMP.

**Table 6-1: Hazard Mitigation Goals**

2025 Goals
<b>Goal 1:</b> Protect life and property, and reduce potential injuries from natural, technological, and human-caused hazards
<b>Goal 2:</b> Improve public understanding, support of, and need for hazard mitigation measures
<b>Goal 3:</b> Promote disaster resilience for the City's natural, existing, and future built environment
<b>Goal 4:</b> Strengthen partnerships and collaboration to implement hazard mitigation activities
<b>Goal 5:</b> Enhance the City's ability to effectively and immediately respond to disasters

### 6.3 Mitigation Actions/Projects and Implementation Strategy

Mitigation actions are specific activities or projects that serve to meet the goals that the community has identified. Mitigation actions and projects are more specific than goals or objectives and often include a mechanism, such as an assigned timeframe, to measure the success and ensure the actions are accomplished. The planning team conducted a review of the mitigation actions and strategies from the State Hazard Mitigation Plan and from other cities' planning efforts to develop new mitigation actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure.

The requirements for prioritization of mitigation actions, as provided in the federal regulations implementing the Stafford Act as amended by DMA 2000, are described below.

Based on these criteria, the City prioritized potential mitigation projects and included them in the action plan discussed below in Table 6-3. The mitigation action plan

developed by the planning team includes the action items that the City intends to implement during the next five (5) years, assuming funding availability. The action plan includes the implementing department, an estimate of the timeline for implementation, and potential funding sources.

#### 6.4 Previous Mitigation Actions/Projects Assessment

The 2018 HMP contained 62 mitigations actions. Many of the mitigation actions were completed or carried out to some degree or are considered ongoing. Some of the mitigation actions were duplicative, others were better categorized as emergency preparedness or recovery activities, and others were either not addressed during the time period or were not feasible to accomplish. **Table 6-2** provides the status of mitigation actions from the 2018 HMP.

**Table 6-2: 2018 Hazard Mitigation Plan Mitigation Action Status**

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
1	Make the City Local Hazard Mitigation Plan available on the website	Completed
3	Establish and conduct annual employee training on privacy and security policies and incident response procedures.	Ongoing – Added to 2025 Plan. #5
4	Develop a policy to ensure the City's LHMP is reviewed during the development of capital improvement plans.	Ongoing – Added to 2025 Plan. #3
5	Upgrade Traffic Signal, Street Lighting Poles, and Systems citywide to meet or exceed modern loading requirements.	Ongoing – Added to 2025 Plan
6	Seismic Retrofit of City-owned Essential Buildings, including Fire Stations and Evacuation Centers.	Planned
7	Develop a policy to ensure the annual review of potential landslide areas in the City of Pasadena.	Planned

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
8	Develop a Public Outreach Plan geared towards providing hazard education, emergency management, and mitigation action activities.	Completed
9	Review and revise the Emergency Operations Plan (EOP) to reflect response and recovery Concept of Operations best practices	Completed
10	Purchase supplies, equipment, and other resources to enable critical facilities identified in the EOP to be able to function as needed	Completed
11	Review area-wide evacuation plans/routes to identify changes and determine if changes need to be incorporated in the City Emergency Operations Plan (EOP) and/or Evacuation Plan	Completed
12	Develop a Disaster Communications Plan	Completed
13	Develop an EOP scenario-based Annex light rail accident	Completed
14	Develop an EOP scenario-based Annex for active shooter events	Completed
15	Develop a planning team to work with local school districts and universities to prepare both scenario-based and functional-based plans	Completed
16	Develop and adopt a soft story retrofit ordinance; possibly administer an implementation program for the ordinance.	Planned
17	Evaluate and take necessary actions to ensure robust cyber-security of utility infrastructure and protection of critical information systems from cyber-attacks/incidents.	Ongoing – Added to 2025 Plan #41

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
19	Develop a policy and/or possibly a Memorandum of Understanding (MOU) with the County Department of Public Works, neighboring jurisdictions, Metrolink, and the California	Completed
20	Department of Transportation to ensure coordination and maintenance of the emergency transportation routes	Completed
21	Establish a Disaster Coordination group and establish a regular meeting schedule. Include both public and private members; and federal, state, county, and local partners. Part of the duties will include the review, evaluation, and monitoring of the LHMP	Planned
22	Provide information to the public regarding hazard mitigation and emergency planning at events promoted by the City.	Completed
23	Develop a policy that encourages incorporation or consideration of vegetation and restoration practices that assist in enhancing and restoring the natural and beneficial functions of the watershed when mitigation against hazards	Completed
24	Develop a policy to ensure the City's Building Codes are reviewed annually to reflect changes and best practices in hazard science (flood, earthquake).	Ongoing
25	Develop a Debris Removal Plan.	Completed
26	Develop a landslide area building ordinance. Review local ordinances for building in potential landslide areas based on proposed development plans and current environmental conditions	Planned

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
27	Develop an EOP functional-based Annex for evacuations	Completed
28	Identify City-service, mission critical tasks and develop Business Continuity Plans for each service	Completed
29	Utility infrastructure improvements against earthquake and other hazards including seismic upgrade of power and water facilities, Sunset reservoir improvements, and other critical water infrastructure and upgrades and replacements of local generating units.	Completed
31	Integrate the LHMP into the City's General Plan	Completed
32	Integrate hazard mitigation material into public safety information and training programs (e.g. Citizen's Academy, Community Emergency Response Team Program)	Complete
33	Prepare an inventory of major urban drainage problems and identify causes and potential mitigation actions for urban drainage problem areas.	Ongoing – Added to 2025 Plan
34	Assess and evaluate critical facilities identified in the EOP	Completed
35	Evaluate and retrofit critical facilities identified in the EOP	Ongoing
36	Develop an EOP scenario-based Annex for terrorist events	Completed
37	Implement measures to bolster local water supply to meet demand, create a sustainable water supply, while meeting environmental mandates.	Ongoing – Added to 2025 Plan #12
38	Seismic Retrofit of City-owned Bridges	Ongoing

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
39	Restoration of habitat, improvements to the watershed, and enhancement of spreading activities of water runoff to enhance the flood protection systems and preserve the natural systems	Completed
40	Evaluate and implement protective measures of critical utility buildings, plants and facilities against natural hazards (fire, flood, windstorm)	Completed
41	Develop and implement a program to develop Business Continuity Plans of utility mission critical tasks. Potentially purchase of equipment, mobile electrical sub-stations, and emergency backup generators for utility facilities; emergency transmission and distribution system replacements to ensure continuous functionality after disaster events	Completed
43	Develop a Floodplain Management/Flood Plan.	Completed
44	Develop an EOP functional-based Annex for mass casualties	Completed
45	Develop an EOP functional-based Annex for Mass Shelter	Completed
46	Develop an EOP scenario-based Annex for civil unrest events	Completed
47	Develop a Dam Mitigation Plan.	Completed
48	Develop a Vegetation Management Plan.	Planned
49	In accordance with the 2020 Water system Resources Plan, develop and implement alternative sources of water to meet Pasadena's annual water supply (non-potable water project)	Ongoing – Added to 2025 Plan #13

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
50	Upgrade the Arroyo Seco stream water intake structure (Arroyo Secon Canon Project) and implement the Devil's Gate Pump back project to improve our ability to capture more stream water and to recharge the groundwater basin.	Ongoing – Added to 2025 Plan #11
51	Vegetation management on City lands in the watershed for water supply enhancement and fire reduction; Improvements to the Arroyo Seco Canyon; Azusa Hydro upgrades and replacements; and rainwater capture and recycling	Completed
52	Develop guidance to provide resources regarding business continuity planning for local businesses	Planned
53	Evaluate and implement necessary retrofits and upgrades to the diversion facilities in Arroyo Canyon	Completed
54	Evaluate and implement security and protective measures of critical utility buildings, plants and facilities from man-made hazards (terrorist)	Completed
55	Identify the libraries role as a critical facility during response and recovery efforts. Assess the current facilities and retrofit as needed (i.e., fire systems, seismic upgrades) to ensure the integrity of library buildings for use as critical facilities during multi-hazard events. Purchase equipment, supplies, and other resources necessary to carry out the intended role.	Completed
56	Develop a Landslide Management Plan.	Ongoing – Added to 2025 Plan #22
57	Raise Park roadways where necessary to improve the flow of water downstream.	Ongoing – Added to 2025 Plan #27

#	Mitigation Action	Status (Complete, Ongoing, Planned, Not Completed)
58	Find an alternate or new EOC location that allows for ease of access during an emergency. Current location has limitations and safety concerns.	Planned
59	Install earthquake early warning systems o city-owned critical facilities	Planned
60	Develop citywide guidance on mitigation grant application	Planned
61	Annually review and update Department Emergency and COOP Plans	Planned
62	Create a volunteer program that will enhance our community lifeline planning that will bolster our ability to respond to hazards.	Planned

#### 6.4.1 New Mitigation Actions

Mitigation actions are specific activities or projects that serve to meet the goals that the community has identified. Mitigation actions and projects are more specific than goals or objectives and often include a mechanism, such as an assigned time period, to measure the success and ensure the actions are accomplished. The planning team conducted a review of the mitigation actions and strategies from the 2018 HMP. With information from the risk assessment, capability assessment, and status of the actions implemented since the 2018 HMP, the planning team developed 32 new ongoing mitigation actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure.

**Table 6-3** lists the initial, potential mitigation actions developed by the planning team. For each mitigation action, the following information is listed: type of mitigation project; hazard(s) addressed, type of development affected by action; and the source of the mitigation project idea.

**Table 6-3: Potential Mitigation Actions 2025**

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organizations
<b>Goal 1: Protect life, property, and reduce potential injuries from natural caused hazards</b>	1.1	Assess and implement flexible piping joints at above-ground storage reservoirs as appropriate	Prevention	Seismic	Operations
	1.2	Continuing to identify and ensure that pipe specifications are compatible with GIS and earthquake specifications	Prevention	Seismic	Operations
	1.3	Identify funding and acquire a mobile command and communications vehicle	Response	All	Operations
	1.4	Continue to include back-up power	Preparedness	Loss of Power/ PSPS	Operations

### 6.4.2 Mitigation Action Plan

The mitigation action plan developed by the planning team includes the action items that the City intends to implement during the next five (5) years, assuming funding availability. The action plan, shown in **Tables 6-4 to 6-13**, includes the implementing department, an estimate of the timeline for implementation, and potential funding sources.

The new mitigation actions include a broad range of approaches to hazard mitigation such as retrofitting, code enforcement, development of new regulations, public education, development of redundant facilities, and others. Measures are included to mitigate risks to existing buildings and infrastructure, as well as new buildings and infrastructure. The mitigation action plan assigns primary responsibility for each of the action items to an implementing department. The implementing department is the controlling department that will assign funding and oversee activity implementation, monitoring, and evaluation.

The planning team does not presume the expertise to prescribe which projects will be implemented. Prioritization of projects in the LHMP is a means to provide a basis for implementing the mitigation strategies, but all new mitigation actions and projects will be formally prioritized and selected by the implementing department. This will accommodate the project funding, schedule of the department, staff requirements, and ability to integrate the new project into existing and ongoing projects. Departments will consider the funding source, the cost-effectiveness of the project, alternative projects, the compatibility of the new project with ongoing projects, the extent to which the project addresses the risks assessed in Section 4, and the potential of economic and social damage.

### *Prioritization*

To assist with implementing the mitigation action plan, the planning team used the following ranking process to provide a method to prioritize the projects for the Action Plan. Designations of High, Medium, and Low priorities have been assigned to each action item using the following criteria.

#### **Does the action**

- Solve the problem?
- Address vulnerability assessment.
- Reduce the exposure or vulnerability to the highest priority hazard?
- Address multiple hazards?
- Offer benefits that equal or exceed costs?
- Implement a goal, policy, or project identified in the General Plan or Capital Improvement Plan?

#### **Can the action**

- Be implemented with existing funds?
- Be implemented by existing state or federal grant programs?

- Be completed within the five (5)-year life cycle of the LHMP?

#### *Will the action*

- Be implemented with currently available technologies?
- Be accepted by the community?
- Be supported by community leaders?
- Adversely affect segments of the population or neighborhoods.
- Require a change in local ordinances or zoning laws?
- Result in a positive or neutral impact on the environment?
- Comply with all local, state, and federal environmental laws and regulations?

#### *Is there*

- Sufficient staffing to undertake the project?
- Existing authority to undertake the project?

Each positive response is equal to one point. Answers to the criteria above determined the priority according to the following scale:

**1–6** = Low priority

**7–12** = Medium priority

**13–18** = High priority

#### *Benefit-Cost Analysis*

Conducting benefit/cost analysis for a mitigation activity can assist the City in determining whether a project is worth undertaking now in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how to best spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis for comparing alternative projects.

#### *Funding*

The funds required to implement the mitigation action plan will come from a variety of sources, including Federal Hazard Mitigation Grants, City budget, bonds, fees and assessments, and others. Some projects are (or will be) included in capital improvement budgets, while some, especially ongoing projects, are included in department operating budgets.

Prior to beginning a project or when federal funding is involved, the implementing department will use a FEMA approved benefit/cost analysis approach to identify the actual costs and benefits of implementing these mitigation actions. For non-structural projects, implementing departments will use other appropriate methods to weigh the costs and benefits of each action item and then develop a prioritized list.

### *Implementation*

Mitigation projects were assigned to one of three (3) categories as a tentative schedule for implementation: short-range, mid-range, and long-range. Projects that are currently being implemented by various departments are assigned to the ongoing category. Implementation of short-range projects will typically begin within the next three (3) years. Mid-range projects will require some planning and likely require funding beyond what is currently allocated to the various departments in the City's Operations and Maintenance budget. Projects in the mid-range category will generally begin implementation in the next three (3) to five (5) years. Long-range projects will require great planning and funding and will generally begin implementation within five (5) years and beyond.

### *Incorporation into Other Plans*

The 2025 LHMP will be coordinated with and integrated into the following other planning mechanisms.

- The City EOP contains a list of hazards. The LHMP provides a similar, more detailed description of these hazards. Updates to the LHMP can inform revisions to the EOP. Hazards in both plans should be corroborated.
- The American Water Infrastructure Act Risk required Risk and Resiliency Assessment (RRA) and the LHMP both should use the same source data and similar language to describe hazards that are contained in both. Hazard analysis and risk/vulnerability updates to one document should be reviewed for inclusion in both. For the 2021 LHMP, the planning team used portions of the RRA to develop new mitigations actions.
- The City will review the mitigation action plan in the LHMP as it updates its CIP. Several mitigation actions address facility improvement and resiliency. Grant funding for these projects may support CIP project.

**Table 6-4: Mitigation Action Implementation Plan - Multiple Hazards**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
1	Install energy efficient equipment and harden emergency backup power at critical facilities deemed necessary. Prioritize installations for facilities that serve as key cooling/warming centers and evacuation centers/shelters.  (Hazards addressed: All)	General Fund, HMGP Grants	Public Works	\$\$	2-5 years	Medium
2	Develop a list of key facilities. Conduct a feasibility assessment of installing solar and battery backup systems at critical facilities within the City.  (Hazards addressed: All)	General Fund, HMGP Grants	Public Works	\$	2 years	Medium
3	Upgrade power and water facilities, to include Sunset reservoir, to improve resiliency due to power loss, flooding, and seismic activity.	General Fund, HMGP Grants	Water and Power	\$\$\$	Ongoing - Yearly	High

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
4	<p>Initiate a project to develop Business Continuity Plans for utility mission critical functions. Create a long-range budget to purchase emergency/standby equipment such as mobile electrical sub-stations, and emergency backup generators for utility facilities; and emergency transmission and distribution system replacements to ensure continuous functionality after disaster events</p> <p>(Hazard addresses: Power Loss)</p>	General Fund, HMGP Grants	PWP	\$\$\$	2 years	High
5	<p>Develop a policy to ensure the City's LHMP is reviewed during the development of capital improvement plans/projects.</p> <p>(Hazards addressed: All)</p>	General Fund, HMGP Grants	Fire	\$	1 year	Medium
6	<p>Develop a Public Outreach Plan geared towards providing hazard education, emergency management, and mitigation action activities. Create and Integrate hazard mitigation material into public safety information and training programs (e.g. Citizen's Academy, Community Emergency Response Team Program)</p> <p>(Hazards addressed: All)</p>	General Fund, HMGP Grants	Fire	\$	Ongoing - yearly	Low

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
7	Integrate the LHMP into the City’s General Plan by complying with AB 2140.  (Hazards addressed: All)	General Fund, HMGP Grants	Planning	\$	Ongoing - yearly	Low
8	Develop a policy to ensure the City’s Building Codes are reviewed annually to reflect changes and best practices in hazard science  (Hazards Addressed: Flood, Earthquake).	General Fund, HMGP Grant	Planning	\$	3 years	Medium
9	Closely monitor changes in the boundaries of mapped hazard areas resulting from land use changes or climate change and adopt new mitigation actions or revise existing ones to ensure continued resiliency.  (Hazards addressed: All)	General Fund, HMGP Grants	Fire/ Planning	\$	2 years	Medium

**Table 6-5: Mitigation Action Implementation Plan – Climate Change**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
10	Integrate climate change mitigation and adaptation information and analysis into future LHMP updates and others.  (Hazards addressed: Climate Change)	General Fund, HMGP Grants	Fire	\$	Ongoing - Yearly	High

**Table 6-6: Mitigation Action Implementation Plan – Drought**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
11	Upgrade the Arroyo Seco stream water intake structure (Arroyo Seco Canon Project) and implement the Devil’s Gate Pump Back project to improve our ability to capture more stream water and to recharge the groundwater basin.  (Hazards addressed: Drought)	General Fund, HMGP Grants	Water and Power	\$\$\$	2 years	High
12	Implement measures to bolster local water supply to meet demand, create a sustainable water supply, while meeting environmental mandates.  (Hazards addressed: Drought)	General Fund, HMGP Grants	Water and Power	\$\$\$	3 years	High

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
13	In accordance with the 2020 Water System Resources Plan, develop and implement alternative sources of water to meet Pasadena’s annual water supply (non-potable water project)  (Hazards addressed: Drought)	General Fund, HMGP Grants	Water and Power	\$\$	2 years	Medium
14	Develop public messaging about water conservation to address climate change-induced drought for posting on websites, social media, and other platforms.  (Hazards addressed: Drought)	General Fund, HMGP Grants	Water and Power	\$	Ongoing - Yearly	Low

**Table 6-7: Mitigation Action Implementation Plan – Earthquake/Geologic Hazards**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
15	Implement and enforce the soft-story retrofit ordinance.  (Hazards addressed: Seismic)	General Fund, HMGP Grants	Planning	\$	2 years	Medium

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
16	<p>Conduct an educational campaign, incentivize and promote medium-scale seismic retrofits, such as window films to minimize shattering, anchors for rooftop-mounted equipment, bracing for masonry chimneys, and other preventative measures to reduce damage to private buildings.</p> <p>(Hazards addressed: Seismic)</p>	General Fund, HMGP Grants	Planning	\$	2 years	Medium
17	<p>Develop a Landslide Management Plan that identifies areas at risk and mitigation strategies and develop a policy to ensure the annual review of potential landslide areas in the City of Pasadena.</p> <p>(Hazards addressed: Landslide)</p>	General Fund, HMGP Grants	Fire/ Planning/ Public Works	\$	5 years	Low
18	<p>Conduct a seismic analysis of all City-owned key facilities and retrofit vulnerable facilities.</p> <p>(Hazards addressed: Seismic)</p>	General Fund, HMGP Grants	Public Works	\$	Ongoing - yearly	High

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
19	Seismically retrofit the City main public library.	General Fund, HMGP Grants	Planning/ Public Works/ Library	\$\$\$\$	3 years	High
20	Initiate a program to schedule installation of resilient (seismically appropriate) piping for new or replacement water distribution pipelines.  (Hazards addressed: Seismic)	General Fund, HMGP Grants	Water and Power	\$\$\$\$	Ongoing - Yearly	High
21	Develop a landslide area building ordinance that restricts building in hazard prone areas. Review local ordinances for building in potential landslide areas based on proposed development plans and current environmental conditions.  (Hazards addressed: Landslide)	General Fund, HMGP Grants	Planning/ Fire	\$	5 years	Low
22	Identify and retrofit key critical facilities with seismically rated window film treatments that ensure glass windows do not shatter during a strong seismic event.  (Hazards addressed: Seismic)	General Fund, HMGP Grants	Planning/ Public Works	\$\$	5 years	High

**Table 6-8: Mitigation Action Implementation Plan – Flooding**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
23	Investigate the use of permeable paved and landscaped swales for new construction and replacement of City-owned hardscaped areas. [Identify which locations]	General Fund, HMGP	Public Works	\$\$	3 years	Medium
	(Hazards addressed: Flood)					
24	Retrofit roadway medians to capture stormwater during rain events. Prioritize improvements along major arterials/ roadways throughout the City.	General Fund, HMGP Grants	Public Works	\$\$\$	4 years	Medium
	(Hazards addressed: Flood)					
25	Prepare an inventory of major urban drainage problems and identify causes and potential mitigation actions for urban drainage problems.	General Fund, HMGP Grants	Public Works	\$	2 years	Low
	(Hazards addressed: Flood)					

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
26	Raise Park roadways or build culverts where necessary to improve the flow of water downstream.  (Hazards addressed: Flood)	General Fund, HMGP Grants.	Public Works	\$\$\$	3 years	Low
27	Track areas where ponding frequently occurs during heavy rainfall and installs new drainage systems or upgrade existing ones to reduce water ponding.  (Hazards addressed: Flood)	General Fund, HMGP Grants	Public Works	\$	Ongoing - yearly	Medium

**Table 6-9: Mitigation Action Implementation Plan – Extreme Weather (Severe Winds, Extreme Heat, Severe Rainstorms)**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
28	Remove or trim trees determined to be susceptible to blowing over during a severe wind event and underground power lines, where feasible.  (Hazards addressed: High Winds, Severe Rainstorm)	General Fund, HMGP Grants	Parks/ Public Works	\$	Ongoing - yearly	Medium
29	Increase the use and construction of shade structures within new developments, City facilities, parks, and trails to reduce heat impacts.  (Hazards Addressed: Extreme Heat)	General Fund, HMGP Grants	Planning/ Public Works/ Parks	\$	Ongoing - yearly	Medium

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
30	Evaluate the long-term capacity of designated cooling centers and shelters in the City to provide sufficient relief from extreme heat. Assess the need to expand services as the frequency, length, and severity of future heatwaves potentially change as a result of climate change.  (Hazards addressed: Extreme Heat)	General Fund, HMGP Grants	Fire	\$	Ongoing - Yearly	Medium
31	Upgrade HVAC within City facilities to more efficient systems that may include split systems or decentralized systems that allow for heating and cooling the spaces needed, not entire buildings.  (Hazards addressed: Extreme Heat)	General Fund, HMGP Grants	Public Works	\$\$	Ongoing – yearly	Medium

**Table 6-10: Mitigation Action Implementation Plan – Fire**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
32	Educate and promote the proper maintenance and separation of power lines from trees and other hazards.	General Fund, HMGP Grants	Fire/ PWP	\$	Ongoing - Yearly	High

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
33	Conduct regular fuel modification projects to reduce fire hazard risks, such as clearing out dead vegetation in parks, open spaces, right-of-way embankments, and other areas that could become fuel for fires.  (Hazards addressed: Wildfire)	General Fund, HMGP Grants	Parks/ Public Works	\$	Ongoing - Yearly	High
34	Adopt a wildfire mitigation ordinance to limit the use and development of wildfire hazard areas to mitigate risk to life and property.  (Hazards addressed: Wildfire)	General Funds	Fire	\$	2 years	High

**Table 6-11: Mitigation Action Implementation Plan – Dam Inundation**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
35	Coordinate with County Public Works to collectively identify threats to the City and implement an early warning system/protocol that notifies downstream communities in the event of a potential dam failure incident.	General Fund, HMGP Grants	Public Works	\$	2 years	Low

**Table 6-12: Mitigation Action Implementation Plan – Human-caused Hazards**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
36	Evaluate all critical facilities, facilities of concern for potential human-caused hazard vulnerabilities and integrate counterterrorism design elements and building materials, where feasible.  (Hazards addressed: Terrorism)	General Fund, HMGP Grants	Police	\$	Ongoing - Yearly	Medium
37	Continuously inspect businesses and other properties storing hazardous materials and create an inventory of storage locations that require updates, maintenance, or renovation.  (Hazards addressed: Hazardous Materials)	General Fund, HMGP Grants	Fire	\$	Ongoing - Yearly	Medium
38	Expand the installation of fiber optics infrastructure and conduit (for future services) to enhance the city's communications systems and economic opportunities.  (Hazards addressed: Terrorism)	General Fund, HMGP Grants	IT	\$\$	Ongoing - Yearly	Medium

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
39	Establish and provide annual cyber-security risk briefings to City officials. Leverage the Department of Homeland Security’s State, Local, Tribal, and Territorial Cyber security engagement programs.  (Hazards addressed: Cyber Attack)	General Fund, HMGP Grants	IT	\$	2 years	High
40	Evaluate and take necessary actions to ensure robust cyber-security of utility infrastructure and protection of critical information systems from cyber-attacks/incidents.	General Fund, HMGP Grants	IT	\$\$	Ongoing - Yearly	High

**Table 6-13: Mitigation Action Implementation Plan – Pandemic**

#	Mitigation Action	Funding Sources	Responsible Department	Relative Cost*	Time Frame	Priority
41	Develop and coordinate planning with partners for dispensing of medications or vaccines. Coordinate infection control planning with partners.	General Fund, HMGP Grants	Public Health	\$\$	Ongoing - Yearly	Medium

## **SECTION 7: PLAN MAINTENANCE PROCEDURES**

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This section details the process that the City will use to monitor, update, and evaluate the plan within the five-year cycle of the plan's revision to ensure the LHMP remains an active and relevant document. The format of the plan aligns with the regulation checklist and is divided into sections of information. When it is time to maintain or revise the LHMP, data can be easily located and incorporated, resulting in an easy method to keep the plan current and relevant.

The planning team represents City staff from each department and other stakeholders that contributed to the development of the 2025 LHMP. The planning team oversaw the development of the plan and made recommendations on key elements of the plan, including the maintenance strategy.

It was important to the City that each department be represented in the planning team and given the opportunity to provide input during the plan's development. This philosophy will continue for future plan revisions through evaluations, maintenance, and updates of data, processes, and programs. The planning team will convene annually to perform annual reviews of the LHMP and its implementation. The planning team will include representation from residents, citizen groups, partner agencies and stakeholders within the planning area.

If planning team members can no longer serve the planning team, the City Manager will assign another staff person to be on the planning team so that every City department is represented.

### **7.1 Monitoring and Evaluation**

The hazard mitigation plan includes a range of action items to reduce losses from hazard events. Together, the action items provide a framework for activities that the City can choose to implement over the next five years. The effectiveness of the plan depends on the incorporation of the action items into existing City plans, policies, and programs. Although the City Fire Department will have primary responsibility for the LHMP's continual review, coordination, and promotion, plan implementation, and evaluation will be a shared responsibility among all departments and agencies that contributed to the mitigation action plan.

The City Emergency Manager and Department Supervisors will be jointly responsible for the plan's implementation and maintenance through existing City programs. Department Supervisors will be responsible for implementing mitigation strategies and

actions specific to their department operations. The City Emergency Manager will assume the lead responsibility for facilitating plan maintenance and coordinating the planning team.

Each April, the planning team will begin the process of reviewing the LHMP and the implementation of mitigation actions to develop an annual progress report. This process can also assist the budget review process by providing information on mitigation projects and activities that have been completed or implemented. The annual progress report process will serve to align annual reviews of the hazard mitigation plan and to incorporate information. As updates to the LHMP are completed, the public will be made aware of the changes to the LHMP and make recommendations or comments.

The planning team will monitor and evaluate the hazard mitigation strategies during the year, and at a meeting held in January of each year, team members will provide information for the evaluation of the progress of the 2025 LHMP. The Emergency Manager will convene the planning team and lead the effort for the annual evaluation. This evaluation will include:

- A summary of any hazard events that occurred during the prior year and their impact on the planning area
- A review of successful mitigation initiatives identified in the 2025 plan
- A brief discussion about the targeted strategies that were not completed
- A re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended, and the reason for the amendment, e.g., funding issues
- Any recommendations for new projects
- Any changes in or potential for new funding options (grant opportunities)
- Any impacts of other planning programs or initiatives in the City that involve hazard mitigation

The planning team will write a progress report that will be provided to the City's budget planning team for review and incorporation in the budget process as mitigation projects are completed or implemented. The hazard mitigation plan progress report will also be posted on the City website on the page dedicated to the hazard mitigation plan, provided to the local media through a press release, and presented in the form of a report to the City Council. The planning team will strive to complete the progress report process by March of each year.

## 7.2 Plan Update

Section 201.6.d.3 of 44CFR requires that local hazard mitigation plans be reviewed, revised as appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the Disaster Mitigation Act. The City intends to update its hazard mitigation plan on a five-year cycle. Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The hazard risk assessment will be reviewed and updated using the most recent information and technologies
- The action plan will be reviewed and revised to account for any initiatives completed, dropped, or changed and to account for changes in the risk assessment
- Any new City policies identified under other planning mechanisms, as appropriate
- The draft LHMP update will be sent to appropriate agencies and organizations for comment
- The public will be given an opportunity to comment on the updated version prior to adoption
- The City Council will adopt the updated plan

At a minimum of six months before the expiration date of the 2025 LHMP, the planning team will implement a plan revision schedule to formally update the 2025 plan. The plan will be revised using the latest FEMA hazard mitigation guidance documents, such as the Mitigation Planning Tool and Regulation Checklist, to ensure compliance with current hazard mitigation planning regulations.

The overall success of the LHMP is through implementation of the plan's hazard mitigation strategy and activities to reduce the effects of hazards, protect people and property, and improve the City's efforts to respond to and recover from disasters. Members of the public and the City will ultimately benefit from the implementation of the LHMP and must be given the opportunity to provide input to the continuous cycle of LHMP planning.

## 7.3 Continued Public Involvement

The overall success of the LHMP is through implementation of the plan's hazard mitigation strategy and activities to reduce the effects of hazards, protect people and

property, and improve the City's efforts to respond to and recover from disasters. Members of the public and the City will ultimately benefit from the implementation of the LHMP and must be given the opportunity to provide input to the continuous cycle of LHMP planning.

The City will strive to keep the public aware of hazard mitigation projects that take place as a result of the LHMP. Public information will be released through press releases, City website announcements, public hearings as required, council meetings, social media, and press releases.

Projects that mitigate hazards are included in the City's annual budget planning process. The public is made aware of the planning through City Council meetings and press releases during this time. The budget planning process will serve as an annual opportunity to conduct outreach to the public on updates to the hazard mitigation planning process.

A survey can be conducted to gather input on how the community feels about the progress being made on LHMP activities. The City will also provide press releases and information about hazard mitigation projects to the public regularly. At a minimum, the public will be engaged to learn about current LHMP activities and given the opportunity to provide comments and information on an annual basis to update and maintain the LHMP. The City PIO and the City Emergency Manager will be responsible for ensuring the public is included and involved in the annual public plan update and outreach.

When the time comes to begin revising the 2025 LHMP, the plan update process will be implemented, which will include continued public involvement and input through attendance at designated public meetings, web postings, through press releases to local media, community fairs, and events, and surveys. As part of this effort, a series of public meetings will be held, and public comments will be solicited on the revisions to the LHMP according to the five (5)-year cycle. **Table 7-1** summarizes successful public involvement efforts previously conducted by the City, as well as proposed activities for public involvement and dissemination of information that shall be pursued whenever possible and appropriate.

**Table 7-1: Past and Proposed Continued Public Involvement Activities or Opportunities Identified by the City**

<b>Department</b>	<b>Public Involvement Activity or Opportunity - Past</b>	<b>Public Involvement Activity or Opportunity - Proposed</b>
<b>Administration</b>	LHMP Survey was conducted online and given out at City events in person.	Conduct annual surveys to be completed online and at the annual Public Safety Event.
<b>All</b>		Place more emphasis on the risks associated with natural and manmade hazards at public awareness campaigns conducted by various City departments. Consider developing and distributing public education materials for natural hazards.
<b>Fire Department</b>		Conduct yearly presentations to the Accessibility & Disability Commission to update on progress of the mitigation activities.

## **APPENDIX A – LOCAL MITIGATION PLAN REVIEW TOOL**

## APPENDIX B – PLANNING TEAM MEETING DOCUMENTATION

Appendix B contains documentation of the planning process for the LHMP Planning Team, including meetings, presentations, emails, etc.

Date	Activity	Documentation
7/9/2024	Project Kick-off Meeting	<ul style="list-style-type: none"> <li>• Presentation (cover only)</li> <li>• Meeting minutes</li> </ul>
8/29/2025	Planning Team Meeting #1	<ul style="list-style-type: none"> <li>• Invitation to stakeholders</li> <li>• Sign-in sheet</li> <li>• Presentation (cover only)</li> <li>• Meeting minutes</li> </ul>
11/14/2025	LHMP Planning Team Meeting #2	<ul style="list-style-type: none"> <li>• Invitation to stakeholders</li> <li>• Presentation (cover only)</li> <li>• Meeting minutes</li> </ul>
2/18/2025	LHMP Planning Team Meeting #3	<ul style="list-style-type: none"> <li>• Presentation (Cover Only)</li> <li>• Meeting minutes</li> <li>• Participant Roster</li> </ul>

*PROJECT KICKOFF MEETING PRESENTATION (Cover Slide)*



**City of Pasadena Fire Department**  
Furnish and Deliver Local Hazard Mitigation Plan

July 9, 2024

Kickoff Meeting



July 10, 2024

To: Nallely Procopio  
From: Lee Rosenberg

### Project Kick-Off Meeting

The City of Pasadena Fire Department hosted a virtual Kick-off Meeting with Navigating Preparedness Associates (NPA) on July 9, 2024, at 1:00 PM to discuss project deliverables and timeline.

#### Attendees

Attendee	Organization/Division
Nallely Procopio	City of Pasadena Fire
Anthony James	City of Pasadena Fire
Lee Rosenberg	Navigating Preparedness
Francisco Soto	Navigating Preparedness

#### Summary of Discussion

- Meeting attendees introduced themselves. Attendees are listed above.
- NPA provided a presentation that addressed the LHMP development process, project management implementation, project schedule and project data needs. The group reviewed the following items:
  1. The project team – An alternate GIS analyst will replace Aaron Cole.
  2. Scope of Work – The project is comprised of 5 tasks that are sequenced to result in an approved and adopted LHMP. The tasks are:
    - a) Organization and Planning Process
    - b) Conduct a Risk Assessment
    - c) Develop a Mitigation Strategy
    - d) Implementation and Maintenance of the plan
    - e) Plan Approval and Adoption
  3. Schedule – The group reviewed the proposed schedule. While the draft plan will be completed by November 2024, the Cal OES and FEMA reviews may take several months. Both agencies have a large backlog of plans to review.





4. Review challenges – The group discussed the requirements of the new FEMA guidance and the additional effort required to meet FEMA and CalOES requirements.
5. Project Management – The group discussed the components of the project management plan including budget/invoices, risks/mitigations and quality, deliverable review and client/consultant communications.
6. Next Steps
  - a) Form the Project Planning Team
  - b) Finalize the Project Management Plan
  - c) Begin the information collection process and TOC/Outline
  - d) Create & Initiate Outreach Plan
7. Discussion and Questions – NPA provided the following items to consider:
  - a) Selection of a file sharing platform –Pasadena Fire uses MS Teams and has set up a group that can be used to share files and communicate.
  - b) Web pages and social media – Facebook, Instagram, Twitter, LinkedIn
  - c) Participants on the planning team – Nallely is working on compiling the planning team and should have it completed by Thursday, July 18, 2024.
  - d) There are two dams that if a failure occurs can cause damage to the city.
    - I. Devil's Gate
    - II. Eaton Canyon Wash



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**Action Items**

Action Item	Responsible Party	Due Date	Status
Provide email where NPA can send monthly invoices	Nallely Procopio	7/19/2024	Open
Provide list of City social media sites that will be used to conduct outreach	Nallely Procopio	7/19/2024	Open
Provide contact list of LHMP planning team	Nallely Procopio	7/19/2024	Open
Invite the Rose Bowl, Convention Center, County Public Works, and JPL to take part in the LHMP Planning Team	Nallely Procopio	7/19/2024	Open
Provide feedback on the Project Management Plan	Nallely Procopio	7/19/2024	Open
Deliver meeting minutes to Pasadena	Lee Rosenberg	7/16/2024	Complete

**Points of Contact**

For concerns or questions regarding these notes, please contact:  
Lee Rosenberg, (925) 381-0583 or [lee.rosenberg@navigatingpreparedness.com](mailto:lee.rosenberg@navigatingpreparedness.com)

*HMPC MEETING #1 PRESENTATION (Cover Slide)*



CITY OF PASADENA HAZARD MITIGATION PLAN UPDATE  
**Planning Team Meeting Nr. 1**

August 29, 2024



### HMPC MEETING #1 PRESENTATION (Invitation)

Local Hazard Mitigation Plan (LHMP) - **Planning Meeting #1**

PN Procopio, Nallely <nprocopio@cityofpasadena.net> No Response Required Tue 8/27/2024 3:39 PM

Required Jamsky, Mark Souto, Alexander; Frometa, Henry; Denderian, Lisa; Trachian, Armine; Acevedo, Gloria; James, Anthony; O'Reilly-Jones, Jennifer; Griffin, Brady; Augutyn, Dan; Petty, William; James, Kenneth; Panossian, Koko; Alonzo, Melchor; De Anda, Jesse; Chute, Arthur; Locklin, Derek; Melbourn, Hayden; Templeton, Mandy; Sell, Timothy; Goldman, Sara; Maue, Brent; **+9 others**

Optional Soraya Sutherland; Sinclair, David; Montes, Yosio; Castro, Susana

Accepted on 8/14/2024 4:42 PM.

Thursday, August 29, 2024 2:00 PM-3:30 PM Conf\_Rm\_CH\_S249\_CouncilChamber; Conf\_Rm\_CH\_S249\_CouncilChamber; (Conf\_Rm\_CH\_S249\_CouncilChamber)

2 PM	Local Hazard Mitigation Plan (LHMP) - Planning Meeting #1 Conf_Rm_CH_S249_CouncilChamber, Conf_Rm_CH_S249_CouncilChamber
3 PM	Procopio, Nallely

Good afternoon all,

The City of Pasadena (City) is updating its Local Hazard Mitigation Plan (LHMP) for 2024-2028. The LHMP helps the City to be more resilient to disaster by identifying ways to prepare for natural and human-caused hazards. An approved plan makes the city eligible for mitigation grant funds for projects that prevent loss of life and damage to property. Example projects include seismic building upgrades, generator purchases, flood mitigation, and water infrastructure upgrades.

We are partnering with Navigating Preparedness Associates (NPA) to develop the LHMP and are currently conducting a hazard analysis/risk assessment. NPA is an emergency management firm based in Contra Costa County.

The City requests your attendance (in-person) at the upcoming planning meeting on August 29th from 2:00pm to 3:30pm. We will discuss objectives, hazards, plan requirements, and schedule for the planning process. Additionally, we will focus on reviewing hazards that are currently identified as particularly important to Pasadena's planning and preparedness process.

If you are unable to attend, please ensure that your department has representation by coordinating with your leadership.

Meeting Details

Location: City Hall – Council Chambers Room S249  
Address: 100 N Garfield Ave, Pasadena, CA 91101  
Date and Time: Thursday, August 29, 2024, from 2:00pm -3:30pm

Thank you for your consideration and attendance,

*HMPC MEETING #1 NOTES*



City of Pasadena  
Local Hazard Mitigation Plan Update

**September 3, 2024**

**To: Nallely Procopio**  
**From: Lee Rosenberg**

**Planning Meeting #1**

The City of Pasadena Fire Department hosted an in person Planning Meeting with Navigating Preparedness Associates (NPA) on August 29, 2024, at 2:00 PM.

**Attendees**

Attendee	Organization/Division
Nallely Procopio	Pasadena Fire
Lori Chu	City Safety
Adrienne Kim	Pasadena Public Health
Kenny James	Parks, Recreation, and Community Services
Gloria Acevedo	Finance
Armine Trashian	Finance
Dan Augustine	Information Technology
Alex Souto	Deputy City Manager
Varoojan Avedian	Water and Power
Brent Maue	Assistant City Engineer
Mark Jomsky	City Clerk
Jennifer O'Reilly-Jones	Homeless Programs Coordinator
Bill Petry	Library
Melchor Alonzo	Parks, Recreation, and Community Services
Yosio Montes	Public Information
Marina Ovanessian(?)	Acting Accessibility Coordinator
Anita Cerna	Planning and Community Development
Derek Locklin	Police Department
Anthony James	Pasadena Fire
Art Chute	Deputy Chief of Police
Sean Dawkins	Commander, Police Department
Brady Griffin	Human Resources
Hayden Melbourn	Public Works
Lee Rosenberg	Navigating Preparedness
Francisco Soto	Navigating Preparedness





### Summary of Discussion

- Nalley Procopio provided an introduction to the planning team.
- Lee Rosenberg provided an introduction and gave an overview of why the planning team is here.
- Meeting attendees introduced themselves. Attendees are listed above.
- NPA provided a presentation that addressed the LHMP development process, project management implementation, project schedule and project data needs. The group reviewed the following items:
  - a. Hazard Mitigation Overview
  - b. Planning Process
  - c. Hazard Mitigation Goals
  - d. Public Outreach
  - e. Hazards Review
  - f. Mitigation Examples
- The planning team believes the reason Air Pollution was added to the LHMP is because its correlation with Climate Change.
- Water and Power has large machinery that can produce hazardous chemicals in the air. This can be included in the Hazardous Materials section.
- Hamilton Park Reservoir might need to be addressed in the plan under Dam Failure. Public Works has a list of additional reservoirs in the city.
- The city continues to be at risk of Civil Disturbance. The George Floyd protest was the last time that this hazard impacted the city.
- The Department of Water and Power has underground transformers that contain oil that can cause an oil spill. Some have containment systems but there are a few that might benefit from mitigation funding to obtain and mitigate potential oil spills.
- The planning team would like to include terrorism as a Human Caused Hazard. There are multiple high target events in the city. Include Active Shooter as a part of the Terrorism hazard description.
- CalTech has hazardous material on site that can be described in the Hazardous Materials hazard description. The fire department has a list of all hazardous materials in the city. Add the fire department's hazardous materials team as a capability.





- The City of Pasadena started tracking when they opened their cooling centers. This data will be added to the Climate Change hazard description.
- The city has multiple residential landslide areas of concern
- The Department of Water and Power, and the Fire Department have a Wildfire Prevention Plan that can be added to the Capabilities Section.
- Obtain a list of incident responses for Hazardous Materials release from the Fire Department.
- Pasadena Water and Power does not have any PSPS circuits, but Pasadena gets most of their Power from SCE which might have PSPS Circuits in the City. Obtain PSPS Circuits from SCE.
- Pasadena Fire Department has a Wildfire Evacuation Plan that we can add as a capability. They also provide home inspections for homes in wildfire areas.
- Discussion and Questions from the planning team
  - Will Terrorism be added as a Hazard? Yes
  - Can the City use Hazard Mitigation Grant Funds for human caused hazards? No, you can only use Hazard Mitigation Grant Funds for natural hazards
  - Can the City do targeted social media outreach? Yes

**Action Items**

Action Item	Responsible Party	Due Date	Status
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City of Pasadena  
Local Hazard Mitigation Plan Update

NPA to provide a list of GIS layers to obtain from the city.	NPA	Friday, September 13	Open
Obtain a list of all reservoirs located in the City.	Nallely Procopio/ Public Works	Friday, September 13	Open
Obtain Wildfire Prevention Plan information. Document title, description, and date last updated.	Nallely Procopio	Friday, September 13	Open
Obtain a list of incident responses for Hazardous Materials release from the Fire Department.	Nallely Procopio	Friday, September 13	Open
Obtain PSPS Circuits from SCE.	NPA	Friday, September 13	Open
Obtain Wildfire Evacuation Plan information. Document title, description, and date last updated.	Nallely Procopio	Friday, September 13	Open
Does the City of Pasadena have a COOP?	Nallely Procopio	Friday, September 13	Open

**Points of Contact**

For concerns or questions regarding these notes, please contact:

Lee Rosenberg, (925) 381-0583 or [lee.rosenberg@navigatingpreparedness.com](mailto:lee.rosenberg@navigatingpreparedness.com)



*HMPC MEETING #2 PRESENTATION & INVITATION*



CITY OF PASADENA HAZARD MITIGATION PLAN UPDATE  
**Project Team Meeting #2**

November 14, 2024



1

### HMPC MEETING #2 PRESENTATION (Invitation)

**Local Hazard Mitigation Planning Meeting #2**

PN Procopio, Nallely <nprocopio@cityofpasadena.net>

Required Petry, William; Alonzo, Melchor; Ipchyan, Arutyun; James, Anthony; Montes, Yosio; Ovanessian, Marina; Cerna, Anita; Locklin, Derek; Chute, Arthur; Dawkins, Sean; Griffin, Brady; Melbourn, Hayder; Chu, Lori; Kung, Adrienne; James, Kenneth; Acevedo, Gloria; Trashian, Armine; Augustyn, Dan; Souto, Alexander; Avedian, Varoajan; Maue, Brent; O'Reilly-Jones, Jennifer; Sell, Timothy; Nguyen, Kelly; Boman, Brad; Silva, Art; Takeguchi, Stacie

Optional Francisco Soto; lee.rosenberg

Wed 10/9/2024 12:21 PM

Please respond.  
Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this meeting.

LHMP2019- List of Projects.pdf  
723 KB

Thursday, November 14, 2024 1:00 PM-3:00 PM Microsoft Teams Meeting

1 PM	Local Hazard Mitigation Planning Meeting #2
	Microsoft Teams Meeting
	Procopio, Nallely
2 PM	

List of Department that need to submit status updates by Oct 28<sup>th</sup> for the listed projects:  
\*\*If you are not listed or have already submitted your status, please disregard\*\*

- Water & Power
- Library
- DoIT
- Planning
- Fire
- City Manager
- Public Works
- PIO
- Parks
- Police
- Public Health

HMPC MEETING #2 NOTES



November 18, 2024  
 To: Nallely Procopio  
 From: Lee Rosenberg

Planning Meeting #2

The City of Pasadena Fire Department hosted a virtual Planning Meeting with Navigating Preparedness Associates (NPA) on November 14, 2024, at 1:00 PM.

Attendees

Attendee	Organization/Division
Nallely Procopio	Pasadena Fire
Jonathan Robinson	GIS Administrator
Jenny Diaz	Human Resources
Adrienne Kim	Pasadena Public Health
Gloria Acevedo	Finance
Armine Trashian	Finance
Scott Gregowske	Public Works
Jennifer O'Reilly-Jones	Homeless Programs Coordinator
Bill Petry	Library
David Sinclair	Planning and Community Development
Marina Ovanessian	Acting Accessibility Coordinator
Anita Cerna	Planning and Community Development
David Bratzler	Pasadena Water and Power
Henry Frometa	Risk/Safety
Derek Locklin	Police Department
Kelly Knuyen	Power Company
Brad Boman	Pasadena Water and Power
Anthony James	Pasadena Fire
Art Chute	Deputy Chief of Police
Catherine Christensen	Caltech
Sean Dawkins	Commander, Police Department
Antonio Sanchez	Pasadena Public Health
Chief Dollarhide	Pasadena Fire
Brady Griffin	Human Resources
Harry Lochyan	Building and Safety Planning
Hayden Melbourne	Public Works
Lee Rosenberg	Navigating Preparedness
Francisco Soto	Navigating Preparedness





### Summary of Discussion

- Nallely Procopio introduced the new external partners who participated in the planning meeting.
- Lee Rosenberg provided an introduction and gave an overview of the meeting.
  - a. During the planning meeting we reviewed the following:
    - i. Provided planning updates since meeting #1
      - 1. Hazard Descriptions Finalized
      - 2. Finalized Capabilities Assessment
      - 3. Finalized Risk Assessment
      - 4. Developed Hazard Maps with City infrastructure
    - ii. NPA provided an overview of the plan development timeline.
    - iii. Currently, the planning team is in the Mitigation Strategy Development phase.
      - 1. The planning team will be reviewing the 2018 mitigation activities and developing new mitigation activities for the updated plan.
    - iv. NPA provided an update on the public outreach process and activities.
    - v. NPA reviewed the natural and human caused hazards that will be incorporated into the updated plan.
    - vi. The planning team reviewed the risk assessment maps overlayed with City infrastructure.
    - vii. NPA provided the group with example mitigation activities.
    - viii. NPA reviewed next steps in the planning process
      - 1. Commence the public engagement process
      - 2. Disseminate the public survey
      - 3. Finalize the risk assessment
      - 4. Develop mitigation activities
      - 5. Distribute a draft Hazard Mitigation Plan





- Possible outreach events include:
  - a. December 6 – Holiday Tree lighting ceremony
  - b. December 31- Jan 2 will boost social media post around that time

**Action Items**

Action Item	Responsible Party	Due Date	Status
<u>Distribute</u> HPM Survey	Nallely Procopio	November 20, 2024	Open
Post information on City website.	Nallely Procopio	November 20, 2024	Open
Distribute HMP Press Release	Nallely Procopio	November 20, 2024	Open
Add City logo to the printed survey	NPA	N/A	Complete
Send outreach material to the Housing Department	Nallely Procopio	November 20, 2024	Open
Distribute draft Hazard Mitigation Plan to the Planning Team	NPA	December 6, 2024	Open

**Points of Contact**

For concerns or questions regarding these notes, please contact:  
Lee Rosenberg, (925) 381-0583 or [lee.rosenberg@navigatingpreparedness.com](mailto:lee.rosenberg@navigatingpreparedness.com)

*HMPC MEETING #3 PRESENTATION & MEETING NOTES W/PARTICIPANTS*



CITY OF PASADENA HAZARD MITIGATION PLAN UPDATE  
**Project Team Meeting #3**

February 18, 2024





February 21, 2025

To: Nallely Procopio

From: Lee Rosenberg

**Planning Meeting #3**

The City of Pasadena Fire Department hosted a virtual Planning Meeting with Navigating Preparedness Associates (NPA) on February 18, 2025, at 3:00 PM.

**Attendees**

Attendee	Organization/Division
Nallely Procopio	Fire Department
Yosjo Montes	Public Information – City Manager’s Office
Dan Augustyn	Information Technology
Sara Goldman	City Manager’s Office
Anthony James	Fire Department
David Sinclair	Fire Department
Melchor Alonzo	Parks, Recreation, and Community Services
Antonio Sanchez	Public Health
William Petry	Library
Michael Oshiro	Public Health
Anita Cerna	Planning and Community Development
Hayden Melbourne	Public Works
Sean Dawkins	Police Department
Jenny Diaz	Human Resources
Adrienne Kim	Pasadena Public Health
Gloria Acevedo	Finance
Alexander Souto	City Manager’s Office
Jennifer O’Reilly-Jones	Homeless Programs Coordinator
Lee Rosenberg	Navigating Preparedness
Francisco Soto	Navigating Preparedness

**Summary of Discussion**

- → Nallely Procopio introduced the new external partners who participated in the planning meeting.
- → The meeting was convened to expedite the submission of the plan due to the recent fire event.



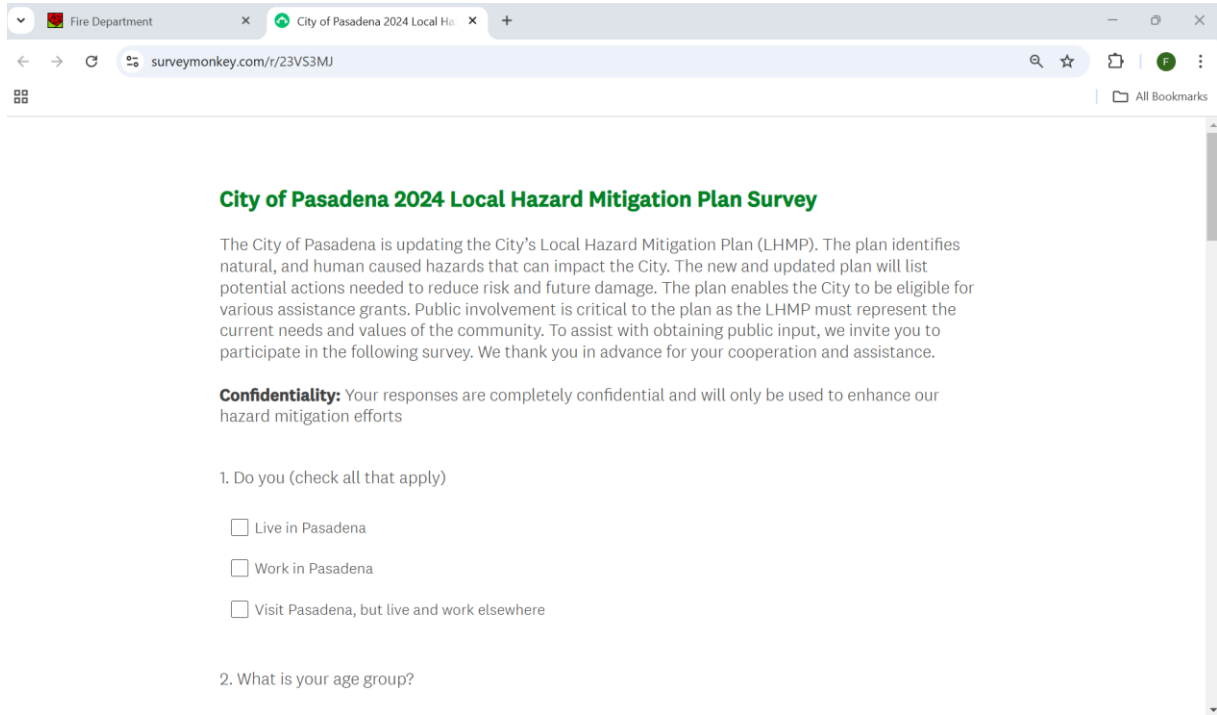
## APPENDIX C – PUBLIC ENGAGEMENT DOCUMENTATION

**Appendix C** contains documentation of the planning process including meetings, presentations held for the stakeholders and public, and other stakeholder/public outreach efforts.

Date	Activity	Documentation
<b>November 19, 2024 - Present</b>	Survey posted on City Website with links provided in social media accounts. General Hazard Mitigation documents.	Documentation 1 – Survey Documentation 2 – Posting on City Instagram Account Documentation 3 – Posting on City Facebook Account Documentation 4 – News release Documentation 5 – Google Search Documentation 6 – Posting on City website Documentation 7 – LHMP Flyer (English) Documentation 8 – LHMP Flyer (Spanish) Documentation 9 – LHMP Flyer (Chinese) Documentation 10 – Survey (Spanish) Documentation 11 – Survey (Chinese) Documentation 12 – City website presentation and newsletter Documentation 15 – Flyers at facilities
<b>November 19, 2024</b>	Public Meetings	Documentation 13: Accessibility & Disability Commission Presentation Agenda

Date	Activity	Documentation
<b>3 months</b>	Public hazard mitigation survey conducted.	Documentation 14: Survey results
<b>Ongoing</b>	Outreach Materials at Public Facing Facilities	Documentation 15: Outreach Materials at Public Facing Facilities
<b>6/9/2025</b>	Draft LHMP provided for public review.	Documentation 16: Survey Distribution for Feedback
<b>Ongoing</b>	Survey Results to Public Review Draft Feedback	Documentation 17: Survey Distribution for Feedback
<b>6/24/2025</b>	Draft LHMP provided to neighboring jurisdiction for review and comment.	Documentation 18: Distribution Email/Feedback

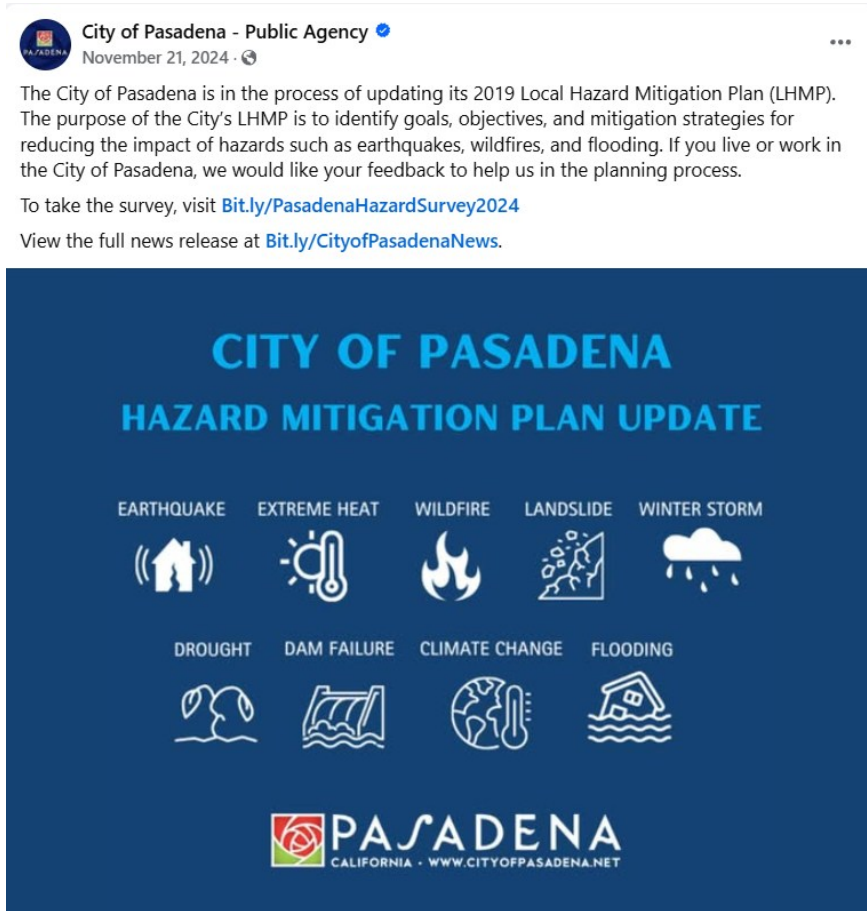
*DOCUMENTATION 1: SURVEY*



DOCUMENTATION 2: INSTAGRAM ACCOUNT



*DOCUMENTATION 3: FACEBOOK POST*



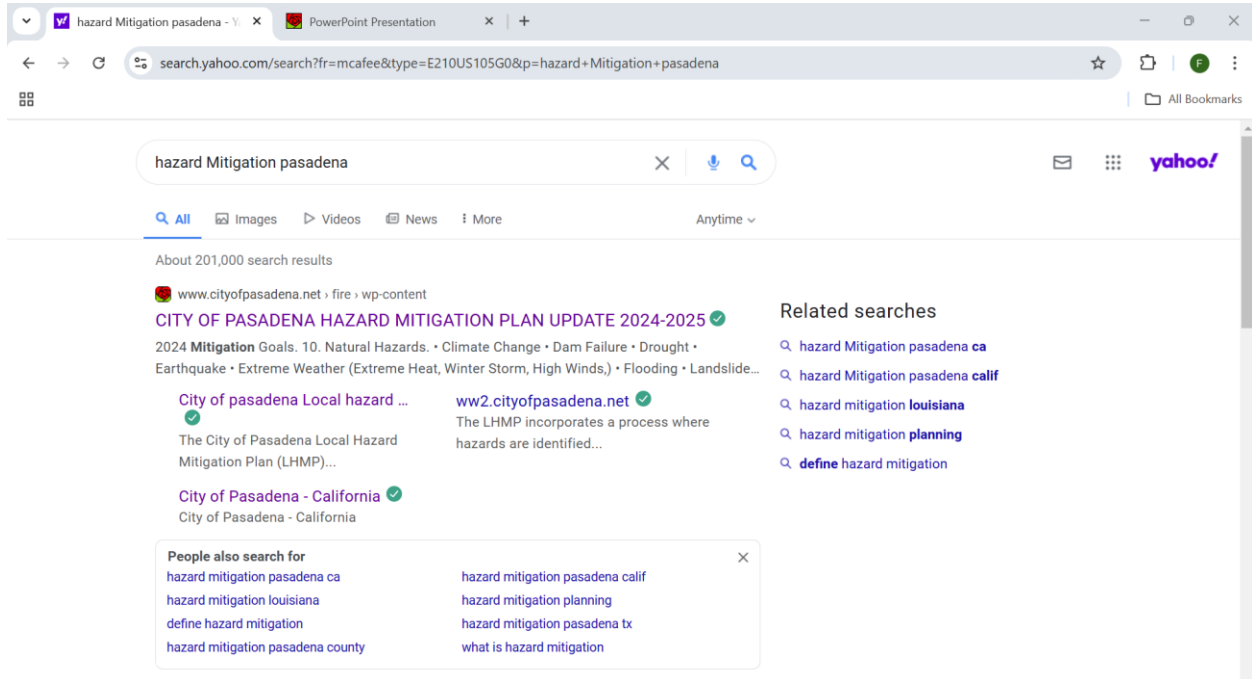
*DOCUMENTATION 4: NEWS RELEASE*

**Community Feedback Needed  
To Update City of Pasadena  
2019 Local Hazard Mitigation  
Plan**

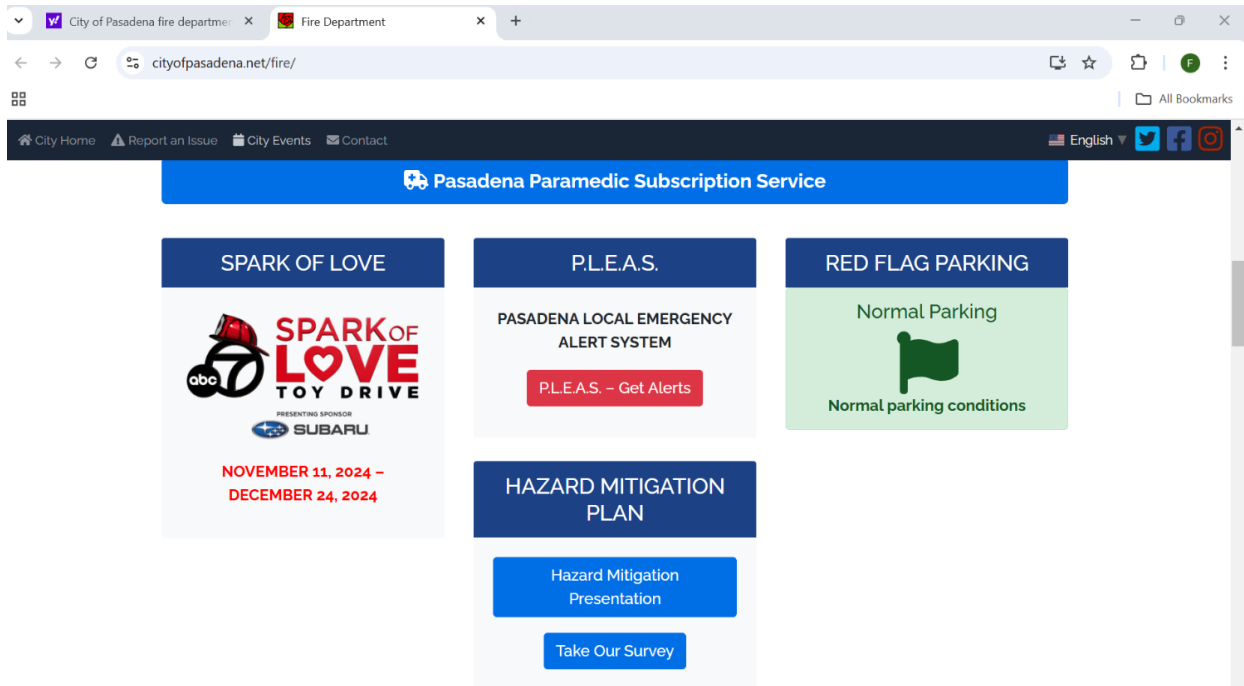
📅 November 21, 2024    📰 News

PASADENA, Calif.— The City of Pasadena is in the process of updating its [2019 Local Hazard Mitigation Plan](#) (LHMP). The purpose of the City's LHMP is to identify goals, objectives, and mitigation strategies for reducing the impact of hazards such as earthquakes, wildfires, and flooding. If you live or work in the City of Pasadena, we would like your feedback to help us in the planning process.


DOCUMENTATION 5: GOOGLE SEARCH



DOCUMENTATION 6: FIRE WEBPAGE



DOCUMENTATION 7: LOCAL HAZARD MITIGATION PLAN FLYER (English)



# PASADENA

CALIFORNIA • WWW.CITYOFPASADENA.NET

## HAZARD MITIGATION PLAN UPDATE

### WHAT IS A HAZARD MITIGATION PLAN

The Local Hazard Mitigation Plan is a document that outlines the City's long-term strategy to eliminate risk to human life, property, and infrastructure from future natural and man-made disasters. Mitigation plans are key to breaking the cycle of disaster damage and reconstruction.

The essential steps of hazard mitigation planning are to:

- Identify and profile hazards that affect the local area
- Analyze people and facilities at risk from those hazards
- Develop a mitigation strategy to lessen the impacts
- Implement the hazard mitigation actions and projects

### WHY NOW










To ensure the plan stays current, FEMA requires the plan to be updated every 5 years. With our last plan adopted in 2018, we are actively working on our update. An up-to-date plan ensures that residents are prepared, and the City remains eligible for federal mitigation funds.

### HOW CAN YOU BE INVOLVED IN THE PLANNING PROCESS


The community can strengthen the content and outcomes of the mitigation plan. The public is represented by community members and organizations that have an interest in City projects and actions to mitigate hazards and save lives and property. The City will post hazard mitigation plan progress and key documents on the following platforms:

- City Website and Social Media Platforms
- Print materials at City Hall and Public Libraries
- Hazard Mitigation Survey
- Public Outreach Workshops
- Present and adopt the plan at a City Council meeting


### HAZARDS

- 
EARTHQUAKE
- 
DROUGHT
- 
EXTREME HEAT
- 
WILDFIRE
- 
LANDSLIDE
- 
WINTER STORM
- 
DAM FAILURE
- 
CLIMATE CHANGE
- 
FLOODING

FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT:



EMAIL  
PREPAREDPASADENA@CITYOFPASADENA.NET



PHONE  
(626) 744-4655

*DOCUMENTATION 8: LOCAL HAZARD MITIGATION PLAN UPDATE FLYER/SURVEY (SPANISH)*



# PASADENA

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## ACTUALIZACIÓN DEL PLAN DE MITIGACIÓN DE RIESGOS

**¿QUÉ ES UN PLAN DE MITIGACIÓN DE RIESGOS?**

El Plan Local de Mitigación de Riesgos es un documento que describe la estrategia a largo plazo de la ciudad para eliminar el riesgo a la vida humana, la propiedad y la infraestructura de futuros desastres naturales y provocados por el hombre. Los planes de mitigación son clave para romper el ciclo de daños por desastres y reconstrucción.

Los pasos esenciales de la planificación de mitigación de riesgos son:

- Identificar y describir los peligros que afectan el área local
- Analizar personas e instalaciones en riesgo por esos peligros
- Desarrollar estrategias de mitigación para reducir impactos
- Implementar acciones y proyectos de mitigación de riesgos

**¿POR QUÉ AHORA?**


Para garantizar que el plan se mantenga actualizado, FEMA requiere que el plan se actualice cada 5 años. Nuestro último plan se adoptó en 2018, por lo que estamos trabajando activamente en su actualización. Un plan actualizado garantiza que los residentes estén preparados y que la ciudad siga siendo elegible para recibir fondos federales de mitigación.

**¿CÓMO PUEDE USTED PARTICIPAR EN EL PROCESO DE PLANIFICACIÓN?**

La comunidad puede fortalecer el contenido y los resultados del plan de mitigación. El público está representado por miembros de la comunidad y organizaciones que tienen interés en los proyectos y acciones de la ciudad para mitigar los riesgos y salvar vidas y bienes. La ciudad publicará el progreso del plan de mitigación de riesgos y los documentos clave en las siguientes plataformas:

- Sitio web de la ciudad y plataformas de redes sociales
- Materiales impresos en el Ayuntamiento y bibliotecas Públicas
- Encuesta de Mitigación de Riesgos
- Talleres de divulgación pública
- Presentar y adoptar el plan en una reunión del Consejo Municipal

PELIGROS

-  **TERREMOTO**
-  **SEQUÍA**
-  **CALOR EXTREMO**
-  **INCENDIO FORESTAL**
-  **DESIZAMIENTO DE TIERRA**
-  **TORMENTA DE INVIERNO**
-  **FALLA DE PRESA**
-  **CAMBIO CLIMÁTICO**
-  **INUNDACIONES**

**PARA OBTENER MÁS INFORMACIÓN O HACER PREGUNTAS, CONTACTE A:**

**CORREO ELECTRÓNICO**  
PREPAREDPASADENA@CITYOFPASADENA.NET

**TELÉFONO**  
(626) 744-4655

## DOCUMENTATION 9: LOCAL HAZARD MITIGATION PLAN UPDATE FLYER (Chinese)



## 减灾计划更新

### 什么是减灾计划

《地方减灾计划》是一份文件，概述了本市的长期战略，旨在消除未来自然和人为灾害对人类生命、财产和基础设施的风险。减灾计划是打破灾害破坏和重建循环的关键。

制定减灾计划的基本步骤是：

- 明确和分析影响当地的危害
- 分析受这些危害威胁的人员和设施
- 制定减灾策略以减轻影响
- 实施减灾行动和项目

### 为什么现在进行更新

为了确保该计划与时俱进，FEMA 要求每 5 年更新一次。我们的上一个计划于 2018 年通过，目前正在积极进行更新。最新的计划可确保居民做好准备，并且本市仍然有资格获得联邦减灾资金。

### 您如何参与计划制定过程

社区可以加强减灾计划的内容和成果。公众由社区成员和组织代表，他们对减轻危害并挽救生命和财产的城市项目和行动感兴趣。本市将在以下平台上发布减灾计划进展情况和关键文件：

- 市政府网站和社交媒体平台
- 市政厅和公共图书馆的印刷材料 减灾调查
- 减灾调查
- 公众宣传研讨会
- 在市议会会议上提出并通过该计划

### 灾害



地震



干旱



极端高温



野火



山体滑坡



冬季风暴



溃坝



气候变化



洪灾

如需了解详情或有疑问，  
请联系：



电子邮件

PREPARED@PASADENA@CITYOFPASADENA.NET



电话

(626) 744-4655

*DOCUMENTATION 10: Survey (Spanish)*

La Ciudad de Pasadena está actualizando el Plan Local de Mitigación de Riesgos (Local Hazard Mitigation Plan, LHMP) de la ciudad. El plan identifica los riesgos naturales y los causados por el hombre que pueden tener un impacto en la ciudad. El plan nuevo y actualizado enumerará las posibles acciones necesarias para reducir el riesgo y daños en el futuro. El plan le permite a la ciudad ser elegible para varios subsidios de asistencia. La participación pública es fundamental para el plan, ya que el LHMP debe representar las necesidades y los valores actuales de la comunidad. Para ayudar a obtener la opinión del público lo invitamos a participar en la siguiente encuesta. Le agradecemos de antemano su cooperación y asistencia. ¶

1. →Usted (marque todas las opciones que correspondan)¶  
a. →Vive en Pasadena¶  
b. →Trabaja en Pasadena¶  
c. →Visita Pasadena, pero vive y trabaja en otro lugar¶  
¶

2. →¿Cuál es su grupo de edad?¶  
a. →Menor de 18 años¶  
b. →18-24¶  
c. →25-34¶  
d. →35-44¶  
e. →45-54¶  
f. →55-64¶  
g. →65+¶  
h. →Prefiero no responder¶  
¶

3. →Si mañana se produjera un gran terremoto o un incendio forestal...¶  
a. →Estoy seguro de que sé cómo protegerme durante la emergencia. ¶  
b. →No estoy seguro de cómo protegerme durante la emergencia. ¶  
c. →Otro: \_\_\_\_\_ ¶  
¶

4. →¿Qué tan preparado está su hogar para un peligro natural (por ejemplo, incendio forestal, inundación, terremoto) en una escala del 1 al 5, donde 1 es no preparado y 5 es muy preparado?¶  
a. →1¶  
b. →2¶  
c. →3¶  
d. →4¶  
e. →5¶  
¶  
¶  
¶

5. →El Plan de Mitigación de Riesgos de la Ciudad de 2018 ha identificado una variedad de peligros naturales que representan una amenaza para la ciudad. Seleccione el peligro natural que más le preocupa. ¶
- a. →Cambio climático¶
  - b. →Terremoto¶
  - c. →Inundación¶
  - d. →Deslizamiento de tierra¶
  - e. →Incendio forestal¶
  - f. → Sequía¶
  - g. →Peligros para la salud pública¶
  - h. →Falla de presa¶
  - i. → Contaminación del aire¶
  - j. → Clima extremo (tormentas de viento, calor extremo, granizadas) ¶
- ¶
6. →¿Qué medidas ha tomado su hogar para mitigar los peligros naturales? (Marque todas las que correspondan)¶
- a. →Compró un generador de emergencia¶
  - b. →Podó árboles para evitar que las ramas cayeran sobre la casa durante las tormentas¶
  - c. →Fijó los calentadores de agua y otros electrodomésticos grandes para evitar que se vuelquen¶
  - d. →Compró un seguro contra terremotos y/o inundaciones¶
  - e. →Instaló válvulas de cierre automático para el gas y el agua¶
  - f. → Otro (especifique)¶
- ¶
7. →Elija las formas que prefiere para encontrar información sobre amenazas futuras o en desarrollo. ¶
- a. →Redes sociales (X, Facebook, Instagram)¶
  - b. →Sitio web del gobierno local¶
  - c. →Notificación a la comunidad¶
  - d. →Sistema de alerta de emergencia local de Pasadena, o PLEAS¶
  - e. →Conferencias de prensa de la Ciudad¶
  - f. → Otro (especifique)¶
- ¶
8. →A continuación, proporcione comentarios o ideas adicionales sobre cómo se deben mitigar los peligros naturales locales. ¶
- ¶
- [Cuadro de texto]¶
- ¶
- Gracias por tomarse el tiempo para completar esta encuesta. ¶

*DOCUMENTATION 11: Survey (CHINESE)*

帕萨迪纳 (Pasadena) 市正在更新其《当地减灾计划》(Local Hazard Mitigation Plan, LHMP)。该计划确定了可能影响本市的自然灾害和人为灾害。新的更新计划将列出减少风险和未来损害所需的潜在行动。该计划使本市有资格获得各种援助补助金。公众参与对该计划至关重要, 因为 LHMP 必须代表社区的当前需求和价值观。为了协助获取公众意见, 我们邀请您参与以下调查。我们提前感谢您的合作和协助。¶

1. → 您是否 (选中所有适用的选项) ¶

- a. → 在帕萨迪纳居住 ¶
- b. → 在帕萨迪纳工作 ¶
- c. → 参观帕萨迪纳, 但在其他地方生活和工作 ¶

¶

2. → 您的年龄段是多少? ¶

- a. → 18 岁以下 ¶
- b. → 18-24 ¶
- c. → 25-34 ¶
- d. → 35-44 ¶
- e. → 45-54 ¶
- f. → 55-64 ¶
- g. → 65 岁以上 ¶
- h. → 不想回答 ¶

¶

3. → 如果明天发生大地震或野火……¶

- a. → 我有信心知道在紧急情况下如何保护自己。¶
- b. → 我不确定在紧急情况下如何保护自己。¶
- c. → 其他: \_\_\_\_\_ ¶

¶

4. → 您的家庭对自然灾害 (例如, 野火、洪水、地震) 的准备程度如何 (采用 1 到 5 分制, 其中 1 分表示没有准备, 5 分表示准备充分)? ¶

- a. → 1 ¶
- b. → 2 ¶
- c. → 3 ¶
- d. → 4 ¶
- e. → 5 ¶

¶

¶

¶

5. → 《2018 年城市减灾计划》确定了一系列对城市构成威胁的自然灾害。选择您最关心的自然灾害? ¶

- a. → 气候变化
- b. → 地震
- c. → 洪灾
- d. → 山体滑坡
- e. → 野火
- f. → 干旱
- g. → 公共卫生危害
- h. → 溃坝
- i. → 空气污染
- j. → 极端天气 (风暴、酷热、冰雹)

6. → 您的家庭采取了哪些措施来减轻自然灾害的影响? (选中所有适用的选项)

- a. → 购买了备用发电机
- b. → 修剪树木, 以防暴风雨时树枝掉到房子上
- c. → 固定热水器和其他大型电器, 防止倾倒
- d. → 购买了地震保险和/或洪水保险
- e. → 安装煤气和水的自动关闭阀
- f. → 其他 (请注明)

7. → 选择您喜欢的方式来查找有关即将来临或正在进行的威胁的信息?

- a. → 社交媒体 (X、Facebook、Instagram)
- b. → 当地政府网站
- c. → 社区通知
- d. → 帕萨迪纳当地紧急警报系统 (PLEAS)
- e. → 城市新闻发布会
- f. → 其他 (请注明)

8. → 请在下面就如何减轻当地自然灾害提出任何补充意见或见解。

[文本框]

感谢您抽出时间完成本次调查。

*DOCUMENTATION 12: CITY WEBSITE PRESENTATION & NEWS ARTICLE*

## Community Feedback Needed To Update City of Pasadena 2019 Local Hazard Mitigation Plan

📅 November 21, 2024    🗞 News

PASADENA, Calif.— The City of Pasadena is in the process of updating its [2019 Local Hazard Mitigation Plan](#) (LHMP). The purpose of the City's LHMP is to identify goals, objectives, and mitigation strategies for reducing the impact of hazards such as earthquakes, wildfires, and flooding. If you live or work in the City of Pasadena, we would like your feedback to help us in the planning process.

### What is a Local Hazard Mitigation Plan?

The Local Hazard Mitigation Plan is a document that outlines the City's long-term strategy to eliminate risk to human life, property, and infrastructure from future natural and human-caused disasters. To ensure the plan stays current, **FEMA requires the plan to be updated every 5 years.** With our last plan adopted in 2019, we are actively working on our update. An up-to-date plan ensures that residents are prepared and the City remains eligible for federal mitigation funds.

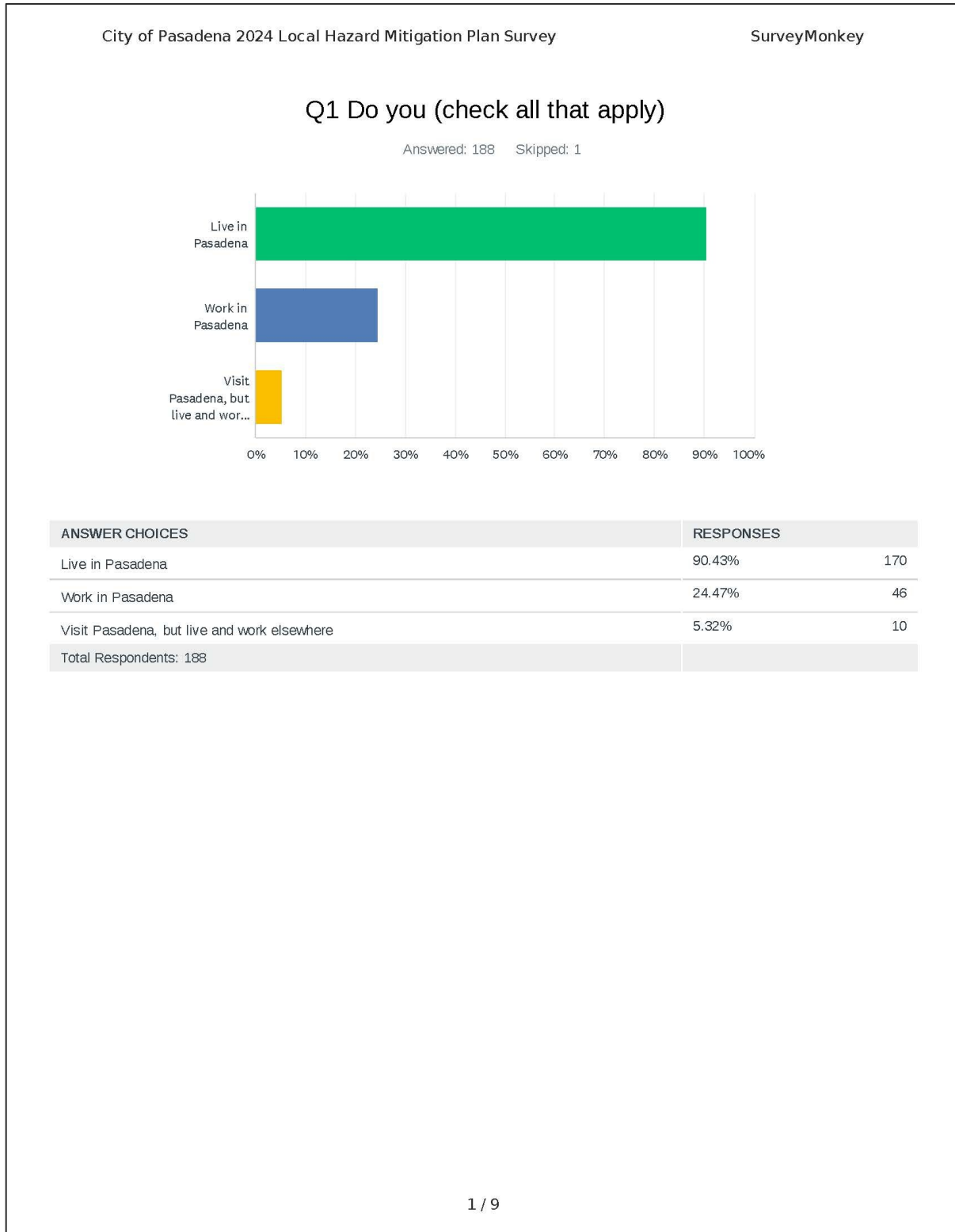
*DOCUMENTATION 13: ACCESSIBILITY & DISABILITY COMMISSION AGENDA*



**Agenda  
Special Meeting  
Accessibility and Disability Commission  
Tuesday, November 19, 2024  
5:30 P.M.  
Jackie Robinson Community Center  
1020 North Fair Oaks Avenue, Pasadena, CA 91103**

1. **Call to order**
2. **Roll call**
3. **Public comments for Items not on the agenda**
4. **Approval of minutes**
  - October 22, 2024, Regular Meeting minutes\*
5. **New business**
  - Information items**
    - Hazard Mitigation Plan presentation; Tandem Solutions
6. **Old business**
  - Action items**
    - Discussion and approval of Workplan updates & Presentation Calendar
7. **Reports / comments from the Chair**
8. **Comments from Commissioners**

**DOCUMENTATION 14: SURVEY RESULTS**

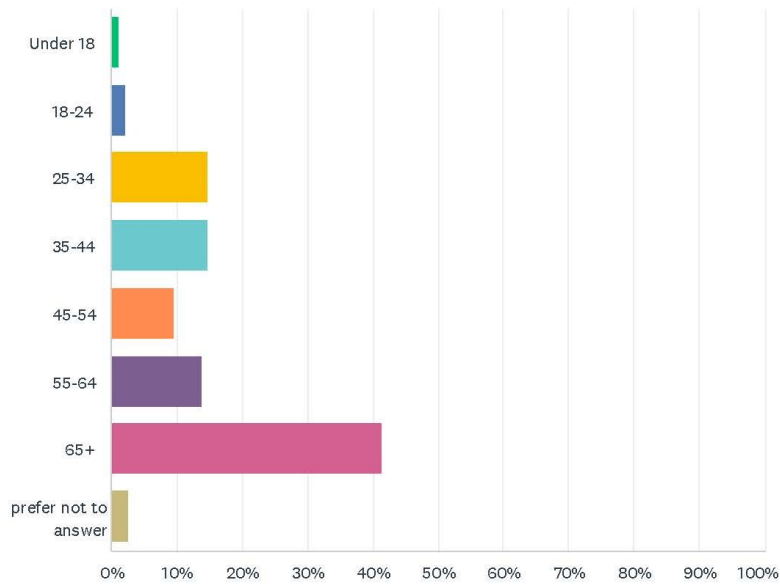


City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

### Q2 What is your age group?

Answered: 189 Skipped: 0



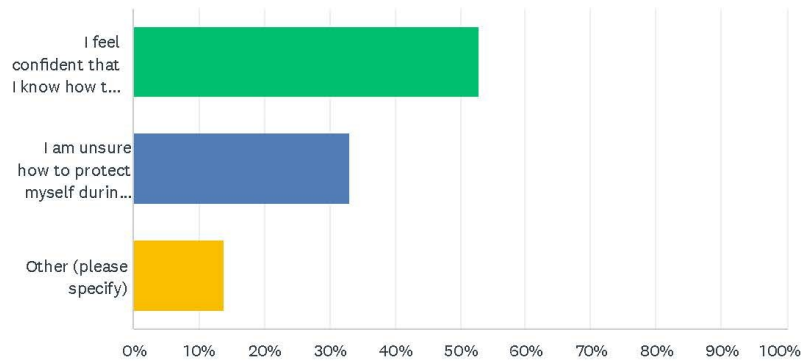
ANSWER CHOICES	RESPONSES	
Under 18	1.06%	2
18-24	2.12%	4
25-34	14.81%	28
35-44	14.81%	28
45-54	9.52%	18
55-64	13.76%	26
65+	41.27%	78
prefer not to answer	2.65%	5
<b>TOTAL</b>		<b>189</b>

City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

Q3 If a large earthquake or wildfire were to strike tomorrow.....

Answered: 187 Skipped: 2



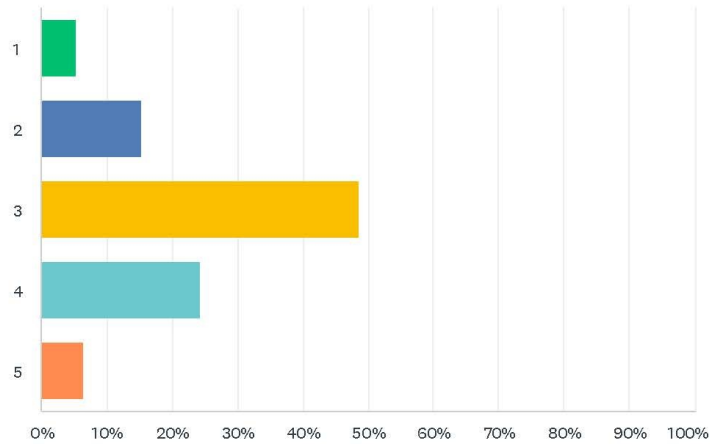
ANSWER CHOICES	RESPONSES
I feel confident that I know how to protect myself during the emergency.	52.94% 99
I am unsure how to protect myself during the emergency	33.16% 62
Other (please specify)	13.90% 26
TOTAL	187

City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

Q4 How prepared is your household for a natural hazard (for example, wildfire, flood, earthquake) on a scale of 1 to 5 with 1 being not prepared and 5 being very prepared?

Answered: 189 Skipped: 0



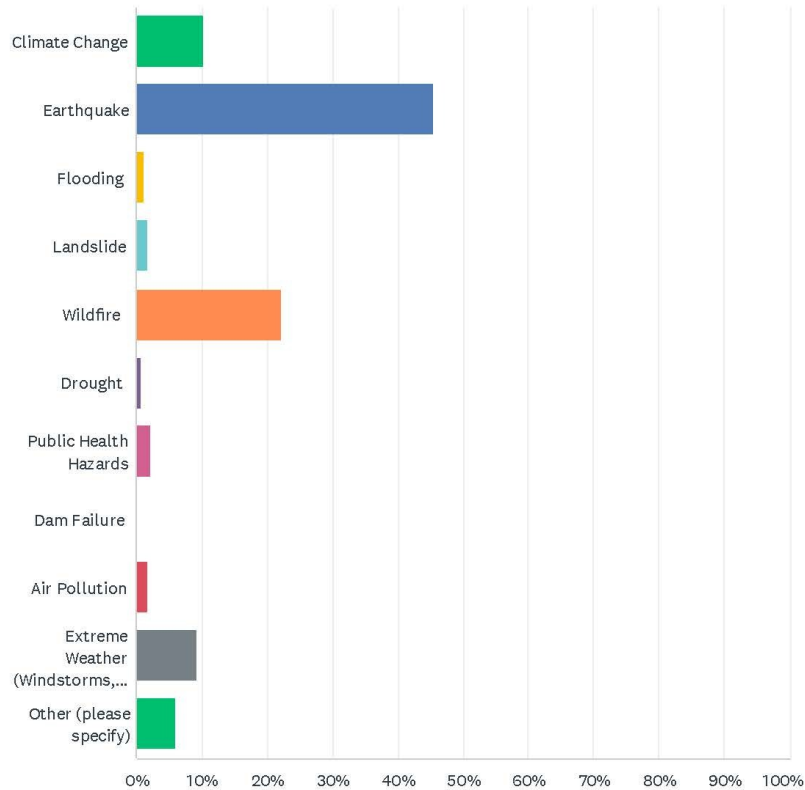
ANSWER CHOICES	RESPONSES	
1	5.29%	10
2	15.34%	29
3	48.68%	92
4	24.34%	46
5	6.35%	12
TOTAL		189

City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

Q5 The City 2019 Local Hazard Mitigation Plan has identified a range of natural hazards posing a threat to the City. Select the natural hazard that concerns you the most?

Answered: 185 Skipped: 4



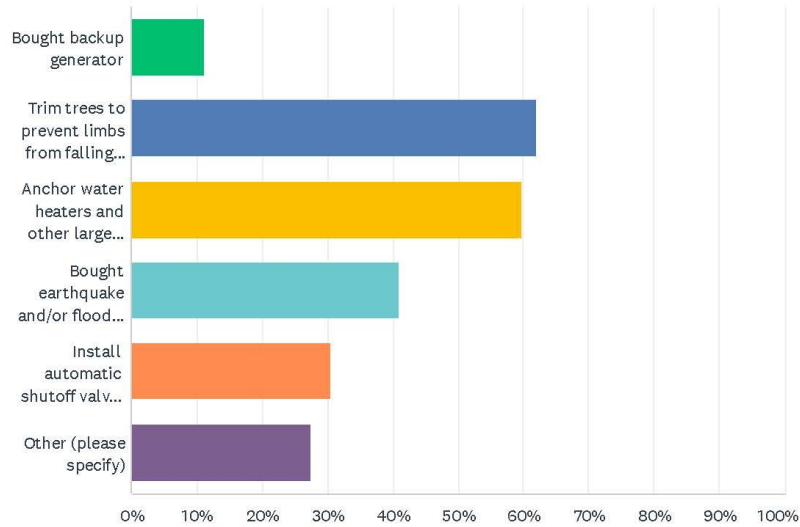
City of Pasadena 2024 Local Hazard Mitigation Plan Survey		SurveyMonkey	
ANSWER CHOICES		RESPONSES	
Climate Change		10.27%	19
Earthquake		45.41%	84
Flooding		1.08%	2
Landslide		1.62%	3
Wildfire		22.16%	41
Drought		0.54%	1
Public Health Hazards		2.16%	4
Dam Failure		0.00%	0
Air Pollution		1.62%	3
Extreme Weather (Windstorms, Extreme Heat, Hailstorms)		9.19%	17
Other (please specify)		5.95%	11
<b>TOTAL</b>			<b>185</b>

City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

### Q6 What steps has your household taken to mitigate against natural hazards? (Check all the apply)

Answered: 171 Skipped: 18



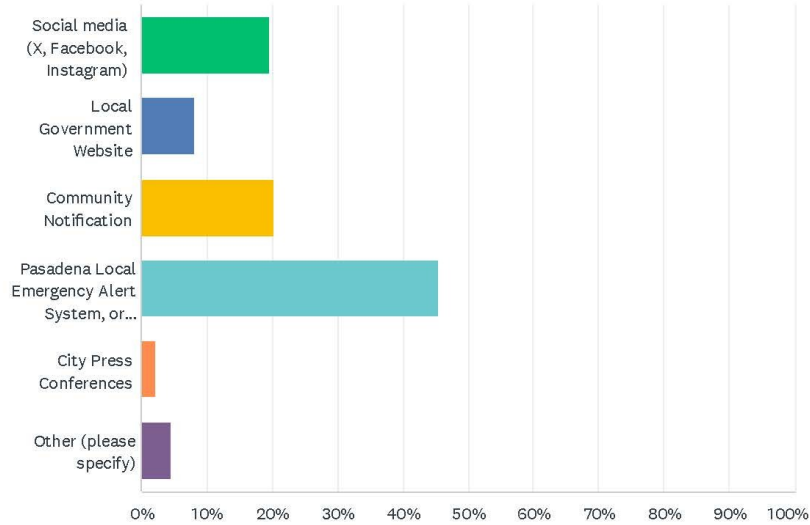
ANSWER CHOICES	RESPONSES
Bought backup generator	11.11% 19
Trim trees to prevent limbs from falling onto the house during storms	61.99% 106
Anchor water heaters and other large appliances to prevent tipping	59.65% 102
Bought earthquake and/or flood insurance	40.94% 70
Install automatic shutoff valves for gas and water utilities	30.41% 52
Other (please specify)	27.49% 47
Total Respondents: 171	

City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

### Q7 Choose the ways you prefer to seek information about incoming or ongoing threats?

Answered: 183 Skipped: 6



ANSWER CHOICES	RESPONSES	
Social media (X, Facebook, Instagram)	19.67%	36
Local Government Website	8.20%	15
Community Notification	20.22%	37
Pasadena Local Emergency Alert System, or PLEAS	45.36%	83
City Press Conferences	2.19%	4
Other (please specify)	4.37%	8
<b>TOTAL</b>		<b>183</b>

City of Pasadena 2024 Local Hazard Mitigation Plan Survey

SurveyMonkey

**Q8 Please provide any additional comments or insight below into how local natural hazards should be mitigated.**

Answered: 64 Skipped: 125

DOCUMENTATION 15: OUTREACH MATERIALS AT PUBLIC FACING OFFICES



*DOCUMENTATION 16: SOCIAL MEDIA POST SURVEY DISTRIBUTION FOR FEEDBACK*



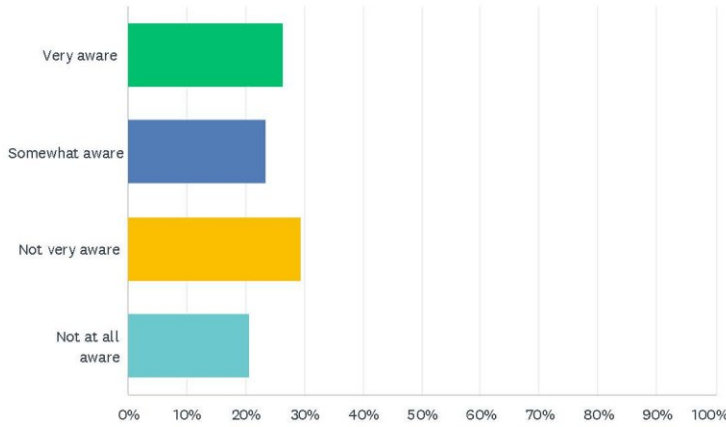
*DOCUMENTATION 17: PUBLIC REVIEW DRAFT SURVEY RESULTS*

City of Pasadena 2025 Local Hazard Mitigation Plan Community Feedback

SurveyMonkey

Q1 How aware are you of the local hazard mitigation plan?

Answered: 34 Skipped: 0



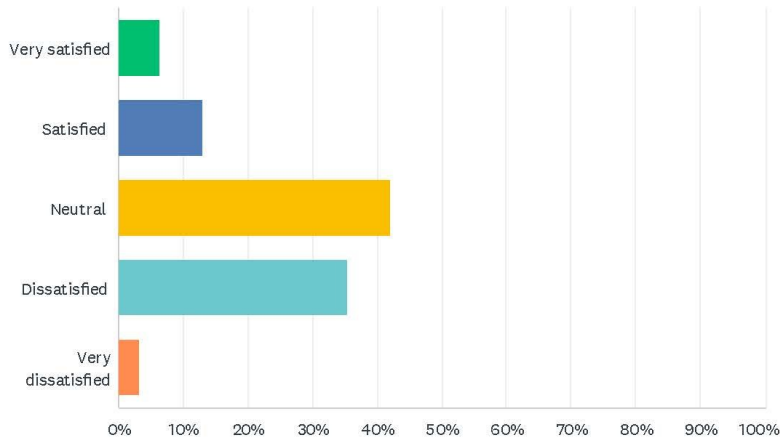
ANSWER CHOICES	RESPONSES
Very aware	26.47% 9
Somewhat aware	23.53% 8
Not very aware	29.41% 10
Not at all aware	20.59% 7
TOTAL	34

City of Pasadena 2025 Local Hazard Mitigation Plan Community Feedback

SurveyMonkey

### Q2 How do you feel about the updated 2025 Local Hazard Mitigation Plan?

Answered: 31 Skipped: 3



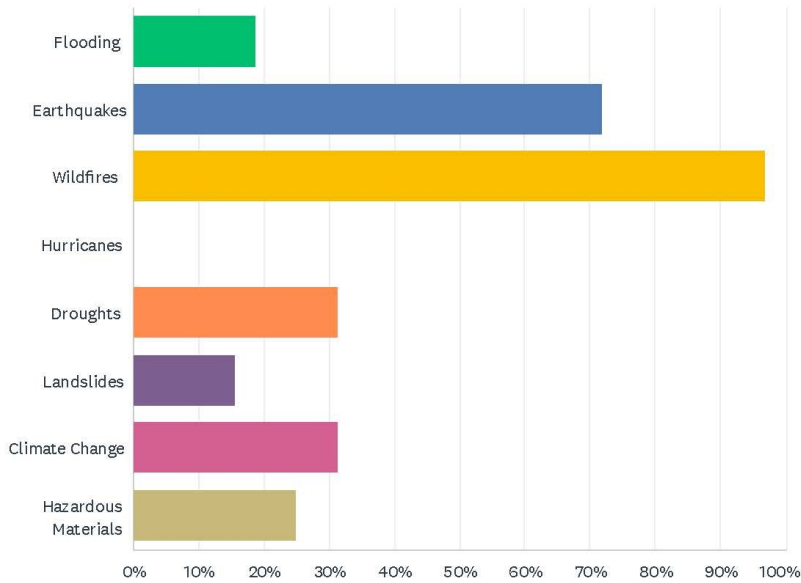
ANSWER CHOICES	RESPONSES	
Very satisfied	6.45%	2
Satisfied	12.90%	4
Neutral	41.94%	13
Dissatisfied	35.48%	11
Very dissatisfied	3.23%	1
<b>TOTAL</b>		<b>31</b>

City of Pasadena 2025 Local Hazard Mitigation Plan Community Feedback

SurveyMonkey

Q3 Which hazards do you think should be prioritized in the mitigation plan?  
(Select all that apply)

Answered: 32 Skipped: 2



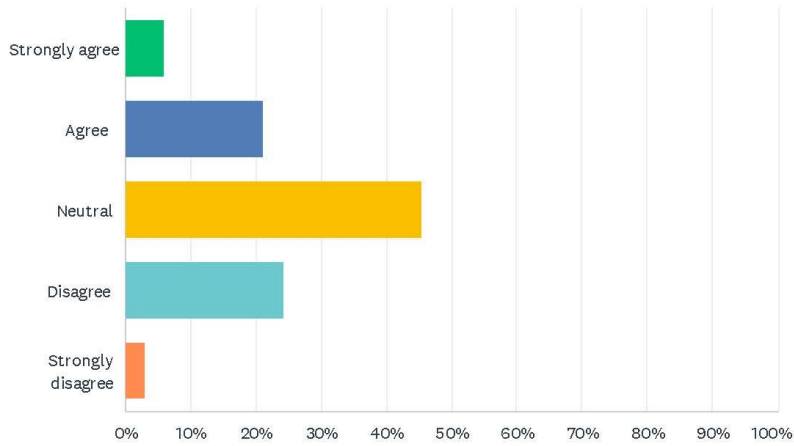
ANSWER CHOICES	RESPONSES
Flooding	18.75% 6
Earthquakes	71.88% 23
Wildfires	96.88% 31
Hurricanes	0.00% 0
Droughts	31.25% 10
Landslides	15.63% 5
Climate Change	31.25% 10
Hazardous Materials	25.00% 8
Total Respondents: 32	

City of Pasadena 2025 Local Hazard Mitigation Plan Community Feedback

SurveyMonkey

### Q4 Do you feel the plan addresses the most significant hazards in our community?

Answered: 33 Skipped: 1



ANSWER CHOICES	RESPONSES	
Strongly agree	6.06%	2
Agree	21.21%	7
Neutral	45.45%	15
Disagree	24.24%	8
Strongly disagree	3.03%	1
TOTAL		33

City of Pasadena 2025 Local Hazard Mitigation Plan Community Feedback

SurveyMonkey

**Q5 Do you have any additional comments or concerns about the hazard mitigation plan?**

Answered: 23 Skipped: 11

*DOCUMENTATION 18: DISTRIBUTION EMAIL/FEEDBACK*

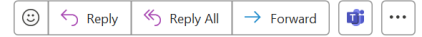
City of Pasadena Local Hazard Mitigation- Draft Plan- Public Comme



Procopio, Nallely <nprocopio@cityofpasadena.net>

To Prepared Pasadena

Cc dave.j.dollarhide@jpl.nasa.gov; Lawrence, Joseph; Baumgardner, Eric; Nicola, Tommy; areac; Sinan Khan; Bennett Cummings; Diana Manzano; lee.rosenberg; Francisco Soto; Mario Rueda; Christensen, Catherine M.; +1 other



Tue 6/24/2025 11:10 AM

Dear Community Partners,

We are pleased to announce that the draft of the City of Pasadena’s Local Hazard Mitigation Plan (LHMP) is now available for public review and comment. Please feel free to review here: [Bit.ly/LocalHazardMitigationPlan2025](https://bit.ly/LocalHazardMitigationPlan2025)

To effectively address community needs, identify key risks, and outline strong strategies for future hazard reduction, your contribution as a community partner is indispensable. The public comment period will be open until July 15<sup>th</sup>, 2025.

After your review you can submit your comments here: [Bit.ly/LHMPsurvey](https://bit.ly/LHMPsurvey)

We encourage you to provide feedback on all aspects of this plan—from risk assessments and mitigation actions to overall priorities. This will help us boost our community’s resilience and readiness for natural and man-made hazards..

If you have any questions or would prefer to provide feedback open-ended feedback, please submit to email: [PreparedPasadena@CityofPasadena.net](mailto:PreparedPasadena@CityofPasadena.net)

Thank you for your time and for assisting with creating a safer and more prepared Pasadena!

## APPENDIX D – ACRONYMS AND ABBREVIATIONS

Acronym	Definition
<b>BRIC</b>	Building Resilient Infrastructure and Communities
<b>Cal OES</b>	California Governor’s Office of Emergency Services
<b>CDAAs</b>	California Disaster Assistance Act
<b>CIP</b>	Capital Improvement Plan
<b>CO2</b>	Carbon Dioxide
<b>CPRI</b>	Calculated Priority Risk Index
<b>DMA 2000</b>	Disaster Mitigation Act of 2000
<b>EAP</b>	Emergency Action Plan
<b>EOP</b>	Emergency Operations Plan
<b>FEMA</b>	Federal Emergency Management Agency
<b>FMA</b>	Flood Mitigation Assistance
<b>HMA</b>	Hazard Mitigation Assistance
<b>HMGP</b>	Hazard Mitigation Grant Program
<b>LHMP</b>	Local Hazard Mitigation Plan
<b>NFIP</b>	National Flood Insurance Program
<b>NWS</b>	National Weather Service
<b>PDM</b>	Pre-Disaster Mitigation
<b>RFC</b>	Repetitive Flood Claims

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Acronym	Definition
<b>STAPLEE</b>	Social, Technical, Administrative, Political, Legal, Economic, Environmental
<b>UCERF3</b>	(the third) Uniform California Earthquake Rupture Forecast
<b>USDM</b>	U.S. Drought Monitor
<b>USSDO</b>	U.S. Seasonal Drought Outlook
<b>UWMP</b>	Urban Water Management Plan
<b>NIDIS</b>	National Integrated Drought Information System
<b>WUI</b>	Wildland Urban Interface

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**Appendix C: WSCP Adoption Resolution [to be inserted]**

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