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City of Pittsburg Draft Local Hazard Mitigation Plan

(Draft 11-3-2022)



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RECORD OF REVIEWS AND REVISIONS

Revision #	Date	Sections Reviewed or Revisions Made	Entered by

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SECTION 1: INTRODUCTION

The City of Pittsburg (City) has prepared this update to its Hazard Mitigation Plan (HMP) in order to assess the natural, technological, and human-caused risks to the City so as to reduce the potential impact of the hazards by creating mitigation strategies. The 2022 HMP 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 of Pittsburg.

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. This law, as of November 1, 2004, 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 Manager's Office and Police Department have coordinated preparation of the HMP in cooperation with other Pittsburg departments, community stakeholders, partner agencies, and members of the public.

This introduction to the HMP provides a brief description of hazard mitigation planning, local mitigation plan requirements, and an outline of the 2022 HMP. 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 work done to minimize the impact of a hazard event before it occurs, with the goal of reducing losses from future disasters. 44 CFR § 201.1(b) describes 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 local area;
- Analyze the population and facilities at risk from those hazards;
- Develop a mitigation strategy and actions to lessen or reduce the impact of the profiled hazards;
- Implement the strategy and actions that may involve planning, policy changes, programs, projects, and other activities.

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

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.¹

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 to implement the mitigation planning requirements of the Stafford Act. 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 Plan Review Tool*.

Federal law and the State of California’s requirements for hazard mitigation plans require coverage of only natural hazards. The City’s Emergency Operations Plan 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 HMP, 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 (2013)*, 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 C** of this document.

1.3 HAZARD MITIGATION PLAN DESCRIPTION

The 2022 HMP consists of the sections and appendices described below:

Table 1-1: Plan Sections, Appendices, and Descriptions	
Section 1: Plan Introduction	Section 1 includes an introduction to hazard mitigation planning, lists the HMP planning requirements, provides a description of the plan, and discusses grants related to hazard mitigation.
Section 2: Planning Process	Section 2 describes the planning process for the 2022 HMP, including an overview of how the HMP was prepared, identification of the HMP planning team, involvement of outside agencies and communities, the inclusion of related plans, reports, and information, and stakeholder and public outreach activities.
Section 3: Planning Area Description	Section 3 includes a description of the natural and built states of the City, including climate, geography, demographics, and economic conditions.

¹ 42 U.S. Code § 5165(a) <https://www.law.cornell.edu/uscode/text/42/5165>



Section 4: Capability Assessment and Hazard Analysis	Section 4 identifies and evaluates the resources available for hazard mitigation within the City. It provides a list of the hazards identified in the 2022 HMP, a profile of each hazard and hazard summary, and a risk assessment of the planning area.
Section 5: Risk Assessment	Section 5 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.
Section 6: Mitigation Strategy	Section 6 identifies and evaluates the current, ongoing, and completed mitigation projects and programs in the City and lists mitigation strategies for reducing potential losses.
Section 7: Plan Maintenance Procedures	Section 7 describes procedures for updating the HMP to keep it current and for continued public engagement in the planning process.
Section 8: Adoption Resolution	Section 8 includes documentation of Cal OES and FEMA processes, and adoption of the HMP by the City Council.
Appendix A	Appendix A lists acronyms and abbreviations used in the 2022 HMP.
Appendix B	Appendix B lists references used in the 2022 HMP.
Appendix C	Appendix C contains the FEMA <i>Local Mitigation Plan Review Tool</i> , which documents the City's compliance with the local hazard mitigation plan requirements of 44 CFR Part 201.
Appendix D	Appendix D 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.
Appendix E	Appendix E contains documentation of the planning process for the planning team, including invitations, attendee lists, meetings minutes, presentations, emails, etc.
Appendix F	Appendix F contains the Mitigation Action Prioritization (STAPLEE) table.

1.4 ASSEMBLY BILL 2140

The California Disaster Assistance Act limits the state share for any eligible project to no more than 75% of total state eligible costs, except that the state share shall be up to 100% of total state eligible costs connected with certain events. AB 2140 prohibits the state share for any eligible project from exceeding 75% of total state eligible costs unless the local agency is located within a city, county, or city and county that has adopted a local hazard mitigation plan in accordance with the federal DMA 2000 as part of the safety element of its general plan, in which case the Legislature may provide for a



state share of local costs that exceeds 75% of total state eligible costs.

The California Government Code, Sections 8685.9 and 65302.6, allow for the State Legislature to provide for a state share of local costs that exceeds 75 percent of total state eligible costs where the local agency is located within a city, county, or city and county that has adopted a local hazard mitigation plan in accordance with the federal Disaster Mitigation Act of 2000 (P.L.106-390) as part of the safety element of its general plan adopted pursuant to subdivision (g) of Section 65302.

1.5 GRANT PROGRAMS WITH MITIGATION PLAN REQUIREMENTS

Currently, five FEMA grant programs provide funding to local entities that have a FEMA- approved local mitigation plan meeting federal hazard mitigation plan requirements. Two of the grant programs are authorized under the Stafford Act. The remaining three programs are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act.

1.5.1 STAFFORD ACT GRANT PROGRAMS

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.

The Building Resilient Infrastructure and Communities (BRIC) Program

The new BRIC grant program is for pre-disaster mitigation activities and replaces FEMA's existing Pre-Disaster Mitigation program. The BRIC priorities are to:

- Incentivize public infrastructure projects
- Incentivize projects that mitigate risk to one or more lifelines
- Incentivize projects that incorporate nature-based solutions
- Incentivize the adoptions and enforcement of modern building codes

BRIC will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability and capacity-building, encouraging and



enabling innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency. The federal government provides up to 75 percent of the cost of projects approved under the program.

1.5.2 NATIONAL FLOOD INSURANCE ACT PROGRAMS AND THE BUNNING-BEREUTER-BLUMENAUER FLOOD INSURANCE REFORM ACT

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 places emphasis on 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 damages. All RFC grants are eligible for up to 100 percent federal assistance.

Severe Repetitive Loss Program

The Severe Repetitive Loss (SRL) Program provides funding to reduce or eliminate the long-term risk of flood damage to residential structures insured under the NFIP. Structures considered for mitigation must have had at least four NFIP claim payments over \$5,000 each, with the cumulative amount of such claims payments exceeding \$20,000; or for which at least two separate claims payments have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building, and at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart. The cost-share for this grant is 75 percent federal, 25 percent nonfederal. There is a cost-share of 90 percent federal, 10 percent nonfederal, available to mitigate SRL properties when the state or tribal plan addresses ways to mitigate SRL properties.



SECTION 2: PLANNING PROCESS

The requirements for documentation of the HMP planning process are described below. This section summarizes the planning area’s hazard mitigation planning efforts in 2022. In addition, the section describes public and stakeholder outreach efforts as part of the HMP planning process. The section also summarizes the review and incorporation of existing plans, studies, and reports used to develop the HMP. Documentation of the 2022 HMP planning process for the Hazard Mitigation Planning Team is provided in **Appendix E**, and documentation of the process for the public and stakeholders is found in **Appendix D**. 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.

FEMA REGULATION CHECKLIST: PLANNING PROCESS

Documentation of the Planning Process

44 CFR § 201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Elements

A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? 44 CFR § 201.6(c)(1).

A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? 44 CFR 201.6(b)(2)

A3. Does the Plan document how the public was involved in the planning process during the drafting stage? 44 CFR 201.6(b)(1) and 201.6(c)(1)

A4. Does the Plan document the review and incorporation of existing plans, studies, reports, and technical information? 44 CFR 201.6(b)(3)

Source: FEMA, *Local Mitigation Planning Handbook Review Tool*, March 2013.

The planning process began with the City establishing the planning area 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 HMP. 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 PLANNING HISTORY

The City developed a single jurisdiction HMP that was adopted by the City Council on November 6, 2017. FEMA provided final HMP approval on November 29, 2017. Prior to 2017, the City participated in the Association of Bay Area Governments (ABAG) multi-jurisdiction HMP. This plan was found non-compliant with FEMA guidance for HMPs in 2016.

In July 2022, the planning process for updating the 2022 HMP began. Select staff from various City
City of Pittsburg
November, 2022



departments were invited to participate in the hazard mitigation planning team. Solicitation was also sent to neighboring cities and other interested agencies through an email sent by Contra Costa County to the roster of Operational Area member agencies.

2.2 PLAN PURPOSE AND AUTHORITY

The purpose of the Plan is to identify natural and technological/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 HMP.

The requirements for adopting this HMP 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 HMP and in **Appendix C, FEMA Local Mitigation Plan Review Tool**. This Plan Review Tool is documented in the governing body meeting resolution documented in **Section 8**.

FEMA REGULATION CHECKLIST: PLAN ADOPTION	
<u>Adoption by the Local Governing Body</u>	
44 CFR § 201.6(c)(5): The local hazard mitigation plan shall include “[d]ocumentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).”	
<u>Element</u>	
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval?	
<i>Source: FEMA, Local Mitigation Plan Review Tool, March 2013.</i>	

Funding for the development of the Plan was provided by the City’s 2021 Operations Budget. Navigating Preparedness Associates (NPA) was retained by the City to provide consulting services in guiding the planning process and Plan development.

2.3 PLANNING PROCESS DESCRIPTION

In July 2022, the planning process for the 2022 HMP began. Select staff from various City departments and other stakeholders were invited to join the Hazard Mitigation Planning Team to develop the 2022 HMP. Representatives from the City of Pittsburg and Contra Costa County, participated in Planning Team meetings. Documentation is located in **Appendix E**.



2.4 PLANNING TEAM The City invited a number of stakeholder organization to participate on the HMP planning team. They are listed in **Table 2-1** below. Individual invitations to support the planning team were provided by email August 2022. A sample copy of the email is in **Appendix D**.

Table 2-1: HMP Planning Team	
Name	Organization
Dick Abono	City of Pittsburg (COP) – Engineering / Public Works
Capt. Steve Albanese	COP – Police Department
Bryan Ballardo	COP – Public Works/Parks & Landscaping
Zuna Barker	COP – Environmental Services
Janielyn Bayona	COP - Finance
Sara Bellafronte	COP – Environmental Services
Alicia Bush*	Pittsburg Unified School District (PUSD)
Jordan Davis	COP – Community Development
Jorge Esparza	COP – Public Works/Sewer
John Funderburg	COP – Community Development/Planning Division
Lt. Les Galer	COP – Police Department
Bobby Joaquin	COP – Public Works
Jolan Longway	COP - Engineering
Hilario Mata	COP – Public Works
Jason Moser	COP – Public Works/Water
Nikesh Patel	COP – Engineering/GIS
Paul Rodriguez	COP - Finance
Kolette Simonton	COP - Recreation
Melaine Venenciano	COP – Community Services/CDBG

3.1 LOCATION

San Francisco is approximately 40 miles west of the City, while Sacramento is approximately 44 miles northeast of Pittsburg. The surrounding jurisdictions include the unincorporated area known as Bay Point and the cities of Antioch, Oakley, Brentwood, Martinez, Pleasant Hill, Concord and Walnut Creek. Pittsburg is located at the confluence of the Sacramento and San Joaquin rivers just east of where the rivers enter Suisun Bay. The region is known as the Sacramento-San Joaquin Delta. Freshwater from



the two rivers mingle with saltwater from the Pacific Ocean, creating the West Coast's largest estuary. Browns Island and Winter Island are just off the shoreline of Pittsburg, along with the New York Slough and Broad Slough.

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Figure 2-1: Aerial View, City of Pittsburg

2.3.1 Planning Team Activities

Two 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 E** documents the HMP planning activities. On XXXXXXXXXXXX XX, XXXX the draft HMP was presented to the City Council for formal adoption.

Table 2-2: Planning Activities		
Date	Activity	Purpose

City of Pittsburg
November, 2022



8/31/2022	HMP Project Kickoff Meeting /Team Meeting #1	Introduce core Planning Team members, review the project management plan, align expectations. Describe the regulatory issues of HMP, the value of them, and the HMP planning process. Distribute data collection forms.
9/30/2022	HMP Planning Team Meeting #2	Review potential hazards and select those that pose risks. Use CPRI. Review status of 2017 mitigation activities and update status. Review data-collection-sheet inputs, begin to develop potential mitigation activities. Request information for hazard analysis and potential losses
	City Council Adoption	

2.3.2 Other Jurisdictions Agency/Organizational Participation

External organizations participated in Planning Team meetings. They were invited by an MS Outlook invitation to the meetings. **Appendix E**, Planning Process, documents their engagement. **Table 2-3** lists the organizations and attendees:

Table 2-3: Organization Participation	
Attendee	Organization

Copies of the draft HMP were provided for their review. Comments received from these partners are incorporated in the final draft of the HMP and are documented in **Appendix D**.

2.4 STAKEHOLDER AND PUBLIC OUTREACH

A requirement is that the HMP must document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning



process (44 CFR § 201.6(b)(2)). The plan must also document how the public was involved in the planning process during the drafting stage (44 CFR § 201.6(b)(3)).

At the August 31, 2022 kick-off meeting, the planning team provided recommendations for the public and stakeholder outreach process. The discussion included a two-pronged strategy for reaching out to the public, focused on efforts during the drafting phase and prior to plan adoption.

2.4.1 Public Outreach Strategy

To reach out to the general public about the 2022 HMP, a survey was created which provided information on the hazards in the City, on preparedness of the public, on the value of community wide projects, actions and activities, and on issues related to hazard mitigation through policies and the effectiveness of receiving information regarding emergencies and disasters from the City. In August 2022, a survey was placed on the City's web site located at www.pittsburgca.gov and was advertised on the City e-news to subscribers, Health Services email subscriber announcement, and on the City website. To invite stakeholders from other jurisdictions, Contra Costa County Office of Emergency Services sent out an email to the emergency management coordinators in the cities in the county inviting them to participate in the HMP development process.

During this process, the City Manager's Office received 70 public comments about the 2022 HMP. Information on how members of the public like to receive information about hazards in Pittsburg, and on how they would use that information to better prepare for disasters was also received. The favored method of receiving information from the City was via the Internet (71.64%). Some participants asked specific questions about what to do when certain issues arise, such as having no water or electricity after an earthquake. Screenshots of the survey invitation, survey, and results can be found in **Appendix D** of the HMP.

Prior to the approval and adoption of the 2022 HMP, a copy of the plan will be placed on the City's website. The Planning Team will review any comments and consider changes to the HMP for those suggestions that would benefit the plan. The City website page will provide an e-mail address and phone number to which people can direct further comments or concerns.

For documentation of the above HMP public outreach efforts, see **Appendix D**, Public Outreach

2.4.2 Stakeholder Outreach

To facilitate stakeholder involvement for the development of the HMP, the City provided an overview of the HMP, gave presentations of information, provided a survey for input, and answered questions regarding the planning process. The meeting facilitation materials and attendance sheets are included in **Appendix D**.

The Planning Team conducted the following stakeholder outreach activities:

- Emergency management/disaster coordinators of the surrounding cities were sent the draft 2022 HMP for review to provide input.



- The Contra Costa County Office of Emergency Management was sent the draft HMP for review to provide comments and recommendations.
- The Contra Costa County Health Services Division Hazardous Materials Division was sent the draft HMP for review to provide comments and recommendations
- The American Red Cross Bay Area Chapter was sent the 2022 HMP for review and comment.

2.4.3 Public Outreach

The following activities were undertaken as part of outreach to members of the community regarding the 2022 HMP:

- In August 2022, a notice was placed on the City website about the 2022 HMP requesting residents and employees of businesses in Pittsburg to complete the hazard mitigation plan development survey. The results of the survey are contained in **Appendix D**. They were used to provide input to the analysis of hazards and in developing the mitigation goals and activities.
- An advertisement about the hazard mitigation plan and the request to participate in the survey was placed on the City Facebook page.
- An advertisement, requesting community members to participate in the hazard mitigation survey was distributed to subscribers via the City's e-news blast.
- The complete draft version of the 2022 HMP was posted on the City website on XXXXXXXXXXXXXXXX and on the City Facebook page from XXXXXXXXXXXX, 2022 through XXXXXXXXXXXX, 2022 with a request for public comments.

2.5 INCORPORATION OF EXISTING PLANS AND OTHER TECHNICAL INFORMATION

The requirements for review and incorporation of existing plans, studies, reports, and technical information (44 CFR §201.6(b)(3)), as described in the federal regulations are described below. During the planning process, members of the planning team reviewed and incorporated information into the 2022 HMP information from several existing plans, studies, and reports. These reports are listed below:

- The 2018 Pittsburg Emergency Operations Plan. The hazard section of the EOP provided a basis for the hazards identified in the HMP.
- Pittsburg General Plan 2020 and 2040 Draft, Health and Safety Element. The hazards identified in the Health and Safety Element provided natural hazard information for the seismic hazard profile, including ground shaking and ground failure, and for flooding and fires.
- Pittsburg General Plan. The land use and development trends identified in the General Plan provided guidance for development trends identified in the HMP vulnerability analysis.
- Adopted Annual Budget, Fiscal Year 2022-2023
- Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2022
- Pittsburg Sewer System Management Plan, February 2020
- City of Pittsburg Greenhouse Gas Inventory and Draft Climate Sustainability Plan 2022



- California Climate Adaptation Planning Guide (APG): The 2012 APG provides information on the effects of climate change on California and provided adaptation planning guidance used in the development of the climate change hazard profile.
- 2018 State of California Multi-Hazard Mitigation Plan. The State HMP was reviewed to ensure the alignment of the Pittsburg HMP with the state’s current hazard profiles and mitigation strategy.

Additionally, a resolution to the City Council will be forwarded upon approval of the HMP adopting the HMP as a part of the General Plan Health and Safety Element. This incorporates the mitigation actions contained in the HMP into the General Plan and provides commonality between the plans. This action meets the requirements of State Assembly Bill 2140 as stated in California Code Section 8685.9.

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SECTION 3 PLANNING AREA DESCRIPTION

The following description of the planning area includes its location, geography, history, government, economy, and demographics.

The planning area for the HMP includes the City of Pittsburg, which is an industrial city in eastern Contra Costa County, California in the East Bay region of the San Francisco Bay Area. Pittsburg was incorporated on June 25, 1903 as a general law city. The City of Pittsburg encompasses approximately 19.71 square miles (United States Census Bureau) and lies at Latitude: 38.03° North Longitude: 121.88° West. The elevation ranges from 30 feet Mean Sea Level (MSL) in the northern portion of the City along the Sacramento River, then increases in elevation to 1,900 feet MSL at the City's southernmost ridge in the hills of the Diablo Range.

3.2 GEOLOGY

The Health and Safety Element of the Pittsburg General Plan 2040 Draft describes two general topographic zones within the City, the lowland zone and the hillside zone.

Lowland Zone

The Estuarine (coastal) areas are underlain by Bay Mud, which consists of unconsolidated silt and clay with abundant organic material, local peat, sand, and gravel lenses or discontinuous beds (USGS, 1973). There is artificial fill occurring along the edges of the Suisun Bay, particularly around the power plant and in filled channels. Old fill (pre-1950's) typically consists of mixed material including weak compressible soils with a risk of liquefaction. The Flatland areas of Pittsburg are underlain by alluvial deposits, unconsolidated flood-plain deposits, sand, silt, gravel, and clay, layered irregularly.

Hillside Zone

The Hillside areas of the City consist primarily of tilted marine sedimentary and volcanic rocks that range in age from Paleocene to Pliocene. Hillside areas in the western and southern portions of the planning area contain steep slopes, weak bedrock, and local landslide deposits. The Hillside zone is vulnerable to landslides, soil creep, debris flow, and other hazards due to historic coal mining.

3.3 CLIMATE

Pittsburg experiences a hot summer Mediterranean climate (Köppen climate classification Csa) bordering on the Semi-arid climate because of the Mt. Diablo rain shadow in East Contra Costa County. The rainy season extends from November 1st to March 31st, with relatively dry conditions for the remainder of the year. Average annual rainfall in the vicinity of the planning area is 14 inches. Temperatures are generally moderate with a comparatively small range of temperatures between the winter low and summer high. Average low temperatures in January are 38 degrees Fahrenheit with highs averaging 58 degrees. In July the average lows are 58 degrees with highs averaging 90 degrees Fahrenheit. Table 3-1 shows monthly average temperature range and precipitation.



Table 3.1: Temperature and Precipitation Averages

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °F	57.6	60.1	71.1	79.0	86.0	91.0	90.0	86.0	78.1	64.9	64.0	54.0	73.0
Average low °F	37.9	41.0	46.9	52.0	57.0	57.9	57.9	55.9	51.1	44.1	44.1	36.0	48.6
Precipitation inches	2.72	2.51	2.16	0.73	0.47	0.09	0.03	0.03	0.24	0.76	1.77	1.89	13.3

3.4 HISTORY OF PITTSBURG

Pittsburg began along the Suisun Bay/Delta shoreline as a 10,000-acre land grant from the government of Mexico in 1839 and grew into a settlement along the banks of the Sacramento River. The land grant was awarded to Jose Antone Mesa and Miguel Jose Garcia. Shortly thereafter the little town was named New York of the Pacific, possibly because the man who laid out the town, Colonel J.D. Stevenson, was a native of New York. This area soon became known as New York Landing and thrived on fishing and canning industries. Following the discovery of coal in the hills three miles south of town, the town was renamed Black Diamond in 1868.

In 1910, Columbia Steel opened its California steel plant in Pittsburg with one foundry and a crew of 60 employees. It made steel castings for the dredging, lumber, and shipping industries. By popular vote on February 11, 1911, the name was changed to Pittsburg, after the eastern birthplace of the steel industry (the “h” was removed to simplify the spelling).

In 1930, Columbia became a subsidiary of U.S. Steel Company. The plant continued to grow until the early 1950s, reaching a peak staff of 5,200 employees when the markets for its products crashed. The parent company (by 1986, renamed as USS Company) had merged with Korean Pohang Iron and Steel Company. Together they invested \$450 million turning the Pittsburg plant into a modern flat-products mill, renamed as USS-Posco. In 2021, US Steel purchased the remaining interest and is back to US Steel Company.

In 1942 Camp Stoneman was built. This had a tremendous impact on the City and its growth. Forty-five thousand servicemen were stationed at Camp Stoneman during the Asiatic-Pacific operations in



World War II. In 1954, the Camp was closed and the property was added to the City of Pittsburg for commercial and residential development.

3.5 GOVERNMENT

The City of Pittsburg is a general law city with a Council/Manager form of government. City government is divided into 26 functional areas and operates with 11 City Departments plus five specialized services. City Departments include the City Manager’s Office; City Clerk’s Office; Human Resources Department; Finance Department; Community Development Department; Public Works / Engineering Department; Recreation Department; Police Department; City Attorney; and Community Services Department. Specialized Services include Economic Development Department; Planning Department; , the Successor Agency, the Environmental Services Division, the Pittsburg Power Company and the City Marina.

3.6 ECONOMY

Pittsburg has grown from its days as primarily an industrial center for steel and commercial fishing into a community with a blend of commercial, retail, and office businesses. There are still large industrial employers such as U.S. Steel Company and Dow Chemical Company, a variety of smaller commercial employers, such as Ramar Foods International and Walmart, and educational employers such as Pittsburg Unified School District and Los Medanos College to name a few.

The California Delta Highway, State Highway 4, runs primarily east-west through the City. Other major transportation corridors include the Burlington Northern, Union Pacific, Santa Fe (BNSF) railroad, and the Pittsburg/Bay Point Bay Area Rapid Transit (BART) station is in Pittsburg. The East Contra Costa BART extension project added a station near Hillcrest Avenue in Antioch and a station at Railroad Avenue in Pittsburg. Tri-Delta Transit is a bus operator serving the communities in the eastern section of the county. East Bay Para-Transit is a bus service for persons with disabilities and others with access and functional needs throughout the county. **Table 3-2** shows the principal employers in the City of Pittsburg²

Rank	Employer	Number of Employees
1	Pittsburg Unified School District	1,221
2	Los Medanos College	584
3	U.S. Steel Company	570

² City of Pittsburg Comprehensive Annual Financial Report, FY June 2020
City of Pittsburg
November, 2022



4	Dow Chemical Company	350
5	Ramar Foods	370
6	City of Pittsburg	340
7	Wal-Mart	222
8	Home-Depot	188
9	WinCo Foods	168
10	Cardenas (supermarket)	143

3.7 DEMOGRAPHICS

The 2021 United States Census estimated that the City of Pittsburg had a population of 76,544. The population density was 4323 people per square mile. The City’s demographic data below in **Table 3-3** is from the United States Census Bureau 2021 estimate:

Table 3-3: City Demographics	
Census Category	Percentage
Hispanic or Latino (Any race)	43.3
White	34.0
Black/African American	13.6
American Indian	0.9
Hawaiian & Other Pacific Islander	0.6
Asian	19.4
Two or more races	11.0

There were 21,349 households with an average family size of 3.34. The annual median income is \$83,163 with 11.0% below the national poverty level. The average home value was 425,300. Households where a language other than English is spoken at home is 50.0%. Highschool graduates are 80.3% of the population and 21.4% have graduated college. Foreign born residents make up 32.3% of the City.

SECTION 4: CAPABILITIES ASSESSMENT AND HAZARD ANALYSIS

The 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)).

FEMA REGULATION CHECKLIST: CAPABILITY ASSESSMENT

44 CFR § 201.6(c)(3): – The plan must include mitigation strategies based on the jurisdiction's “existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.”

Elements

C1. Does the plan document the jurisdiction’s existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR § 201.6(c)(3).

C2. Does the Plan address the jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR § 201.6(c)(3)(ii).

C3. Does the Plan include goals to reduce or avoid long-term vulnerabilities to identified hazards? 44 CFR § 201.6(c)(3)(i).

C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for the jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? See 44 CFR § 201.6(c)(3)(ii).

C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost-benefit review), implemented, and administered by the jurisdiction? 44 CFR § 201.6(c)(3)(iii).

C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?

Source: FEMA, *Local Mitigation Planning Handbook Review Tool*, March 2013.

A HMP’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 of Pittsburg.
- 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 HMP mitigation action plan.

A capability assessment was conducted of 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. This section also includes information regarding Pittsburg's implementation of and continued participation in the National Flood Insurance Program (NFIP).

4.1 EXISTING AUTHORITIES, PROGRAMS, POLICIES AND RESOURCES

An assessment of the City’s capabilities that contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, staff, and fiscal resources, 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 City.

The planning team also considered ways to expand on and improve these existing policies and programs with the goal of integrating hazard mitigation into the day-to-day activities and programs of the City. **Tables 4-1, 4-2, 4-3 and 4.4** summarize the existing authorities, policies, programs, and resources to implement mitigation actions and projects.

4.1.1 Planning and Regulatory Capabilities

These 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. The City will adopt the approved 2022 HMP into the Safety Element of the City’s General Plan for AB 2140 compliance. **Table 4-1** contains a list of legal and regulatory capabilities.

Regulatory Tools (ordinances, plans, codes)	Lead City Department	Hazards Addresses	Description
Pittsburg 2020 & Draft 2040 General Plan Element 10: Health and Safety	City Manager’s Office, Police Department, Community Development/Planning, Contra Costa County Fire Protection District		Identifies and addresses mitigate risks posed by geologic and seismic conditions, prevent man-made risks stemming from use and transport of hazardous materials, and ensure that local emergency response agencies are prepared for potential disaster relief. Expansion and Improvement: The HMP will be informed by reference into the Public Safety Element of the General Plan.
Pittsburg 2020 & Draft 2040 General Plan 2020 Element	Community Development /Engineering		Addresses the problems and outlines policies relating to biological resources and habitat, drainage and erosion,

Table 4-1: Local Legal and Regulatory Capabilities

Regulatory Tools (ordinances, plans, codes)	Lead City Department	Hazards Addresses	Description
9: Resource Conservation			<p>water quality, air quality, and historical resources conservation. Regulations enacted by ordinance will establish specific regulations to protect natural features and ensure compatible project design.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with the Resource Element of the General Plan to protect the natural environment.</p>
Pittsburg 2020 & Draft 2040 General Plan Element 11: Public Facilities	Public Works, Environmental Services Water Utilities, Delta Diablo Sanitation District		<p>Addresses the provision of public services and facilities, including water supply and distribution, wastewater collection and treatment, solid waste collection and disposal, fire protection, and public utility corridors, and major public facilities within the City.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with the Public Facilities Element of the General Plan to promote infrastructure resiliency.</p>
Uniform Codes	Community Development; Planning and Building Division		<p>Adoption of the Uniform Codes (to include the Administrative Codes, Building Codes, Electrical Codes, Energy Codes, Fire Codes, Mechanical Codes, and Plumbing Codes) and incorporated into the Pittsburg Municipal Code as the means of operations for the City, and to provide sufficient and effective protection of life, health, and property.</p>

Table 4-1: Local Legal and Regulatory Capabilities

Regulatory Tools (ordinances, plans, codes)	Lead City Department	Hazards Addresses	Description
			Expansion and Improvement: Building and Fire Codes will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.
Building Code	Community Development Planning and Building Divisions		Per Health and Safety Code 17958.7, adoption of the CA Building Code to regulate the general design requirements applicable to construction of all structures and portion regulated by the code for seismic strengthening and structural integrity. Expansion and Improvement: Building and Fire Codes will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.
Fire Code	Contra Costa County Fire Protection District, Community Development		Provides the means to ensure fire protection systems are installed and maintained; fire protection and life safety equipment is installed in new mid-rise buildings/structures; prohibits the use of fireworks; and reduces the available fire flow reduction to 50% to increase site available fire flow. Expansion and Improvement: Building and Fire Codes will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.

Table 4-1: Local Legal and Regulatory Capabilities

Regulatory Tools (ordinances, plans, codes)	Lead City Department	Hazards Addresses	Description
Pittsburg Water Master Plan	Water Operations, Sewer Operations		<p>Establishes water conservation measures to encourage efficient water use and discourage waste to avoid a water emergency related to contamination, drought, or damage to the City’s potable water infrastructure.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with the City Water Master Plan to address climate change and drought.</p>
Pittsburg Stormwater Management Plan	Community Development, Engineering		<p>Addresses the floodplain management within the City, and the City actions taken to maintain eligibility with the FEMA National Flood Insurance Program.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with the Stormwater Management Plan to reduce the threat of flooding.</p>
Pittsburg Sewer System Management Plan	Sewer Operations, Delta Diablo Sanitation District		<p>A plan to meet the requirements established in the State Water Resources Control Board’s Order No. 2006-0003-DWQ to prevent sanitary sewer overflows (SSOs) by establishing a statewide monitoring and reporting program.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with the Sewer System Management Plan to reduce potential hazardous material releases.</p>

Table 4-1: Local Legal and Regulatory Capabilities

Regulatory Tools (ordinances, plans, codes)	Lead City Department	Hazards Addresses	Description
Pittsburg Collection System Master Plan	Sewer Operations, Delta Diablo Sanitation District		<p>A report that provides an assessment of the wastewater system and provides recommendations for upgrades to meet future capacities.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with the Collections System Master Plan to reduce potential hazardous material releases.</p>
Pittsburg Emergency Operations Plan	City Manager’s Office, Police Department,		<p>Explains how the City will respond to a major emergency or disaster and coordinate between the Emergency Operations Center (EOC) and field level Incident Commanders; includes the hazards with a description of each; the concept of operations during a major emergency or disaster; the role of the EOC, and the coordination that occurs between the EOC and City’s departments and other local, state, and federal governments in times of disaster.</p> <p>Expansion and Improvement: The HMP hazards analysis and selection will inform the EOP section and address incident specific emergency response.</p>
Contra Costa Hazardous Materials Plan / Hazardous Material Business Plan	Contra County HazMat as the administering agency, Contra Costa County Fire Protection District		<p>Addresses the storage, use and emergency planning for hazardous materials and extremely hazardous substances in the community and at businesses.</p> <p>Expansion and Improvement: The HMP will support mitigation measures that are compatible with</p>

Table 4-1: Local Legal and Regulatory Capabilities			
Regulatory Tools (ordinances, plans, codes)	Lead City Department	Hazards Addresses	Description
			the County Hazardous Materials Plan to reduce potential hazardous material releases.

4.1.2 Administrative and Technical Capabilities

These capabilities include community (including public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. These capabilities may be used to support mitigation activities. An example would be to create a GIS data base of facilities that may be used as emergency shelters. **Table 4-2** list administrative and technical capabilities.

Table 4-2: Administrative and Technical Capabilities		
Personnel Resources	Department	Relation to Hazard Mitigation
Planners/Engineers/ Building Officials / Code Enforcement	Community Development Department - Building Division Engineering	Issue building permits, review plans for new construction and improvements; conduct plan checks; work with architects, engineers, designers and building owners during pre-construction; inspect all phases of residential and commercial/industrial construction for compliance; enforce municipal code violations. Expansion and Improvement: Provide opportunities for continued education to Community Development staff to maintain state of the art knowledge for new code and regulatory requirements.
Planners/Engineers/ Analysts/General Staff	Community Development Department - Planning Division; Community Services Department	Plan future City land use; develop and implement the 2020 General Plan, land use regulations through zoning and subdivision codes, and environmental review of development; administer the Community Development Block Grant Program (CDBG), conduct Code Compliance program with the Building Division; conduct conditional use permits, variances, land subdivision, CEQA review, public hearings, noise permits, and zoning information. Expansion and Improvement: Provide opportunities for continued education to Community Development staff to maintain state of the art knowledge for new code and regulatory requirements.

Table 4-2: Administrative and Technical Capabilities

Personnel Resources	Department	Relation to Hazard Mitigation
<p>Director/Asst. Director /Superintendent/ Supervisors/ Engineers/ Analysts/General Staff</p>	<p>Public Works, Water Operations</p>	<p>Supply water to the City's customers and perform the operation, maintenance and repair of the City's water distribution system.</p> <p>Expansion and Improvement: Provide opportunities for continued education to Public Works staff to maintain state of the art knowledge for new code and regulatory requirements.</p>
<p>Director/Asst. Director /Superintendent/ Supervisors Engineers/ Analysts/General Staff</p>	<p>Public Works / Engineering Department,</p>	<p>Oversee public and private improvements in the public right-of-way; develop and implement the Capital Improvement Program by providing staff support to the City Infrastructure and Transportation Subcommittee relative to City streets, sanitary sewer, storm drains, water system facilities, traffic signals, park and recreational facilities; maintain and upgrade public infrastructure; provide services related to traffic issues; monitors the street lighting system maintained by the City and PG&E; keeps and maintains record drawings of City-owned infrastructure; conducts traffic committee meetings with the Police Department; and provides engineering support to other City Departments and other Divisions within the Public Works Department.</p> <p>Expansion and Improvement: Provide opportunities for continued education to Community Development staff to maintain state of the art knowledge for new code and regulatory requirements.</p>
<p>Director of Emergency Services, CMO Liaison Police Lieutenant</p>	<p>City Manager's Office, Police Department</p>	<p>Provide for the coordinated response and recovery from major emergencies and disasters; develop, administer and coordinate the emergency planning preparedness program in conformity with local, State and Federal requirements; develop emergency management and hazard mitigation plans; provide training to City staff in emergency planning and preparedness; develop, maintain, and coordinate the City Emergency Operations Center; provide businesses and residents with emergency planning and preparedness material to help reduce the loss of life and property resulting from a disaster; coordinate with County, State, and Federal counterparts; prepare emergency management grants; coordinate the efforts of volunteer organizations.</p>

Table 4-2: Administrative and Technical Capabilities

Personnel Resources	Department	Relation to Hazard Mitigation
		Expansion and Improvement: Provide training to Officers, EOC staff and other key personnel to better enable them to see potential hazards and take action to report them.
Public Preparedness Education	City Manager's Office, Police Department	Provide free disaster preparedness and Community Emergency Response Team training to residents and businesses in Pittsburg; provide an organizing framework and support to neighborhood Community Emergency Response Team (CERT) teams, which may volunteer in the event of a serious earthquake or other major disaster. General Education for people and businesses. Expansion and Improvement: Include mitigation activities that enhance public awareness of hazards, advertise CERT and contribute to individual/family preparedness.
Code Enforcement Officer	Community Development	Investigates citizen complaints regarding the enforcement of municipal code violations, conducts inspections, notification, communication and the issuance of citations as a means of establishing a proactive response to citizens' concerns. Expansion and Improvement: Provide opportunities for continued education to Community Development staff to maintain state of the art knowledge for new code and regulatory requirements.
Fire Marshall	Contra Costa County Fire Protection District	Perform fire inspections for construction, commercial, multi-family occupancies, and high-rise buildings; conduct fire prevention, emergency evacuation, and extinguisher training to businesses and the public; conduct enforcement and identify and issue notices for fire code violations; update Fire Prevention Regulations to conform with currently adopted Codes, Regulations, and Standards; coordinate with industries for fire prevention. Expansion and Improvement: Continue to coordinate with the County Fire Marshall to update building codes and conduct inspections of new construction.
Floodplain Manager	Director of Community Development	As a member of the National Flood Insurance Program (NFIP) the Floodplain Manager is responsible for working with stakeholders to ensure the Floodplain Management Ordinance is followed within the City of Pittsburg.

Table 4-2: Administrative and Technical Capabilities

Personnel Resources	Department	Relation to Hazard Mitigation
		<p>Expansion and Improvement: Continue to manage the City’s NFIP participation. Support development of mitigation activities that are consistent with the best practices for floodplain management.</p>
Public Information Officer	City Manager’s Office, Police Department	<p>Provide public and media information regarding Pittsburg’s disaster response, mitigation, and recovery efforts.</p> <p>Expansion and Improvement: Continue to use public information officers to promote awareness of the HMP and activities associated with individual mitigation projects as they are implemented.</p>
Information technology and Geographic Information System	Finance Department; Engineering	<p>Provide the technical resources and support necessary to operate all of the applications relating to the City’s information resources; respond to the service needs to all departments based on citywide priorities as established by the City Manager; responsible for the training and effective use of all City technology computer hardware, software, and peripherals; provide internal coordination of technology efforts Citywide including substantial interface with all technology vendors to assure cost-effective, secure and reliable technologies compatible with the long-range needs of the City; provide high-quality spatial data to Pittsburg departments.</p> <p>Expansion and Improvement: Acquire and conduct training for GIS technicians on the latest versions of ArcGIS</p>
Risk Management	Human Resources Department; Finance Department	<p>Provide services to assist City departments in managing their risk of injury to employees, City property, and the public at large; purchase insurance for City departments and act in an advisory capacity with respect to workers’ compensation, public liability, City property, and City contracts.</p> <p>Expansion and Improvement: Continue to have Risk Manager provide input to support analysis of potential losses due to hazards. Update HMP based on current insurance values.</p>

4.1.3 Financial Capabilities

Table 4-3 contains a list of financial capabilities available to the City. Based upon procedures for each resource, these financial resources may be used to support mitigation activities.

Table 4-3: Financial Resources		
Financial Resource	Administrator	Purpose
General Fund	Department Specific	<p>Program operations and specific projects.</p> <p>Expansion and Improvement: Hazard mitigation projects may be considered during the annual budgeting process for funding from the general fund.</p>
Internal Services Funds	Department Specific	<p>Funds that were created to account for the cost and revenues of services provided to other City departments for which those departments are charged.</p> <p>Expansion and Improvement: Hazard mitigation projects may be considered during the annual budgeting process for funding from the general fund.</p>
Special Revenue Funds	Office of City Manager	<p>Special Revenue Funds are used to account for the proceeds of specific revenue sources that are legally restricted to expenditures for specific purposes.</p> <p>Expansion and Improvement: Where permissible, Special Revenue Funds may be considered during the annual budgeting process for funding mitigation project.</p>
Capital Outlay Funds	Department Specific	<p>Monies are transferred from various funds to this fund for City capital improvement projects and equipment approved by the City Council.</p> <p>Expansion and Improvement: Where permissible, Capital Outlay Funds may be considered during the annual budgeting process for funding mitigation project.</p>
Building Maintenance Fund	Public Works	<p>The Building Maintenance Division of the Department of Public Works Department (DPW) maintains and/or oversees maintenance and service contracts for all City owned buildings. User charges to respective City departments based on square footage provide the revenues to support the building maintenance function.</p> <p>Expansion and Improvement: Where permissible, Building Maintenance Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Sewer Operating Fund	Public Works	<p>The City maintains the collection system that transports the sewage to the treatment plant at Delta Diablo Sanitation District. The City charges water customers</p>

Table 4-3: Financial Resources

Financial Resource	Administrator	Purpose
		<p>who use the City’s sewer system sewer fees to cover the cost to operate and maintain the system. The non-single family and non-residential fees are based on a flat fee multiplied by their water consumption. The annual operation of the Sewer Fund generates approximately \$4.7 million in gross revenue and \$2 million in operating expenses.</p> <p>Expansion and Improvement: Where permissible, Sewer Operating Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Water Operating Fund	Public Works, Water Operations	<p>The City operates and maintains its own water treatment plant. The City charges water customers fees for water usage to cover the cost to procure water as well as operate and maintain the City’s water system. Currently the City provides water service to approximately 18,099 customers of which 94 percent are for residential locations. The annual operation of the Water Fund generates approximately \$19 million in gross revenue and \$12.8 million in operating expenses.</p> <p>Expansion and Improvement: Where permissible, Water Operating Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Water and Sewer Facility Reserve Charge Funds	Public Works	<p>A Facility Reserve Charge (FRC) or development impact mitigation fee is a charge to pay for public facilities in existence at the time the charge is imposed and serve new development, or to pay for new facilities that will be of benefit to the person or property being charged. The City has separate FRC’s for both the water and sewer utilities.</p> <p>Expansion and Improvement: Where permissible, Water and Sewer Facility Reserve Charge Funds may be considered during the annual budgeting process for funding mitigation project.</p>
Kirker Creek Drainage Fund	Engineering	<p>The City collects fees from developers of properties that are within the Kirker Creek Watershed Drainage Area. These fees are deposited into a separate special revenue fund to be expended solely for land acquisition, construction, engineering, administration, repair maintenance and operating of planned drainage facilities within the drainage area, or to reduce</p>

Table 4-3: Financial Resources

Financial Resource	Administrator	Purpose
		<p>the principal or interest of any bonded indebtedness of the drainage area.</p> <p>Expansion and Improvement: Where permissible, Kirker Creek Drainage Fund may be considered during the annual budgeting process for funding mitigation project.</p>
National Pollutant Discharge Elimination System (NPDES)	Community Development / Engineering	<p>NPDES is a joint effort of the Planning, Engineering and Public Works departments through the Contra Costa County Clean Water Program. Since 1993, the City has worked with Contra Costa County, Contra Costa County Flood Control and Water Conservation District and 15 other cities in the county to meet federal mandates for minimizing pollutants in storm water runoff. This revenue is used to fund its pro-rata share of the Clean Water Program’s staffing and overhead costs as well as local level activities necessary to comply with provisions of the joint Municipal Regional Permit (MRP).</p> <p>Expansion and Improvement: Where permissible, NPDES Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Solid Waste Fund	Environmental Services	<p>Solid Waste Management creates and implements programs and services for schools, City offices, businesses and the community by promoting waste prevention, reuse and recycling to meet the state-mandated, AB 939 waste diversion and SB 1383 organics management (percent waste diversion requirements leading to the eventual ‘zero-waste’ formula).</p> <p>Expansion and Improvement: Where permissible, Solid Waste Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Fleet Maintenance Fund	Public Works	<p>The Fleet Maintenance Division provides maintenance of the City’s 250 vehicle fleet. User charges to respective City departments based on the number of vehicles provide the revenues to support this function.</p> <p>Expansion and Improvement: Where permissible, Fleet Maintenance Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Information and Communication Fund	City Manager’s Office (IT within)	Centrally budgeted for the operation, maintenance and replacement of the Citywide network infrastructure, telephone, computer equipment and other hardware

Table 4-3: Financial Resources

Financial Resource	Administrator	Purpose
		<p>and software needs. User charges to other departments provide the revenues to support this function.</p> <p>Expansion and Improvement: Where permissible, Information and Communication Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Marina Fund	Pittsburg Marina	<p>Pittsburg’s Marina, with a total of 649 berths, is self-sufficient generating all of its revenues through the use of its berthing facilities and the sale of gasoline. The annual operation of the Marina Fund generates approximately \$2 million in gross revenue and \$2 million in operating expenses.</p> <p>Expansion and Improvement: Where permissible, Marina Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Pittsburg Power and Island Energy Fund	Pittsburg Power Company	<p>The Pittsburg Power Company (PPC) is a municipal utility formed under the California Constitution. The PPC does business in the City of Pittsburg and as Island Energy on Mare Island located in Vallejo, California as an Enterprise Fund, which distributes natural gas and electricity to the industries, schools, businesses and residents on Mare Island. Island Energy’s focus is to build capital asset value and income for the City of Pittsburg as Mare Island is redeveloped over time.</p> <p>Expansion and Improvement: Where permissible, Pittsburg Power and Island Energy Fund may be considered during the annual budgeting process for funding mitigation project.</p>
Community Development Block Grants (CDBG)	CMO and Community Services Department	<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 availability of supplemental appropriations.</p> <p>Expansion and Improvement: Where applicable, CDBG grants should be used to fund mitigation projects that enhance the resiliency of low income and underserved communities.</p>

Table 4-3: Financial Resources		
Financial Resource	Administrator	Purpose
Hazard Mitigation Grant Program (HMPG)	FEMA	Provides support for post-disaster mitigation plans and projects. Expansion and Improvement: Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
Building Resilient Infrastructure and Communities (BRIC)	FEMA	Provides support for pre-disaster mitigation plans and projects. Expansion and Improvement: Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
Flood Mitigation Assistance grant program (FMA)	FEMA	Mitigates structures and infrastructure that have been repetitively flooded. Expansion and Improvement: Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.

4.1.4 Education and Outreach Capabilities

Table 4-4 lists City financial and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information, or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Table 4-4: Education and Outreach Resources		
Name	Description (Effect on Hazard Mitigation)	Lead Organization
County Emergency/Disaster Readiness web site https://www.cocosherriff.org/disaster-preparedness/emergency-services-division	The County Sheriff’s website has educational material on making numerous programs including making an emergency plan, stocking supplies staying informed and getting involved. Expansion and Improvement: Provide links to the County web site on the City’s web site. Post material on social media accounts	Contra Costa County Emergency Services Division

	that provide a link to the appropriate County website page.	
CERT https://www.pittsburgca.gov/our-city/living/emergency-preparedness-cert	CERT Program is a 20-hour all-risk, all-hazard training offered by the County Fire Department. This valuable course is designed to help you protect yourself, your family, your neighbors, and your neighborhood in an emergency situation. Expansion and Improvement: Include CERT material in City Newsletter and E-Blasts that provides updates to progress in the mitigation action plan and contains links to the appropriate website page.	Emergency Services / Police Department
City Website Emergency Preparedness Information https://www.pittsburgca.gov/services/emergency-services	FEMA Ready Gov and others. Link to information on earthquake preparedness, heat risk, storm readiness, run hide fight/active shooter, fire home safety (i.e., risk awareness and preparedness information). Expansion and Improvement: Devote a page on the website to post the HMP and provide updates on the progress of the mitigation action plan.	Emergency Services

4.1.5 National Flood Insurance Program Participation and Compliance

The City of Pittsburg adopted the Model Floodplain Management Ordinance within the City in order to maintain eligibility within the National Flood Insurance Program. **Table 4-5** contains information is from the FEMA Community Status Book Report for communities participating in the NFIP.

Table 4-5: NFIP Participation Information for the City of Pittsburg						
CID	Community Name	County	Initial FHBM Ident	Initial FIRM Ident	Current Eff Map	Date Reg-Emer Date
060033C	City of Pittsburg	Contra Costa	06/21/74	08/15/80	03/21/17	8/15/80

Since 1968 the National Flood Insurance Program (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 Pittsburg Municipal Code (PMC) Chapter 15.80, passed in 1999, 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 Pittsburg 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 Pittsburg 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 as outlined in the Storm Water Management Plan.

There is only one entity located in the Special Flood Hazard Area (SFHA), Integral Communities and is now the Bay Walk Development of single family homes, commercial and multi family. It is unknown if Integral Communities has purchased a NFIP policy, or if they are self-insured for damage to the facilities.

4.2 HAZARD IDENTIFICATION

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, an accidental release of hazardous materials).

The requirements for hazard identification, as stipulated in DMA 2000 and its implementing regulations are described below.

FEMA REGULATION CHECKLIST: RISK ASSESSMENT

Hazard Identification

44 CFR § 201.6(c)(2)(i): The risk assessment shall include a description of the type of all natural hazards that can affect the jurisdiction.

Elements

B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Requirement § 201.6(c)(2)(i).

B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for the jurisdiction? See 44 CFR § 201.6(c)(2)(i).

B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? Requirement § 201.6(c)(2)(ii).

B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? Requirement § 201.6(c)(2)(ii).

Source: FEMA, *Local Mitigation Planning Handbook Review Tool*, March 2013.

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.

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4.2.1 City Disaster Proclamation History

The planning team reviewed historical information and more recent past events to identify hazards where an emergency or disaster was proclaimed within the City. **Table 4-6** shows the emergency or disaster proclamation history for the City.

Table 4-6: Emergency or Disaster Proclamations		
Year	Resolution Number	Emergency/Disaster Type
2020	Proclamation	Local emergency and imposition of a curfew ordered by the Director of Emergency Services on June 2, 2020, in response to possible civil unrest
2020	20-3757	Local Emergency based on COVID-19 pandemic commencing March 16, 2020
1998	98-8573	Local Emergency based on Winter Storm Activity commencing on February 3, 1998
1997	97-8415	Local Emergency based on Winter Storm Activity commencing on January 22, 1997

4.2.2 Disaster Proclamation 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 Contra Costa Operational Area as soon as possible for transmission of the resolution 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 the Federal Emergency Management Agency (FEMA).

The table below lists the State and Federal disaster declarations affecting Contra Costa County, which encompass the cities within the County. Disaster proclamations for hazards that are not present in Pittsburg (dam failure, landslides, fruit fly infestations, etc.) were excluded from **Table 4-7** lists a

history of Contra Costa County emergency proclamations.

Year	Disaster #	Hazard	Declaration
1/20/2002 - Continuing	DR 4482	COVID-19 Pandemic	Federal/State
2/1-23/2017	DR 4308	Winter Storm Event	Federal/State
1/18-23/2017	DR 4305	Winter Storm Event	Federal/State
1/3-12/2017	DR 4301	Winter Storm Event	Federal/State
04/28/2009		H1N1 Swine flu	State
2/27/2009		Drought	State
11/9/2007		Oil spill – Cosco Busan	State
05/10/2006	DR 1646	Winter storms	State
12/15/2005	DR1628	Winter storms/flooding	Federal/State
02/02/1998	DR 1203	Severe flooding/landslides	Federal/State
01/10/1995	DR1046	Severe winter storms	Federal/State
01/13/1995	DR1044	Severe winter storms	Federal/State
01/15/1993	DR979	Winter storms (snow, rain, high winds)	Federal/State
11/17/1989	DR845	Earthquake (Loma Prieta)	Federal/State
02/18/1986	DR758	Winter storms (rain, wind, flooding, landslides)	Federal/State
02/09/1983	DR677	Winter storms	Federal/State
01/07/1982	DR651	Winter storms	Federal/State
01/23/1980	0378-EM-CA	Delta levee break	State
1/26/1969	DR253	Winter storms	Federal/State
10/24/1962	DR138	Flood/rainstorms	Federal/State
04/04/1958	DR82	Winter storm/ flood damage	Federal/State
12/23/1955	DR47	Floods	Federal/State

This disaster history (combined federal and state) suggests that Contra Costa County, including the City of Pittsburg, could experience a major incident worthy of a disaster declaration every 3.3 years, and 13 out of the 18 disaster declarations were the result of severe weather. Similarly, most disaster-related injuries to people and damage to property resulted from severe weather.

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 the Federal Emergency Management Agency (FEMA).

4.3 HAZARD CHARACTERIZATION AND PROFILES

The requirements for hazard profiles are stipulated in DMA 2000 and its implementing regulations. Based on the CPRI scores 12 hazards that the planning team selected for the 2022 HMP have been profiled using federal, state, regional, and local resources that have mapped, documented, or reported on them. Both natural and man-made hazards are included. 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. Except for the future earthquake probability, which was taken from the third Uniform California Earthquake Rupture Forecast (UCERF3), the probability of future hazard events was calculated based on existing data. Probability was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of an event happening in any given year (e.g., three (3) tornados over a thirty (30) year period equates to a ten percent (10%) chance of a tornado in any given year).

This section of the HMP includes requirements for hazard profiles and a risk assessment, as provided in the Code of Federal Regulations.

FEMA REGULATION CHECKLIST: RISK ASSESSMENT

Hazard Identification

44 CFR § 201.6(c)(2)(i): The risk assessment shall include a description of the type of all natural hazards that can affect the jurisdiction.

Elements

B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Requirement § 201.6(c)(2)(i).

B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for the jurisdiction? See 44 CFR § 201.6(c)(2)(i).

B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? Requirement § 201.6(c)(2)(ii).

B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? Requirement § 201.6(c)(2)(ii).

Source: FEMA, *Local Mitigation Planning Handbook Review Tool*, March 2013.

The hazards that exist in Pittsburg are profiled below. Each hazard profile includes a description of the type, location, extent, previous occurrences, and probability of future events within the description. Maps and graphs are used in this plan to display hazard identification data. Except for

the future earthquake probability, which was taken from the third Uniform California Earthquake Rupture Forecast (UCERF3), the probability of future hazard events was calculated based on existing data. Probability was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of an event happening in any given year (e.g., three tornados over a 30-year period equates to a 10 percent chance of a tornado in any given year). The likelihood of future occurrences is categorized into one of the following classifications:

- Highly Likely—Near 100 percent chance of occurrence in the next year or happens every year.
- Likely—Between 10 and 100 percent chance of occurrence in the next year or has a recurrence interval of 10 years or less.
- Occasional—Between 1 and 10 percent chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.
- Unlikely—Less than 1 percent chance of occurrence in the next 100 years or has a recurrence interval of greater than every 100 years.

4.3.1 Civil Unrest

Description:

Civil unrest 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 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 has the potential to result in injuries, loss of life, and destruction of property. Heightened vigilance and strategic organization, and training on the part of law enforcement can mitigate damage and casualties from civil disturbances.

History:

City police departments in the San Francisco Bay Area region have dealt with civil unrest on many occasions. Recent examples include the October 2014 Major League Baseball San Francisco Giants World Series victory riots, 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 counter demonstrations 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:

- Major League Baseball San Francisco Giants World Series Victory Riots 2014: A celebration in San Francisco's streets as a result of the Giants' World Series victory on October 29, 2014, turned violent in some areas with people injured by gunfire, officers hurt by bottles thrown by revelers, and police making arrests. Violence left three people injured, two by gunshots and one in a stabbing.
- Ferguson Verdict Civil Unrest 2014: Hundreds of people marched through downtown Oakland, blocked traffic on Interstate-580, broke windows, and set small fires during a night of protests on November 24, 2014, over a grand jury's decision not to indict Ferguson, Missouri police Officer Darren Wilson in the fatal shooting of Michael Brown. More than 40 people were arrested.
- Black Lives Matter Protesters Block Bay Bridge 2016: Protesters linked with the Black Lives Matter movement chained themselves together on the busy San Francisco-Oakland Bay Bridge on Monday, January 18th, 2016, blocking rush-hour traffic traveling toward San Francisco. Bridge traffic was stopped for more than 30 minutes before California Highway Patrol officers partially reopened the five westbound lanes later on in the afternoon.
- George Floyd Killing Protests: From May 30 through June 5, 2020, protests occurred throughout the Bay Area including in Pittsburg. The City imposed a curfew starting at 6:00 p.m. that lasted from June 2 through 5, to limit potential violence.

Location:

The entire San Francisco Bay Area region is vulnerable to civil unrest. While there are no specific hazard zones that can be identified or predicted for civil unrest, dense population centers located in highly urban areas such as Oakland and San Francisco are more likely to experience this hazard.

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 San Francisco and Oakland City Halls as well as the San Francisco-Oakland Bay Bridge are considered most at risk since several demonstrations or rallies have originated in these locations in the past. 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, such as regional ports and ferry landings, etc., 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, however, any assets owned by local government organizations/agencies may be considered vulnerable to damage or destruction as a result of civil unrest.

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 Bay Area jurisdictions from time to time. Because of the extreme unpredictability of civil unrest events, no specific estimates can be made concerning potential losses.

4.3.2 Climate Change

Description:

The earth's climate is changing. The State has warmed about two degrees F(2°F) in the last century. Throughout the southwestern United States, heat waves are becoming more common, and snow is melting earlier in spring. In the coming decades, changing climate is likely to decrease the flow of water in the Colorado River, threaten the health of livestock, increase the frequency and intensity of wildfires, and convert some rangelands to desert.

Our climate is changing because the earth is warming. People have increased the amount of carbon dioxide in the air by forty percent (40%) since the late 1700s. Other heat-trapping greenhouse gases are also increasing. These gases have warmed the surface and lower atmosphere of our planet about one degree (1.0°F) during the last fifty (50) years. Evaporation increases as the atmosphere warms which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places, but contributes to drought in others. Greenhouse gases are also changing the world's oceans and ice cover. Carbon dioxide reacts with water to form carbonic acid, so the oceans are becoming more acidic. The surface of the ocean has warmed about one degree (1.0°F) during the last eighty (80) years.

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, that 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. The 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. 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 concentrations of heat-trapping gases in the atmosphere are also increasing.
- **Weather and Climate:** Average U.S. and global temperatures are increasing while attributes of weather and climate, such as precipitation, drought and tropical cyclone activity are

changing.

- **Oceans:** Average oceanic temperatures are increasing. Sea levels are rising around the world due to thermal expansion and increases from ice melt, and waters are becoming more acidic.
- **Snow and Ice:** Glaciers in the U.S. and around the world 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 ten (10) out of eleven (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 history of the planet. 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 temperature of the planet correlates to the amount of solar radiation arriving at the surface and with it the climate.

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, one 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, the pattern of temperature variation and glaciation has lagged atmospheric carbon dioxide (CO₂) content.

Figure 4.1 depicts global variations during the past 400,000 years as a correlation between temperature and atmospheric CO₂ content in part per million.³

³ Hogg, A.M., 2008, Glacial cycles and carbon dioxide: A conceptual model. *Geophysical Research Letters*, 35, L01701

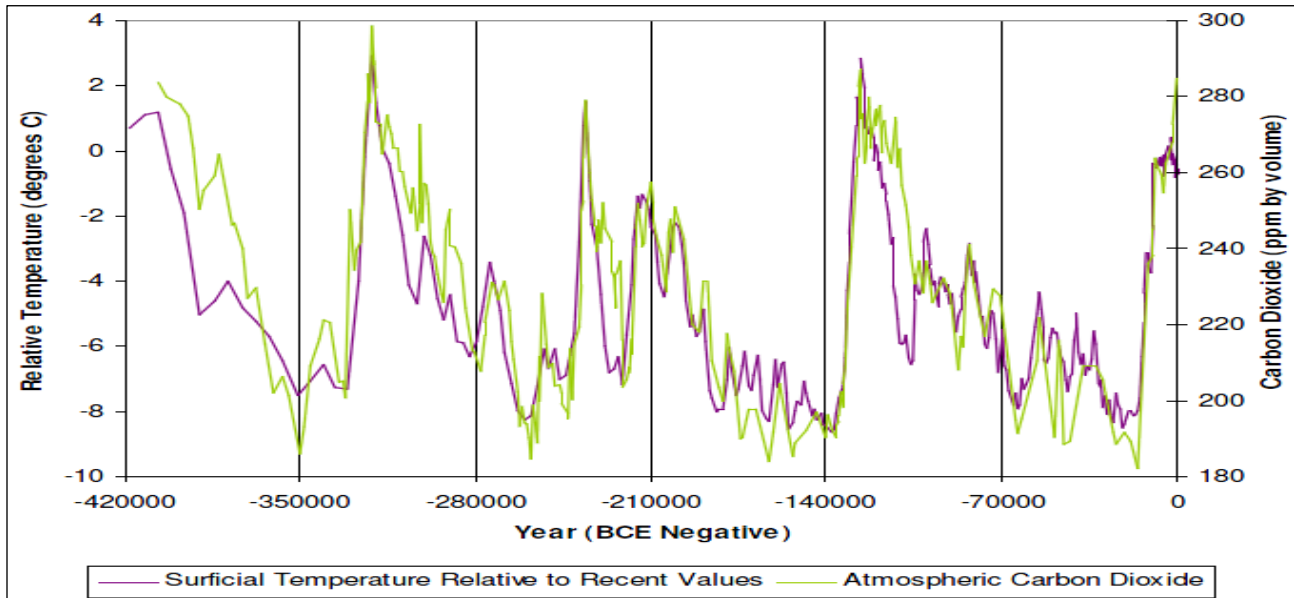


Figure 4.1: Temperature and Atmospheric CO2 Variation Past 400,000 Years

Since 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.⁴

⁴ NOAA

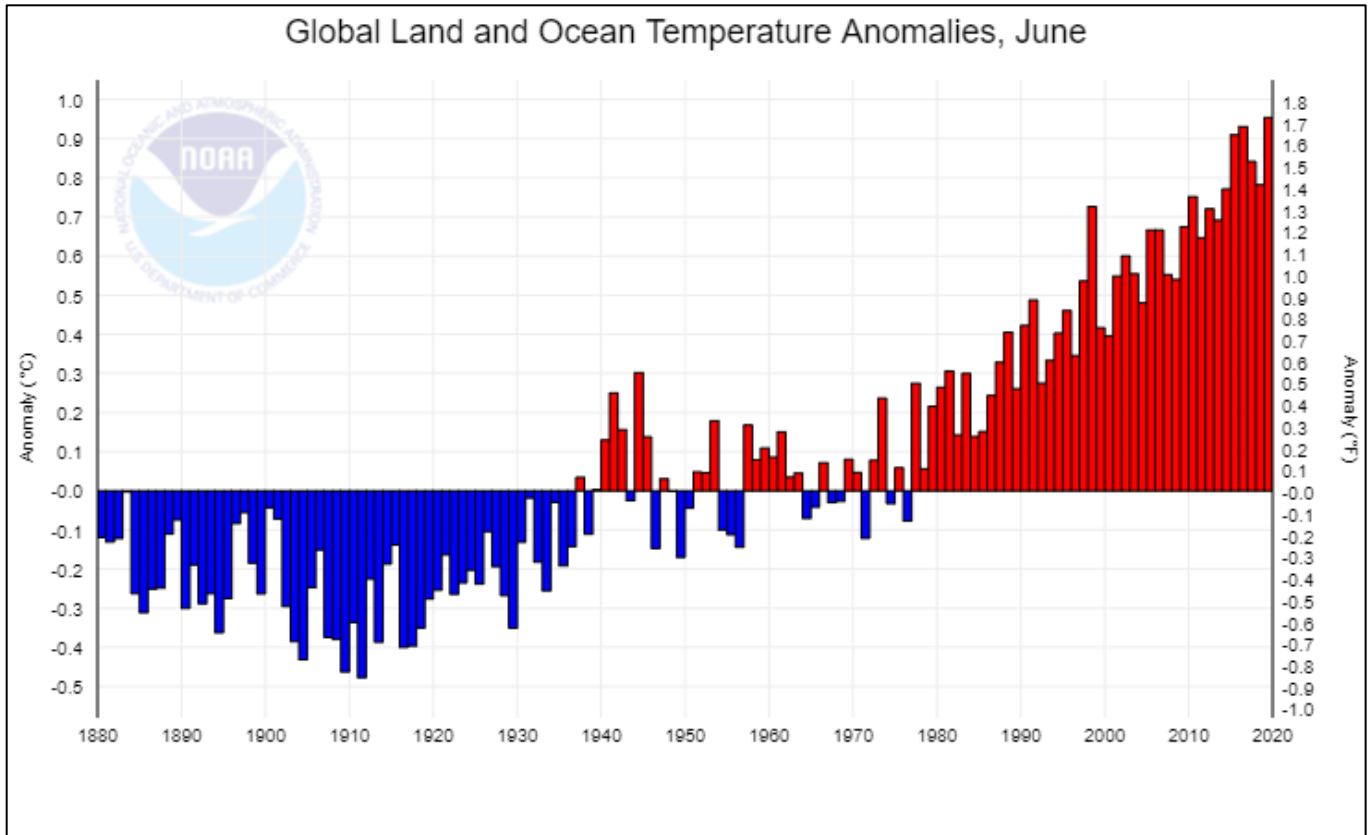


Figure 4.2: Temperature Rise Since 1880

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.

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 include:

Increasing droughts and higher temperatures are likely to affect California’s top agricultural products including cattle, dairy, and vegetables. Hot temperatures threaten the health of cows and causes 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 availability of water 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 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 desert or grassland.

Warmer and drier conditions make forests more susceptible to pests. Drought reduces the ability of trees to mount a defense 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.

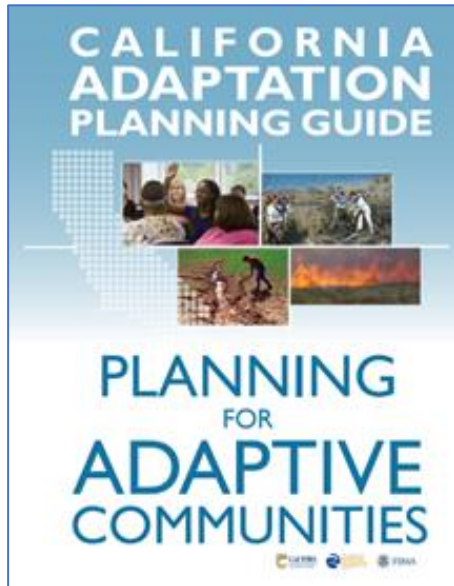
Hot days can be unhealthy, even dangerous. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. High air temperatures can cause heat stroke and dehydration and affect people's cardiovascular, respiratory, and nervous systems. Higher temperatures are amplified 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 a variety of health effects, aggravates lung diseases such as asthma, and increases the risk of premature death from heart or lung disease. Both 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.

Regulatory Context:

The State of California has stepped into a leadership role in planning for both the reduction of greenhouse gas emissions and the adaptation 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 the reporting and verifying of 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 in 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 a vulnerability assessment and identifying potential adaptation strategies.

Impacts:

Climate change by itself is not likely to cause potential losses to infrastructure or affect services to populations. Effects that are secondary to climate change such as greater likelihood of flooding due to more frequent storms or more annual days with excess heat are included in individual hazard such as flood or excess heat. The result is climate change as a standalone hazard is assigned a zero percent loss. There are multiple secondary impacts from climate change.

Effects that are secondary to climate change such as greater likelihood of flooding due to more frequent storms or more annual days with excess heat are included in individual hazard such as flood or excess heat. The result is climate change as a standalone hazard is assigned a zero percent loss. The Table below lists multiple secondary impacts from climate change.

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	Heat & Heat Waves	Drought	Loss of Snow	Floods	Wildfire Risk
CLIMATE SCIENCE					
Historical Trends	Increasing temp; Rates of increase are higher in urban areas than rural areas	Increasing evaporative demand; More drought that not in last 10 years	Decrease between 20-60% from 1955-2016	No historical trends; Most recent flooding events are 2017 and 2006	Between 1984-2017, 4 of the 5 years with the largest area burned have occurred since 2005.
Projected Trend & Confidence	Increase in average temp; Increase in frequency and severity of heat waves HIGH Confidence	Increase in frequency and intensity Confident	By the end of this century, projections indicate a potential 30-50% reduction in April snowpacks; Earlier snow melt HIGH Confidence	More frequent flooding; Confident	Increase of invasive species, increasing fire spread; Increase drying of fuels; Increase precipitation variability affecting fuel production HIGH Confidence
IMPACTS					
Public Health	Increased risk of mortality and morbidity; Increase in preterm births	Potential for mental health impacts; Increased dust due to drying and lowered water levels in desert terminal lakes	Greater change of flooding and associated safety risks	Greater risks to public safety, private property, and infrastructure	Wildfire smoke decrease air quality; Increase in respiratory illness; Increases in hospitalizations and emergency room visits
Water Resources	Degradation of water quality; Increased water loss due to higher evaporative demand	Increase in demand and decrease in supply, limiting water availability for all sectors	Loss of a natural reservoir, reduced water storage; More growing days increasing water demand	Decrease in water quality; May limit the ability to capture rainwater for water supply (i.e., too much, too fast)	Potential erosion leading to changes in biogeochemical cycling and water quality
Environment	Species' ranges will shift; Some local extinctions; Negative impacts on wildlife health including higher mortality	Drought impacts to plant health and growth; Potential for plant mortality	Less and earlier-in-the-year availability of surface water and ground water limiting the bioavailability of water	Increased sheet and river bank erosion affecting Riparian habitats	More cheatgrass, loss of native sagebrush further increasing wildfire risk; Loss of forested areas will impact erosion and sedimentation into watersheds; Negatively impacts wildlife species
Recreation & Hospitality	Decrease in time available to be safely outside; Deterrent to attracting visitors	Partial loss of recreational opportunities due to limited snow pack; Dust to negatively impact tourism	Partial loss of recreational opportunities due to decline of snow pack	Flooding impacts in downtown areas of Reno and Las Vegas; Road closures due to flood and landslide risk following wildfire	Increased fire risk and smoke may lead to loss of tourism and recreation during fire season
Ag and Ranching	Health impacts of being outdoors during heat waves; Heat impacts to livestock health and milk production; Longer growing seasons and new crop varieties; Impacts to plant health and crop production; Delayed or reduced production from adapting to shifting seasons and crop performance	Potential decrease on crop yield and production; Decreased forage quantity, range condition; Water hauling needs; Reduction in use of federal land; Increased need of feeding hay; Reduction in land available for production	Earlier and longer duration of irrigation needs due to decrease in run-off later in the season; Reduced irrigation capacity due to lack of water availability; Reduction in rangeland production	Increase erosion and soil loss; Potential crop loss/damage; Damage to water holding and confinement structures; Microbial contamination of crops	Direct livestock losses; Potential impact on forage production due to wildfire-induced changes in vegetation cover including noxious weeds; Crop and forage loss; Federal land permits closed or temporarily closed due to fire; Loss of infrastructure

Probability of Future Events:

Climate change is an ongoing and accelerating process. Essentially, it has occurred, is occurring, and will continue to occur for several decades, centuries or longer.

4.3.3 Drought

Description:

Drought is an extended period of years when a region is deficient in its water supply or consistently receives below average precipitation. Drought patterns in the West are related to large-scale climate patterns in the Pacific and Atlantic oceans, such as the El Niño–Southern Oscillation in the Pacific, and the Atlantic Multidecadal Oscillation in the Atlantic. As these large-scale ocean climate patterns vary in relation to each other, drought conditions in the U.S. shift from region to region. Drought produces a variety of impacts that span many sectors of the economy such as reduced crops, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in reduced income for farmers and agribusiness, increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, migration, and foreclosures on bank loans to farmers and businesses.

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 of time, 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 four definitions commonly used to describe it:

- **Meteorological** – Drought is defined solely on 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 streamflows 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 weather-related supply shortfall. It may also be called a water management drought.

A drought's severity depends on numerous factors including duration, intensity, and geographic extent as well as 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 difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three 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.

History:

Since record keeping began, California and the western region of the U.S. have experienced several multi-year drought conditions. The last 22 years are depicted in **Figure 4.3**.⁵

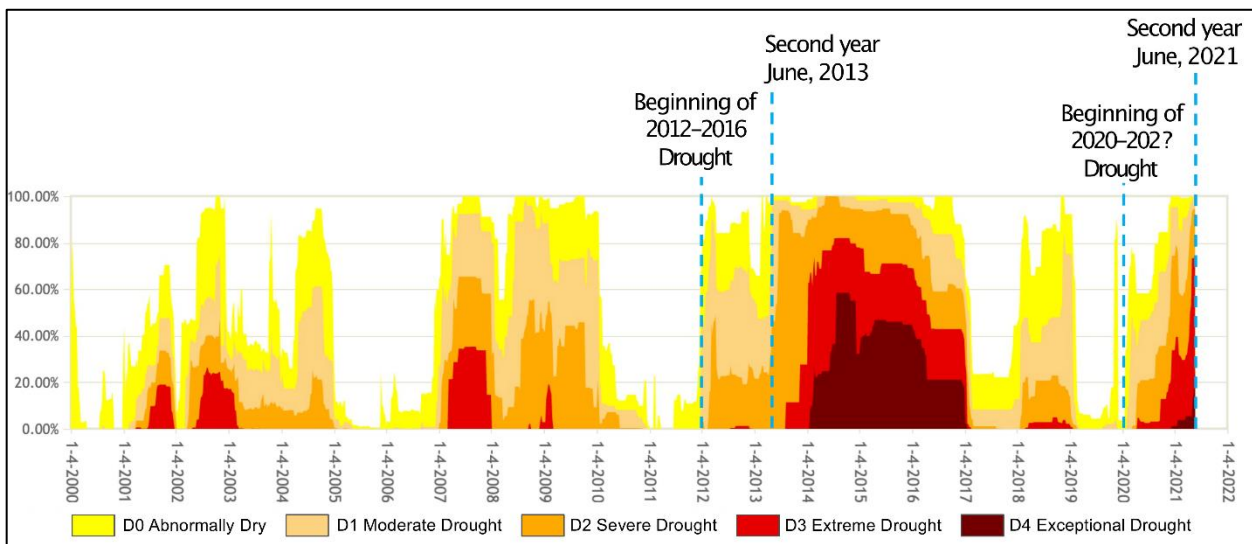


Figure 4.3: History of Droughts in California

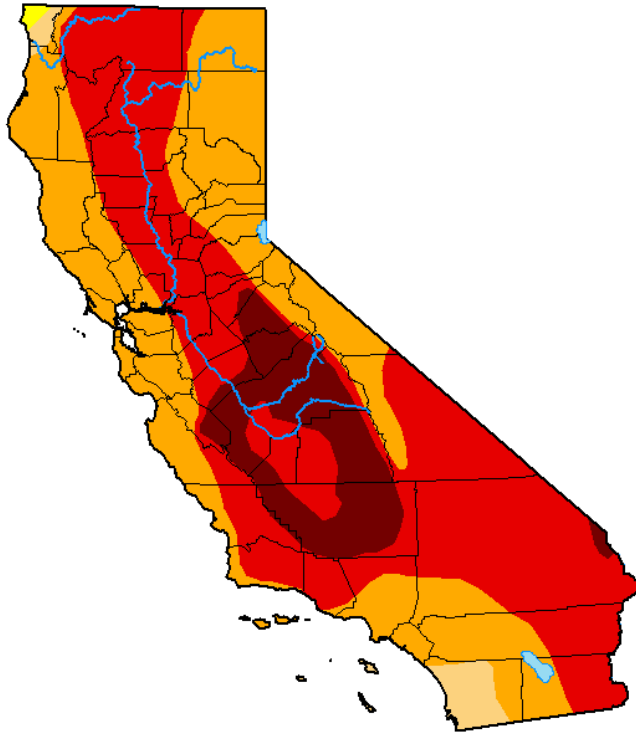
The City experienced severe drought from April 2007 through December 2009 and severe to exceptional drought February 2013 through January 2017. A severe to exceptional drought began in 2020 and is continuing. *Source: U.S. Drought Monitor.*

The following maps show the extent of drought conditions in California from August 2022 and January 2017, and 2012.







⁵ <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>

U.S. Drought Monitor
California

August 2, 2022
(Released Thursday, Aug. 4, 2022)
Valid 8 a.m. EDT



Intensity:

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <http://droughtmonitor.unl.edu/About.aspx>

Author:

Curtis Riganti
National Drought Mitigation Center

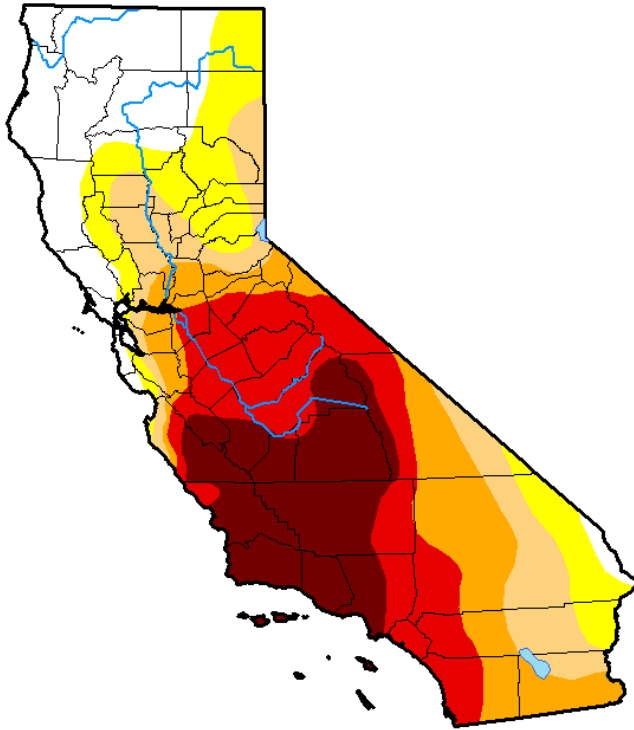


droughtmonitor.unl.edu

Figure 4.4: California Drought Monitor August 2022

U.S. Drought Monitor California

January 3, 2017
(Released Thursday, Jan. 5, 2017)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	18.07	81.93	67.61	54.02	38.17	18.31
Last Week <i>12-27-2016</i>	17.47	82.53	68.87	57.79	40.60	18.31
3 Months Ago <i>10-04-2016</i>	0.00	100.00	83.59	62.27	42.80	21.04
Start of Calendar Year <i>01-03-2017</i>	18.07	81.93	67.61	54.02	38.17	18.31
Start of Water Year <i>09-27-2016</i>	0.00	100.00	83.59	62.27	42.80	21.04
One Year Ago <i>01-05-2016</i>	0.00	100.00	97.33	87.55	69.07	44.84

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC

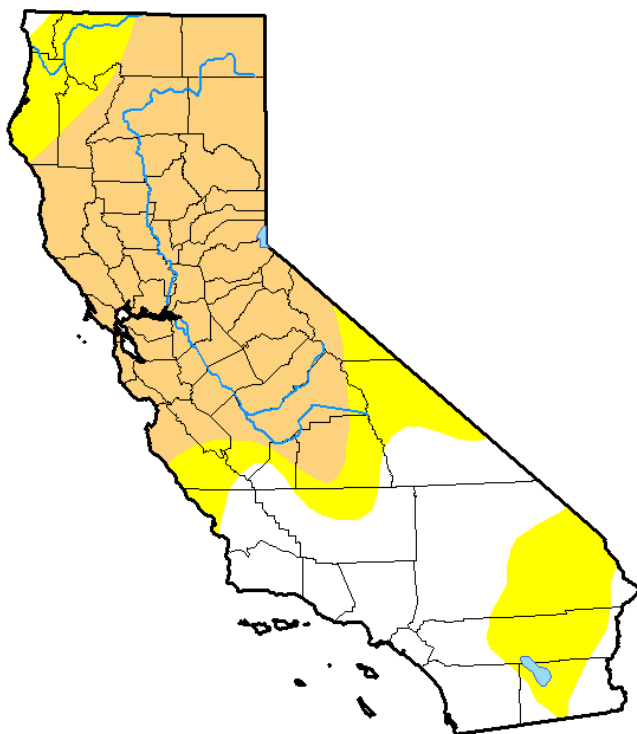


<http://droughtmonitor.unl.edu/>

Figure 4.5: California Drought Monitor January 2017

U.S. Drought Monitor California

January 3, 2012
(Released Thursday, Jan. 5, 2012)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	29.91	70.09	46.34	0.00	0.00	0.00
Last Week <i>12-27-2011</i>	33.91	66.09	5.41	0.00	0.00	0.00
3 Months Ago <i>10-04-2011</i>	89.25	10.75	0.00	0.00	0.00	0.00
Start of Calendar Year <i>01-03-2012</i>	29.91	70.09	46.34	0.00	0.00	0.00
Start of Water Year <i>09-27-2011</i>	89.14	10.86	0.00	0.00	0.00	0.00
One Year Ago <i>01-04-2011</i>	98.62	1.38	0.00	0.00	0.00	0.00

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brad Rippey
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

Figure 4.6: California Drought Monitor January 2012

Location:

When a drought is in effect, the entire region is affected. California experienced an unprecedented drought beginning in 2012 that lasted through 2016, the longest drought in over a century. Reservoirs, groundwater basins and ecosystems were at half-capacity or less. 2014 was the state's third driest in 119 years of record, based on statewide precipitation.

Extent:

Drought is classified by a variety of indices and categories. **Figure 4-7** below depicts three that are widely used. It contains severity classification ranges for each indicator for each dryness level. Because the ranges of the various indicators often do not coincide, the final drought category tends to be based on what the majority of the indicators show and on local observations.

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44+	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

*NDMC - National Drought Mitigation Center

Figure 4-7: Drought Severity Classifications

Additionally, the Palmer Drought Severity Index (PDSI) uses readily available temperature and precipitation data to estimate relative dryness. It is a standardized index that generally spans -10 (dry) to +10 (wet). Maps of operational agencies like NOAA typically show a range of -4 to +4 but more extreme values are possible. The PDSI has been reasonably successful at quantifying long-term drought. The drought map in the location section above is a PDSI product.

Impacts:

Within the City, severe drought may result in water rationing resulting in loss of public and private landscaping. Region-wide, drought results in large-scale tree die-off which increases 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.

Impact of Climate Change:

Climate change is already having a profound impact on California water resources as evidenced by changes in snowpack, sea-level, and river flows. These changes are expected to continue in the future

and more precipitation will likely fall as rain instead of snow. This potential change in weather patterns will add additional challenges for 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 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 to use.

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 State Water Board was created by the Legislature 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 is responsible for the management of water usage including the delivery of water to two-thirds of California's population through the State Water Project.

Probability of Future Occurrences:

As this HMP is being developed, a severe drought is occurring. After an extremely wet winter during 2017 – 2018, drought conditions returned in 2020 and are continuing. An extreme multiyear drought as intense as the 2012 - 2016 drought could impact the region again. Reservoir levels in California are unprecedented, and a combination of low precipitation and unusually high temperatures could occur over the next several, consecutive years. Intensified by such conditions, extreme wildfires could continue to break out throughout the region, increasing the need for water.

4.3.4 Earthquake and Seismic Hazards

Descriptions:

An earthquake is a sudden motion or trembling caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the epicenter (i.e., where the earthquake originates). Earthquakes usually occur without warning and can cause massive damage and extensive casualties in just a few seconds. Ground motion and shaking, surface fault ruptures, and ground failure are common effects of earthquakes. Ground

motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate and cause the ground to vibrate. The severity of the vibration increases as the amount of energy released increases and decreases with distance from the fault or epicenter.

Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude and depth, and the type of earthquake.

- **Ground Shaking:** Ground shaking is the motion felt on the earth's surface caused by seismic waves from an earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.
- **Amplification:** Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and other structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment-filled basins and ridge tops.
- **Earthquake-Induced Landslides:** Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake and are common in areas with steep slopes.
- **Liquefaction:** Liquefaction, a secondary earthquake hazard, occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases, this ground may be subject to liquefaction, depending on the depth of the water table. Liquefaction occurs primarily in saturated and loose, fine- to medium-grained soils, in areas where the groundwater table lies within fifty (50) feet of the ground surface. **Figure 4-8** depicts potential liquefaction locations in the Bay Area.⁶

Earthquake faults are indications of past seismic activity. Those that have been active most recently are the most likely to be active in the future. According to the California Geological Survey Alquist-Priolo Earthquake Fault Zoning Act, an “active” fault is one that has ruptured in the last 11,000 years. Faults that are “potentially active” have been active within the last two (2) million years and are referred to as being in the Quaternary Period.

⁶ <https://earthquake.usgs.gov/hazards/urban/sfbay/liquefaction/sfbay/>

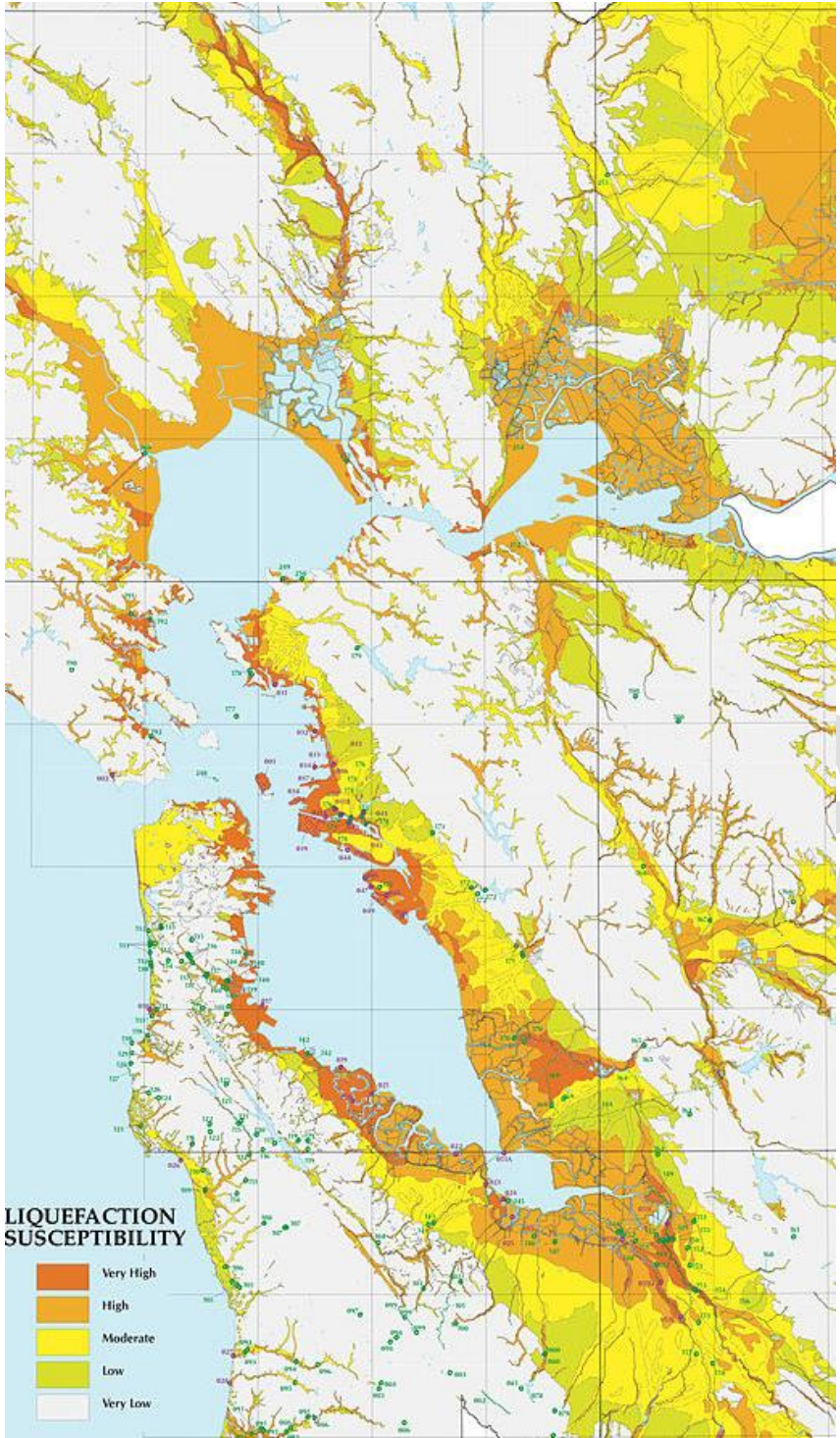


Figure 4-8: Bay Area Potential Liquefaction Zones

History:

Central California is one of the most seismically active areas in the U.S. The region has experienced at least 22 earthquakes of Magnitude 6.0 or higher since 1850. **Table 4-8** contains a list of earthquakes in the region with a magnitude greater than 6.0.

Date	Magnitude	Fault Name (Incident Name)
August 24, 2014	6.0	West Napa Fault (South Napa Earthquake)
December 22, 2003	6.5	San Simeon Fault (San Simeon)
October 17, 1989	6.9	San Andreas Fault (Loma Prieta)
April 24, 1984	6.2	Calaveras Fault (Morgan Hill)
November 4, 1927	7.1	San Simeon-Hosgri Fault (Lompoc)
April 18, 1906	7.9	San Andreas Fault (San Francisco)
October 22, 1868	6.8	Hayward Fault (Hayward)

Location

The City is located in a seismically active area. The Alquist-Priolo Act requires that the California Geologic Survey identify faults in the state that may pose a risk of fault rupture. These faults, known as Alquist-Priolo faults, can create a significant ground-shaking event and include most of the major faults present in California. While there are no Alquist-Priolo faults within the City, there are many of these faults in the surrounding area. The most active strike-slip fault is the Hayward Fault, which has three fault segments (Rodgers Creek, North Hayward, and South Hayward).

The following active faults, most of which are designated as Alquist-Priolo faults, are located within 60 miles of the community and are capable of producing significant earthquakes:

- **San Andreas Fault:** West of Pittsburg, the San Andreas Fault (the largest fault in California) is the major tectonic boundary between the Pacific and North American plates. The Pacific plate is moving northwest relative to North America while the North American plate is moving southward. The San Andreas Fault has a Maximum Earthquake Potential (MW) of 8.0.
- **Hayward Fault:** The Hayward Fault runs along the western portion of Contra Costa County and is divided into southern and northern segments. This Hayward Fault is considered to be the most likely source of the next major earthquake in the San Francisco Bay Area. The Hayward Fault was assigned a MW 6.9 for both the northern and southern segments.
- **Rodgers Creek Fault:** The Rodgers Creek Fault lies in the northern central portion of Contra Costa County and is a right-lateral strike-slip fault. The Rodgers Creek Fault has a predicted earthquake recurrence interval of 230 years with a MW 7.0.
- **Calaveras Fault:** The Calaveras Fault represents a significant seismic source in the southern and eastern San Francisco Bay region. It runs east of San Jose, and along the Pleasanton-Dublin-San Ramon urban corridor, including Highway 680. Seismologic evidence suggests

that the southern and central sections of this fault may produce earthquakes as large as MW 6.2, while the northern section of the fault may produce earthquakes as large as MW 7.0.

- **Concord-Green Valley Fault Zone:** The Concord-Green Valley Fault is a right-lateral strike-slip fault zone that extends from the Walnut Creek area across Suisun Bay and continues to the north. The Concord fault extends approximately 12 miles, from the northern slopes of Mt. Diablo to Suisun Bay. North of Suisun Bay, the Green Valley fault continues to the north about 28 miles. It is estimated that the recurrence interval for these faults is approximately 180 years and a rupture of both faults would produce a maximum earthquake of about MW 6.9.
- **Greenville-Marsh Creek Fault:** The Greenville-Marsh Creek Fault is a strike-slip fault of the San Andreas system extending from Bear Valley to the east side of Mount Diablo. It is estimated this fault has a maximum earthquake of MW 6.9 to the Greenville portion of the fault with a recurrence interval of about 550 years.
- **Pittsburg-Kirby Hills Fault:** The Pittsburg-Kirby Hills fault extends some distance from the Kirby Hills north of the Sacramento River, to the eastern side of Mount Diablo, south of Pittsburg. The fault is believed to be a right-lateral strike-slip capable of generating a MW 6.75. In the vicinity of Pittsburg, the fault is defined as the Pittsburg-Kirby Hills Fault Zone and is located approximately miles to the west of the Standard Oil site. A study (Terrasearch, 2005) however, found no evidence that the fault is active.
- **Mount Diablo Thrust Fault:** The Mount Diablo thrust fault is a northeast-dipping structure located beneath the Mount Diablo anticline. This blind thrust fault is considered capable of generating a maximum earthquake of Mw 6.25.

Pittsburg has no known earthquake faults within its boundaries, but due to the close proximity of several faults, the entire City is equally subject to the earthquake hazard as shown on the **Figure 4-9 San Francisco Bay Area Major Seismic Faults.**⁷

⁷ CA Department of Conservation, 2010 Fault Activity Map, <http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html>

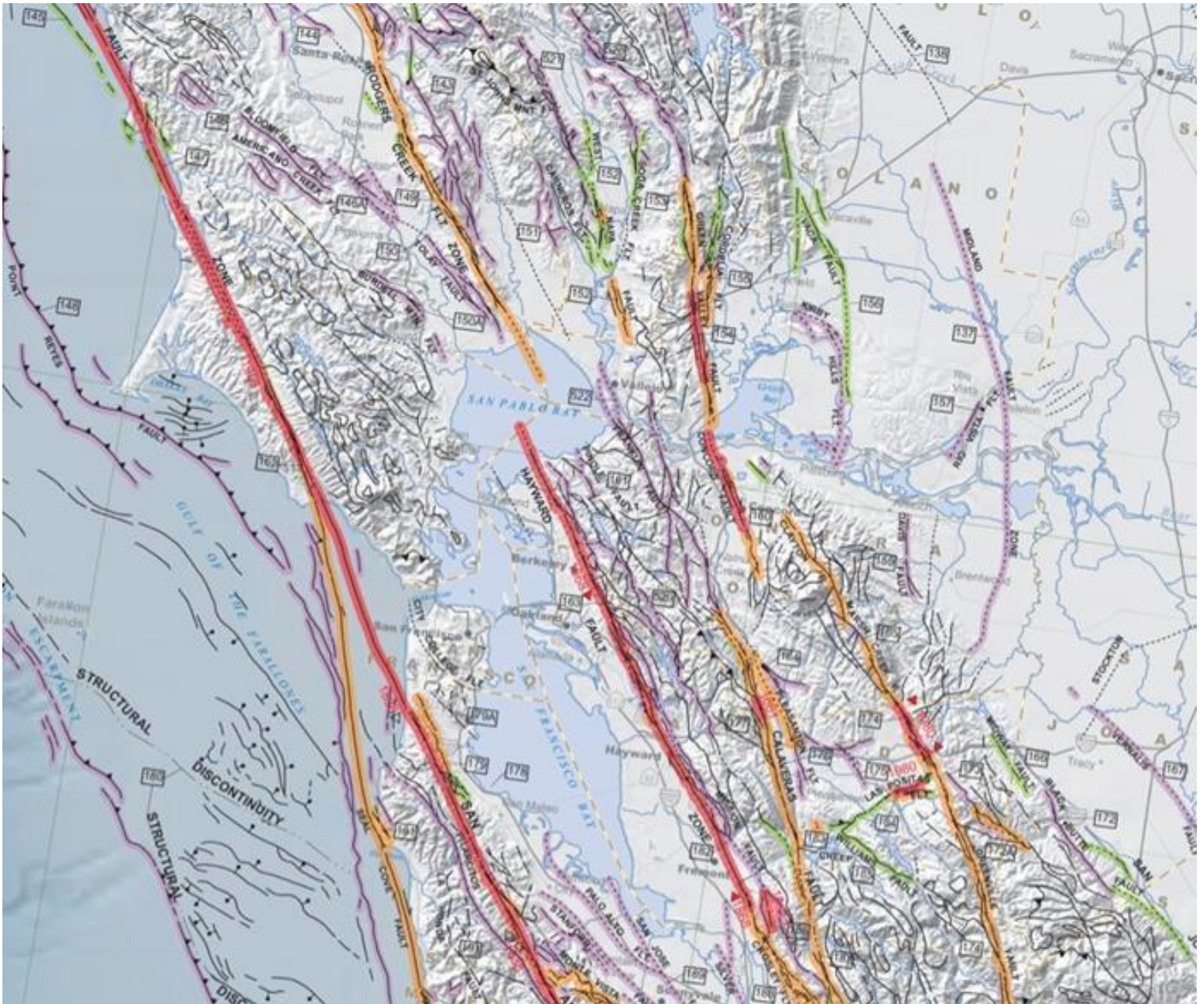


Figure 4-9: San Francisco Bay Area Major Seismic Faults

The City of Pittsburg could be affected in varying degrees by several earthquake faults that are close to the City. Structural damage, as well as damage to infrastructure systems such as water, power, gas, communication, and transportation, is largely dependent upon the location of the earthquake’s epicenter, the time of day, and season of the year.

Extent:

Two 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 4-9** shows an approximate correlation between the Moment Magnitude (Mw) and the Modified Mercalli Intensity (MMI) Scale and its effects.⁸

Table 4-9: Severity (Mw) and Intensity (MMI) Comparison			
Magnitude (Mw)	MMI Scale: Intensity	Abbreviated MMI Scale: Effects	
1.0 - 3.0	I	I. Not felt except by a very few under especially favorable conditions.	
3.0 - 3.9	II – III	II. Felt only by a few persons at rest, especially on upper floors of buildings.	III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0 - 4.9	IV – V	IV. 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.	V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0 - 5.9	VI – VII	VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster—damage slight.	VII. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.

⁸ Source: US Geological Survey (USGS): http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

Table 4-9: Severity (Mw) and Intensity (MMI) Comparison

Magnitude (Mw)	MMI Scale: Intensity	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 great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great 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.
	XII	XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.	

Regulatory Environment:

The Alquist-Priolo Earthquake Fault Zoning Act was signed into California law on December 22, 1972, to mitigate the hazard of surface faulting to structures for human occupancy. The act in its current form has three (3) main provisions:

- It directs the state's California Geological Survey agency (then known as the California Division of Mines and Geology) to compile detailed maps of the surface traces of known active faults. These maps include both the best-known location where faults cut the surface and a buffer zone around the known trace(s);
- It requires property owners (or their real estate agents) to formally and legally disclose that their property lies within the zones defined on those maps before selling the property;
- It prohibits new construction of houses within these zones unless a comprehensive geologic investigation shows that the fault does not pose a hazard to the proposed structure.

The Act was one of several that changed building codes and practices to improve earthquake safety. These changes are intended to reduce the damage from future earthquakes. The State provides extensive regulations on earthquake related issues. A key area for regulation is the California Building Standards Commission (CBSC). It is authorized by California Building Standards Law to administer the development, adoption, approval, publication, and implementation of California's building codes.

The California Building Standards Code, Title 24 serves as the basis for the design and construction of buildings in California. Improved safety, sustainability, maintaining consistency, new technology and

construction methods, and reliability are paramount to the development of building codes. California's building codes are published in their entirety every three (3) years. Intervening Code Adoption Cycles produce supplement pages half-way (eighteen (18) months) into each triennial period. Amendments to California's building standards are subject to a lengthy and transparent public participation process throughout each code adoption cycle.

The California Seismic Safety Commission provides an array of regulatory and advisory information regarding seismic safety at: <https://ssc.ca.gov/>

Probability of Future Events:

Earthquake probabilities are calculated by projecting earthquake rates based on earthquake history and fault slip rates (not simply the number of occurrences within a span of years). The result is expressed as the probability that an earthquake of a specified magnitude will occur on a fault or within an area.

There is a strong likelihood that the City will experience a significant earthquake from one of the known major faults in the next 30 years. In 2017, the Working Group on California Earthquake Probabilities (WGCEP) issued its third Uniform California Earthquake Rupture Forecast (UCERF3)⁹ 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 Northern California are:

- 72% that an earthquake measuring magnitude 6.7
- 51% that an earthquake measuring magnitude 7
- 20% that an earthquake measuring magnitude 7.5

4.3.5 Flooding

Description:

Rain that falls in the Central Valley of California and in most of the Sierra Nevada Mountains ultimately flows to the Pacific Ocean through the San Joaquin-Sacramento River Delta along the water's edge of Pittsburg and the shoreline of Contra Costa County. The shoreline of Pittsburg is within the 100-year flood zone which may cause localized flooding in and around watershed areas. This threat has been mitigated in some degree by improvements in the water runoff infrastructure within the City. Pittsburg does have a dam located at Vista Del Mar Detention Basin identified by the State of California Department of Water Resources. There is also a concrete 3 million gallon reservoir off W. Leland Road located within the hillside.

A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. A floodplain is the area adjacent to a watercourse or other body of water that is subject to recurring floods. Floodplains may change over time from natural processes, changes in the characteristics of

⁹ <http://wgcep.org/UCERF3>

a watershed, or human activity such as construction of bridges or channels. River channels change as water moves downstream, acting on the channel banks and on the channel bottom. On the outside of a channel curve, the banks are subject to erosion as the water scours against them. On the inside of a channel curve, the banks receive deposits of sand and sediment transferred from the eroded sites. In areas where flow contains a high-sediment load, the course of a river or stream may shift dramatically during a single flood event. There are two major types of flooding within the City: riverine flooding (also known as overbank flooding) and localized drainage flooding.

Riverine flooding occurs when downstream channels receive more rain or snowmelt from their watershed than normal, or a channel is blocked by an ice jam or debris. Excess water overloads the channels and flows out onto the floodplain. When flooding occurs in steep, mountainous areas, it is usually confined, strikes with less warning time, and has a short duration. In comparison, larger rivers typically have longer, more-predictable flooding sequences and broad floodplains. Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions to wide, flat areas in plains and coastal regions. The amount of water in the floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics.

Localized flooding in the City is generally associated with urban flooding. Urban flooding results in the inundation of property in a built environment, particularly in more densely populated areas, caused by rain falling on increased amounts of impervious surfaces and overwhelming the capacity of drainage systems. Although sometimes triggered by events such as flash flooding or snowmelt, urban flooding is a condition, characterized by its repetitive and systemic impacts on communities, that can happen regardless of whether or not affected communities are located within designated floodplains or near any body of water. For this HMP, flash flooding is considered as a potential cause of localized flooding and there are no specific mitigation actions within the mitigation strategy.

History:

Flooding associated with severe storms has been among the most common disaster in the Bay Area during the period from 1950 to 2015, occurring on average 1.3 times a year over the past 60 years. Often heavy rainfall brings many areas of localized flooding, especially in low-lying areas of the region. Many other locally significant floods have occurred during this time period. Extensive flooding occurred in 1950, 1957, 1958, 1959, 1962, 1963, 1964, 1965, 1966, 1969, 1970, 1973, 1980, 1982, 1983, 1992, 1995, 1996, 1997, 1998, 2005, 2006, and 2008, 2009, 2012, 2014 and 2017.

The City of Pittsburg has had two resolutions declaring a local disaster. On January 22, 1997, a severe winter storm front impacted the City of Pittsburg causing widespread flooding which impacted both public and private structures and facilities. During the storm, substantial localized flooding was experienced in many areas of the City.

On February 3, 1998, a winter storm impacted the City of Pittsburg and led to significant and

catastrophic public and private losses due to storm-related flooding closing Highway 4 for days and referred to in the media as Lake Loveridge..

Although there have been several severe storms, there have been no Stafford Act declarations in Contra Costa County for flooding since 2017.

Location:

In Pittsburg, low lying areas are subject to flood conditions. Urban development in flood plain areas is often subject to seasonal inundation. The flood plain is a natural extension of any waterway, although infrequently used. Storm water runoff, when exceeding the capabilities of the physical channel characteristics of a stream, results in the natural flooding of a localized area, inundating vehicles and causing considerable damage to residential and industrial properties located near stream and drainage channels.

Figure 4-10 depicts the 100 and 500-year flood zones.

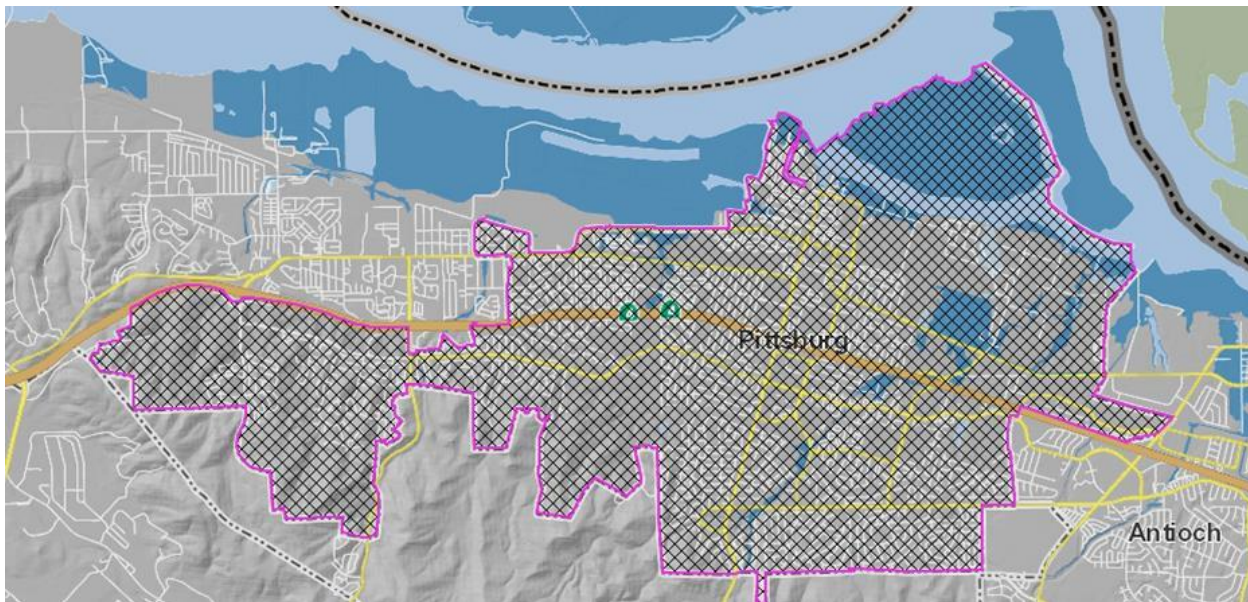


Figure 4-10: FEMA Flood Zones, 100 and 500-year floods. (Source: ABAG Resilience Program)

Extent:

The magnitude of flooding that is used as the standard for floodplain management in the U.S. is a flood with a probability of occurrence of 1% in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood, as well as the 500-year flood (0.2 % probability of occurrence in any given year), is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps are used to support the NFIP.

The USGS and other agencies refer to the percent chance of occurrence as an Annual Exceedance

Probability (AEP). An AEP is always a fraction of one. A 0.2 AEP flood has a 20% chance of occurring in any given year, and this corresponds to a five-year recurrence-interval flood. Recurrence-interval terminology tends to be more understandable for flood intensity comparisons but may be misleading due to the fact that a 100-year flood could occur two years in a row.

Repetitive Loss

A repetitive loss property is defined by FEMA as an NFIP-insured property that has experienced any of the following since 1978, regardless of any changes in ownership:

- Four or more paid losses in excess of \$1,000
- Two paid losses in excess of \$1,000 within any rolling 10-year period
- Three or more paid losses that equal or exceed the current value of the insured property.

Repetitive loss properties make up only 1 to 2 percent of flood insurance policies in force nationally, yet they account for 40 percent of the nation's flood insurance claim payments. In 1998, FEMA reported that the NFIP's 75,000 repetitive loss structures have already cost \$2.8 billion in flood insurance payments and that numerous other flood-prone structures remain in the floodplain at high risk. The government has instituted programs encouraging communities to identify and mitigate the causes of repetitive losses. A recent report on repetitive losses by the National Wildlife Federation found that 20 percent of these properties are outside any mapped 100-year floodplain.

The key identifiers for repetitive loss properties are the existence of flood insurance policies and claims paid by the policies. FEMA-sponsored programs, such as the Community Rating System (CRS), require participating communities to identify repetitive loss areas. A repetitive loss area is the portion of a floodplain holding structures that FEMA has identified as meeting the definition of repetitive loss. Identifying repetitive loss areas helps to identify structures that are at risk but are not on FEMA's list of repetitive loss structures because no flood insurance policy was in force at the time of loss. The following map shows the repetitive loss areas in Contra Costa County. There was one case of repetitive loss in Pittsburg. **Figure 4-11** displays repetitive loss areas for Contra Costa County.

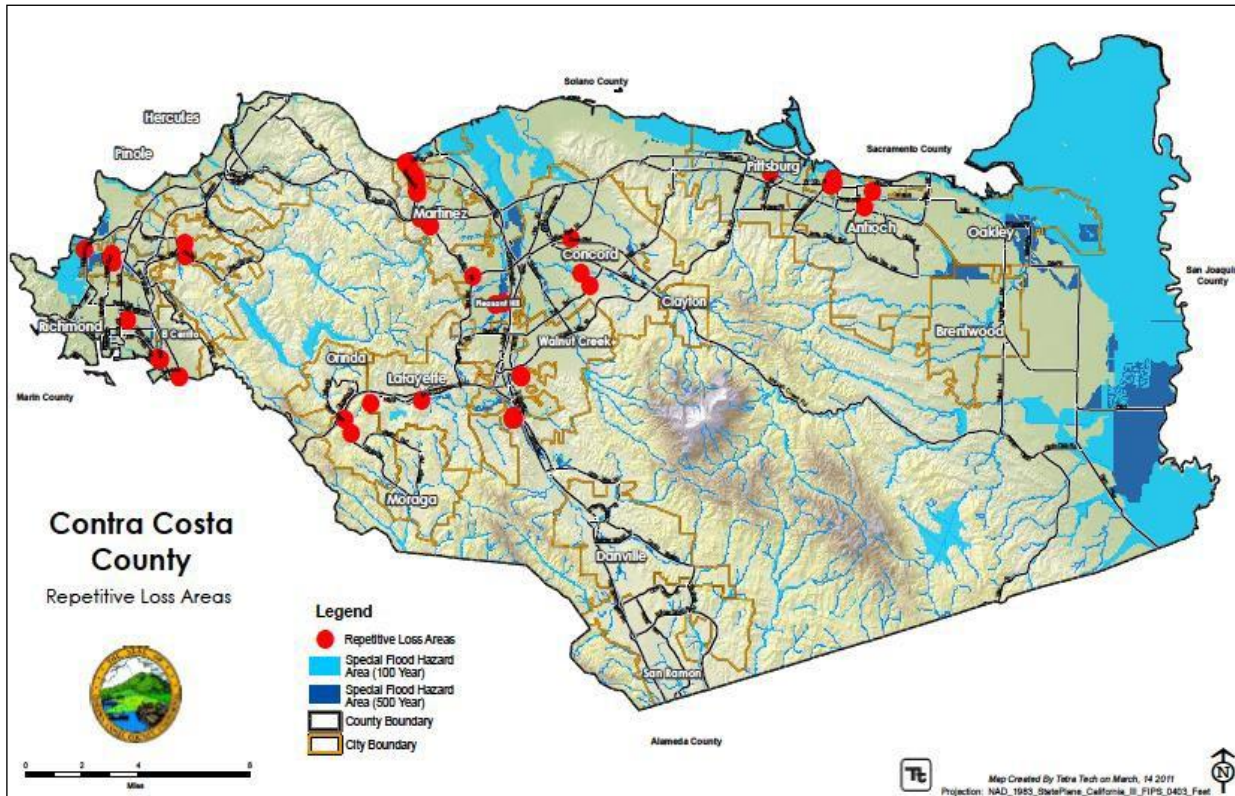


Figure 4-11: Repetitive Loss Areas in Contra Costa County

Impacts:

The primary water courses in Contra Costa County have the potential to flood at irregular intervals, generally in response to a succession of intense winter rainstorms. Storm patterns of warm, moist air usually occur between early November and late March. A series of such weather events can cause severe flooding in the planning area. The worst-case scenario is a series of storms that flood numerous drainage basins in a short time. This could overwhelm the response and floodplain management capability within the planning area.

Major roads could be blocked, preventing critical access for many residents and critical functions. High in-channel flows could cause water courses to scour, possibly washing out roads and creating more isolation problems. In the case of multi-basin flooding, the County would not be able to make repairs quickly enough to restore critical facilities and infrastructure.

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 damaging flood incidents.

Probability of Future Events:

While major flooding is not likely to occur in the City, minor street flooding is possible during any severe winter storm, which can ensue on an annual basis. In addition, the City Marina has experienced flooding during winter storms coinciding with king tides and winds. During a 100 year flooding event, the Kirker Creek Flood Control Channel (KCFCC) along the Pittsburg-Antioch Highway will be at capacity with strong water currents creating pressure passed the KCFCC creating undermining of roads and levees in the Los Medanos Wasteway into the Delta. Mudslides have and can occur along the hillside areas.

4.3.6 Hazardous Material Release

Description:

The northern section of Contra Costa County is home to a large number of industrial sites including refineries and other chemical processing plants. Major operators of the industrial sites include:

- Air Products and Chemicals, Inc.
- Chevron Refinery
- Criterion Catalyst Company L.P.
- Dow Chemical
- NRG Energy
- Pacific Gas and Electric
- Phillips 66
- Praxair, Inc.
- Shell Martinez Catalyst Plant
- Shell Oil Products, U.S.
- Tesoro Petroleum Company
- USS POSCO Industries (now U.S. Steel Company)
- Valero Refining Co

History:

Table 4-10 contains a list of major releases/accidents at nearby refineries.

Table 4-10: Major Accidents at Chemical/Refineries in Contra Costa County		
Company Date Accident Occurred	Accident Description	Offsite Impact
Shell Martinez Refinery December 19, 2016	At approximately 13:15, on December 19, 2016, one of the refinery's three main electrical substations main breakers tripped during maintenance / troubleshooting of the subsystem causing loss of power to two 12kV distribution substations. This resulted in a loss of power to multiple units in LOP, OPCEN, Utilities and Logistics Vine Hill area. The multiple unit shutdown caused excessive flaring at the LOP and Flexicoker flares.	Multiple odor and noise complaints were raised by the nearby community. No injuries were reported.
K2 Pure Solutions December 4, 2013	K2 Pure Solutions stopped production After an equipment malfunction caused two small releases of chlorine gas and a brief public health advisory from the County Officials reported the releases were contained to the plant's property and no injuries were reported.	Public health advisory.
Chevron August 6, 2012	# 4 Crude Unit Fire. An 8" line from the atmospheric distillation column with hot diesel like material leaked and caught fire.	More than 15,000 people sought medical attention.
Phillips 66 June 15, 2012	A sour water tank (T-294) was over pressured resulting in a split in the top seam of the fixed	Strong sulfur odors were detected by Hazmat IR personnel on Friday in areas

Table 4-10: Major Accidents at Chemical/Refineries in Contra Costa County

Company Date Accident Occurred	Accident Description	Offsite Impact
	roof tank. Vapors left the tank through the opening until it could be sealed. Chemicals involved included H ₂ S, other sulfur compounds, natural gas, light hydrocarbons	from I-80 and the surrounding communities. The highest readings were approximately 1 ppm (as H ₂ S) on I-80, which is a few hundred feet from the storage tank. Readings from 5-20 pp
Tesoro Golden Eagle Refinery December 9, 2010	Partial Power outage due to damage at substation led to excess flaring and some unit shut down. CWS 2 activated at 10:31. CCHMP monitored the surrounding area and no hazardous substance was detected. Incident downgraded to CWS 0 at 13:18.	Significant flaring due to loss of power to multiple units.
Tesoro Golden Eagle Refinery November 10, 2010	Power outage from 3rd party power and steam supplier led to excess flaring and refinery-wide shutdown, very dark smoky plume. At 16:14, CWS 2 and at 16:45 upgraded to CWS 3. CCHMP monitored the surrounding area and took air samples. No hazardous substance was detected.	Visible smoke and reports of burnt grass smell in N. Concord.
Conoco Phillips October 22, 2010	Third party (Air Liquide) hydrogen plant tripped resulting in elevated pressure in the Refinery's fuel gas system and decreases in available hydrogen and steam to the Refinery. One turbine at the Refinery power plant immediately tripped further reducing a	The BAAQMD received a number of complaints of visible smoke and odor in the area. No contaminants were found in community air samples taken by Refinery personnel. No activity was seen on the Refinery's fence line monitor.

Table 4-10: Major Accidents at Chemical/Refineries in Contra Costa County

Company Date Accident Occurred	Accident Description	Offsite Impact
Tesoro Golden Eagle Refinery October 10, 2010	At 12:20, fire on Tank 650 (foul water), contractor was replacing seal. Tank has a 3' diesel to layer for odor control. One Contractor treated for smoke inhalation, released same day. No odor reported. All clear at 16:10.	Visible smoke plume, but air monitoring by Tesoro industrial hygiene yielded non-detect levels.
Reactions Products May 5, 2008	A brass valve was removed from a bottom of a storage tank partially filled with toluene. The removal looked to be a theft of the valve over a weekend when no one was at the facility. Over 3,000 gallons of toluene was released. The spill went offsite into a ditch that run through the wetlands between Parchester Village and the Bay. The release was found on Monday morning and the U.S. Coast Guard responded and requested that a shelter-in-place be called. The Parchester siren was sounded and information went out over the media to notify the residents of the shelter-in-place. When Health Services Hazardous Materials Response Team arrived onsite and took measurements of the amount of toluene in the air, the shelter-in-place was lifted. Health Hazardous Materials Programs is classifying this incident as a Community Warning System Level II and a Major Chemical Accident or Release Severity Level II, because if the toluene	Toluene went offsite into the wetlands. The toluene was in a ditch that runs along the border of Parchester Village. Toluene odors were noticeable in the Parchester Village. Siren was sounded and the residents of Parchester Village were requested to shelter-in-place.

Table 4-10: Major Accidents at Chemical/Refineries in Contra Costa County

Company Date Accident Occurred	Accident Description	Offsite Impact
	<p>ignited the damage and consequences of the incident would be major.</p>	
<p>Calpine Los Medanos Energy Center May 24, 2007</p>	<p>While overseeing the unloading of a bulk delivery of corrosion inhibitor, approximately 300 gallons of Nalco Trasar 3DT177 (phosphoric acid) was inadvertently unloaded into a storage tank containing about 378 gallons of 12.5% Sodium Hypochlorite solution. The chemical reaction of the two products resulted in a chlorine gas release in which the Field Operator and two other plant employees were exposed to. The three employees were transported via ambulance to the Mt. Diablo Medical Center for observation. Time of injury was reported to be 8:30 a.m.</p>	<p>Shelter-in-place was declared for the area north of the Los Medanos Energy Center for about an hour. No offsite complaints were received. CCHS Hazardous Materials Response Team conducted air monitoring outside of the affected building with the highest level of chlorine at 0.15 ppm. Air sampling conducted at various locations of the plant perimeter indicated non-detect.</p>
<p>ConocoPhillips March 18, 2007</p>	<p>Sulphur plant shutdown due to electrical failure. XS sulfur to flare.</p>	<p>No complaints were received from the community.</p>
<p>Chevron Richmond Refinery January 15, 2007</p>	<p>"At 5:33 Chevron upgrades incident to Level 3 and sent message that there was a fire at the #4 Crude unit. Initial notification was 5:23 for a Level 2. Operators were in the process of shutting down the plant in preparation for scheduled maintenance. - Information About the Chevron January 15 Fire</p>	<p>Sirens were sounded and TENS Zone 3 & 4 was activated. Unknown amount of hydrocarbons was combusted, resulting in a release of sulfur dioxide. Air monitoring did not indicate adverse air quality impacts.</p>

Table 4-10: Major Accidents at Chemical/Refineries in Contra Costa County		
Company Date Accident Occurred	Accident Description	Offsite Impact
General Chemical - Richmond June 23, 2006	The main turbine tripped and the shutdown interlock on the combustion air blower did not work correctly, so the blower pressured up the upstream side of the system which is normally under a vacuum.	Four Chevron employees were exposed. No other public appears to be affected. Wind at the time of the release was blowing towards Chevron.
USS Posco Industries (Presently U.S. Steel Company) May 31, 2001		Two employees and a firefighter suffered minor injuries.

Location:

Industrial facilities are located throughout northern Contra Costa County with a concentration in the cities of Richmond and Martinez. U.S. Steel Company’s steel production plant is located in Pittsburg as is Corteva’s chemical plant. This plant is the largest integrated chemical manufacturing complex of its kind on the west coast. The plant has the capacity to produce several million pounds of the highly toxic pesticide, sulfuryl fluoride.

Extent:

All the facilities have the potential to produce hazardous releases. The details of the type and extent of the potential releases are maintained by the plant operators and the State Department of Toxic Substances Control (DTSC). The facilities are required to notify the County Hazardous Materials Incident Response Team when there is an incident. The County's Board of Supervisors have approved the Hazardous Materials Incident Notification Policy (PDF) detailing when and how this should be done. The Notification Policy assists Contra Costa Health Services Hazardous Material Program (CCHSHMP) in meeting the requirements established in Assembly Bill (AB) 1646 (approved by the California Governor on October 8, 2017). AB 1646 requires CCHSHMP to develop and implement an alerting and notification system to alert surrounding communities of an incident at a petroleum refinery or other facilities with hazardous chemicals. Businesses are required to know about the reporting to dispatch if reporting a chemical fire or release.

Regulatory Environment:

Federal

- Resource Conservation and Recovery Act: At the federal level, the principal agency regulating the generation, transport, and disposal of hazardous substances is the EPA, under the authority of the Resource Conservation and Recovery Act (RCRA). The RCRA established an all-encompassing federal regulatory program for hazardous substances that is administered by the EPA. Under the act, the EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances.

State

- California Hazardous Materials Release Response Plans and Inventory Law: The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires hazardous materials business plans to be prepared and inventories of hazardous materials to be disclosed, including an inventory of the hazardous materials handled, facility floor plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee safety and emergency response training (California Health and Safety Code, Division 20, Chapter 6.95, Article 1).
- Government Code Section 65962.5 (Cortese List): The provisions of Government Code Section 65962.5 are commonly referred to as the Cortese List. The Cortese List is a planning document used by the state and local agencies to provide information about hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency (Cal/EPA) to develop an updated Cortese List annually, at minimum. The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the list.
- California Emergency Response Plan: California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Response to hazardous material incidents is one part of this plan. The plan is managed by the California Governor's Office of Emergency Services (Cal OES), which coordinates the responses of other agencies, including Cal/EPA, California Highway Patrol, the Regional Water Quality Control Board, and the LA County Emergency Services.

Local

- Certified Uniform Program Agency: The Contra Costa County Health Services Hazardous Materials Program is the designated Certified Unified Program Agency (CUPA) for the City's service area.

Probability of Future Events:

While safety programs aim to prevent hazardous material releases, accidents occur due to equipment failures or human error. Additionally, a large earthquake could rupture piping and other containment

systems and derange controls, causing releases, fires, and public health incidents. There is a high probability of future hazardous releases from refineries and chemical plants that could affect Pittsburgh.

4.3.7: Pipeline Failure

Description:

Although pipelines are the safest and most reliable way to transport natural gas, crude oil, liquid petroleum products, and chemical products, there is still an inherent risk due to the nature of the hazardous materials. Crude oil is a complex mixture of thousands of different hydrocarbons and varying amounts of other compounds containing sulfur, nitrogen, and oxygen as well as salts, trace metals, and water. Crude oils can vary from a clear liquid, similar to gasoline, to a thick tar-like material needing to be heated to flow through a pipeline.

A petroleum refinery's main job is to split crude oil into its many parts (or fractions) which are then reprocessed into useful products. The type, number, and size of process units required at a particular refinery depends on a variety of factors including the type of crude oil and the products required. The interconnected units making up a refinery are tanks, furnaces, distillation towers (fractionating columns), reactors, heat exchangers, pumps, pipes, fittings, and valves. Products of crude oil refineries include:

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

These products can be hazardous not only in their final state but as they are being processed and refined. The principal hazards at refineries are fire and explosion. Refineries process a multitude of products with low flash points. Although systems and operating practices are designed to prevent such catastrophes, they can occur. In a refinery, hazardous chemicals can come from many sources and in many forms. In crude oil, there are not only the components sought for processing, but impurities such as sulfur, vanadium, and arsenic compounds. The oil is split into many component streams that are further altered and refined to produce the final product range. Most, if not all, of these component stream chemicals are inherently hazardous to humans, as are the other chemicals added during processing. Hazards include fire, explosion, toxicity, corrosiveness, and asphyxiation.

Location:

Pipelines owned and operated by Shell Oil, Chevron, Kinder Morgan, and PG&E companies run beneath the City's streets. Pipelines are primarily underground, which keeps them away from public contact and accidental damage. Despite safety and efficiency statistics, increases in energy consumption and population growth near pipelines present the potential for a pipeline emergency incident.

While pipelines are generally the safest method of transporting hazardous chemicals, they are not failsafe. Pipeline product releases, whether in the form of a slow leak or violent rupture, are a risk in any community.

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.

Previous Occurrence:

While there has been only one pipeline failure incidents that directly affected Pittsburg several incidents have occurred in the region. Some of the more significant events include:

- Pittsburg/Bay Point, California – October 17, 2018, a Chevron 12 inch natural gas pipeline with a fire in the underground vault. It burned for several days and included the evacuation of over 4000 people from their homes.
- San Francisco, California – February 6, 2019, firefighters and PG&E employees, respond to the natural gas-fueled fire that erupted after a pipeline branch connection was damaged during excavation. Kilford Engineering Inc.'s excavation crew's failure to follow safe excavation practices near a pipeline contributed to a 2019 natural gas release and fire in a San Francisco neighborhood. An investigation revealed failure of Kilford's crew to follow safe excavation practices within the area surrounding Pacific Gas & Electric (PG&E) Company's four-inch

natural gas distribution pipeline, caused the excavation backhoe to strike a pipeline branch connection. As a result, over 100 people were evacuated.

- Richmond, California – February 9, 2021, a cement-lined carbon steel pipe — a line used intermittently to carry ballast water or refined fuel between tankers docked at the wharf and the refinery complex failed due to internal corrosion. This allowed about 800 gallons of diesel fuel mixed with water to spill into the surrounding waters. The spill spread for several miles along the Richmond shoreline
- Moraga, California – March 3, 2016, heavy rains resulted in runoff that created a sinkhole at the corner of Rheem Boulevard and Center Street near Moraga Road. The pavement collapsed swallowing a signal light and pavement which punctured a four-inch natural gas pipeline. Rapid reaction by PG&E Company to shut down the line prevented ignition. Over 2000 Moraga residents were without gas for 24-36 hours.
- San Bruno, California – September 9, 2010, a 30-inch-diameter segment of an intrastate natural gas transmission pipeline known as Line 132, owned and operated by PG&E ruptured in a residential area in San Bruno, California. The rupture occurred at the intersection of Earl Avenue and Glenview Drive. The rupture produced a crater about 72 feet long by 26 feet wide. PG&E estimated that 47.6 million standard cubic feet of natural gas was released. The released natural gas ignited, resulting in a fire that destroyed 38 homes and damaged 70. Eight people were killed, many were injured, and many more were evacuated from the area.
- Walnut Creek, California – November 9, 2004, excavation equipment operated by Mountain Cascade, Inc., struck Kinder Morgan’s LS-16 pipeline, a 51.4-mile-long intrastate products pipeline that travels from Concord to San Jose. The excavator was working on a large-diameter water supply expansion project in Walnut Creek, CA for the East Bay Municipal Utility District (EBMUD). Several seconds after the line was hit, the gasoline streaming out of the line was ignited by welders employed by Matamoros Pipelines, Inc. who were also working on the new water supply pipeline. The ensuing explosion and fire resulted in the deaths of five workers and significant injury to four others. One nearby two-story structure was burned and other property was damaged.

Probability:

While there are numerous flammable fluid pipelines that run underneath the City of Pittsburg, incidents are rare based upon past occurrence. There is a low probability of a severe pipeline emergency.

4.3.8 Public Health Emergency

Description:

Human health hazards include transmittable diseases and environmental hazards, such as adverse weather. The following sections describe commonly recognized human health hazards.

Corona Viruses /SARS - The current (2020) COVID-19 pandemic is spread by a coronavirus. Coronaviruses cause a large percentage of colds and upper respiratory infections. 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 other countries.

Influenza - Flu epidemics and pandemics 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.

Insect/Tick-Borne Disease - Insects such as mosquitos and ticks can transmit a variety of diseases. Diseases that can be contracted through a tick bite include:

- Colorado tick fever
- Ehrlichiosis
- Lyme disease
- Rocky Mountain spotted fever
- Tularemia

Diseases that mosquitoes carry include:

- Eastern equine encephalitis
- Malaria
- West Nile virus
- Zika virus

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 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 disease. Hemorrhagic fevers include Ebola and Yellow Fever.

History:

Pandemics have occurred throughout history. Some of the largest scale public health and pandemic incidents include:

- 2020 – Continuing: COVID-19: Beginning in December 2019, in the region of Wuhan, China, a new (“novel”) coronavirus appeared and rapidly spread. COVID-19, a shortened form of “coronavirus disease of 2019,” has affected every nation on the planet. It is the largest pandemic since the 1918-1919 Spanish Influenza.
- On October 24, 2009, President Barack Obama declared Swine Flu a national emergency in the United States. On November 12, 2009, the CDC reported an estimated 22 million Americans had been infected with 2009 A H1N1 and 4,000 Americans have died. Highlands Elementary and Marina Vista Elementary, Pittsburg, CA, closed when students and staff tested positive.
- 1976 – Continuing: HIV/AIDS (Peak 2005-2012) HIV/AIDS was first identified in the Democratic Republic of the Congo in 1976. HIV/AIDS is a global pandemic, having killed more than 36 million people since 1981. Currently, there are between 31 and 35 million people living with HIV infections.
- 1968: A category 2 Flu pandemic, sometimes referred to as “the Hong Kong Flu,” the 1968 flu pandemic was caused by the H3N2 strain of the Influenza A virus. Within three months, it had spread to the Philippines, India, Australia, Europe, and the U.S. While the 1968 pandemic had a comparatively low mortality rate (.5%), it still resulted in the deaths of more than a million people, including 500,000 residents of Hong Kong; approximately 15% of its population at the time
- 1956-1958: The Asian Flu was a pandemic outbreak of Influenza A of the H2N2 subtype that originated in China in 1956 and lasted until 1958. In its two-year infectious duration, it resulted in approximately 2 million deaths worldwide and 69,800 in the US
- 1918-1920: A strain of H1N1 influenza resulted in a deadly outbreak that tore across the globe, infecting over a third of the world’s population and ending the lives of 20 – 50 million people.

Of the 500 million people infected in the 1918 infection wave, mortality rates were estimated at 10% to 20%, with up to 25 million deaths in the first 25 weeks alone

- 1346 to 1353: The Black Death was an outbreak of Bubonic Plague that ravaged Europe, Africa, and Asia, with an estimated death toll between 75 and 200 million people. Thought to have originated in Asia, the pandemic most likely jumped continents via the fleas living on the rats found aboard merchant ships.

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 (WHO) currently uses the Pandemic Risk Assessment to characterize pandemics, as shown in **Figure 4-12**. Due to factors that made the WHO-provided information on the COVID-19 pandemic of questionable objectivity, the U.S. Department of Health and Human Services, and the California Department of Public Health no longer solely use WHO characterization for describing the state of a pandemic.

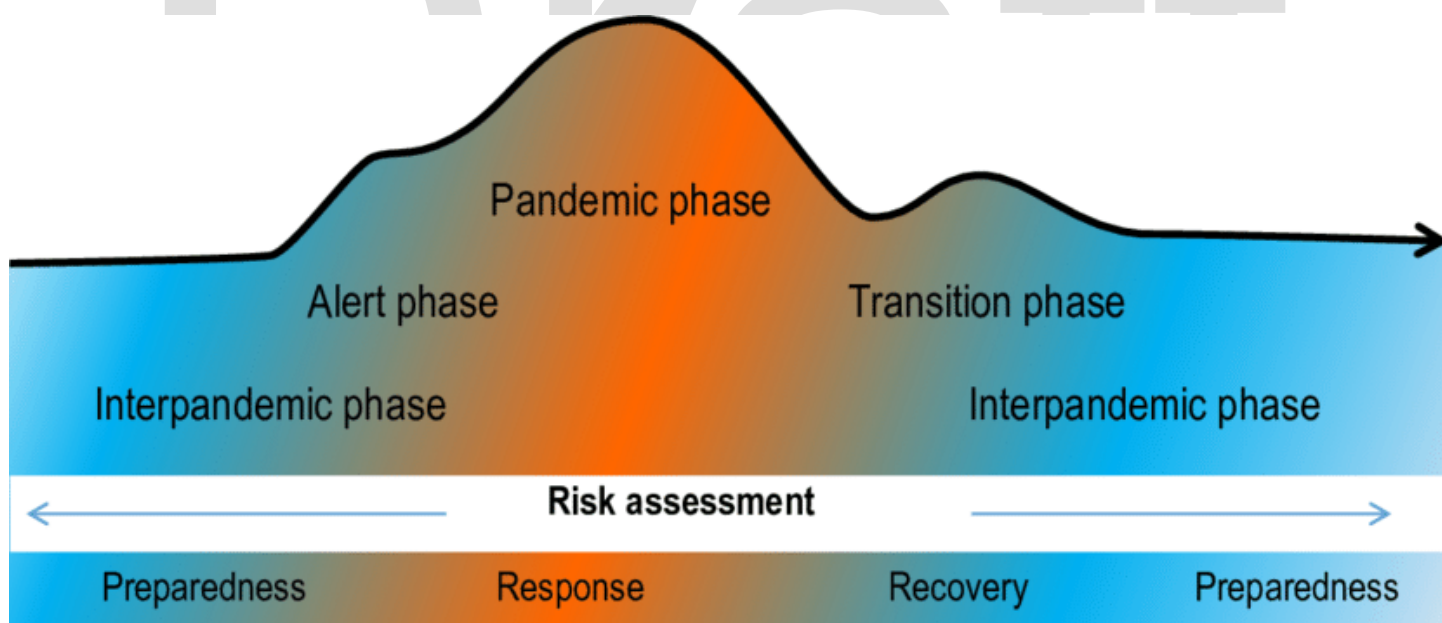


Figure 4-12: WHO Pandemic Risk Assessments (2016)

In nature, influenza viruses circulate continuously among animals, especially birds. Even though such viruses might theoretically develop into pandemic viruses, in **Phase 1** no viruses circulating among animals have been reported to cause infections in humans.

In **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.

In **Phase 3**, an animal or human-animal influenza reassortant 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 reassortant 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 for 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 the 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 countries in one 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.

Phase 6, the pandemic phase, is characterized by community-level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in **Phase 5**. Designation of this phase will indicate that a global pandemic is underway.

Impact of Climate Change:

Climate Change may affect the occurrence or severity of pandemics by causing the geographic expansion of insect and tick-borne pathogens.

Probability of Future Occurrence:

Although the timing of the outbreak of a pandemic or other public health emergency is difficult to predict, they will likely continue to occur and have a greater than one percent chance of occurring in any year.

4.3.9 Severe Weather – Wind, Tornados, Heat

Severe weather refers to any dangerous meteorological phenomena with the potential to cause damage, serious social disruption, or loss of human life. It includes thunderstorms, downbursts, tornadoes, waterspouts, snowstorms, ice storms, severe heat, and dust storms. Severe weather can be categorized into two groups: those that form over wide geographic areas are classified as general severe weather; those with a more limited geographic area are classified as localized severe weather. Severe weather, technically, is not the same as extreme weather, which refers to unusual weather events which are at the extremes of the historical distribution for a given area.

Several types of severe weather events typically impact Contra Costa County: thunderstorms with damaging winds, tornados, severe heat, and flooding. Flooding is discussed in detail in section 4.3.5. Tornados, damaging winds and severe heat occurring in Contra Costa County are described in detail in the following sections.

Tornado

Description:

A tornado is a rapidly rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. They are often referred to as twisters, whirlwinds, or cyclones. Tornadoes come in many shapes and sizes and are often visible in the form of a condensation funnel originating from the base of a cumulonimbus cloud, with a cloud of rotating debris and dust beneath it. Most tornadoes have wind speeds less than 110 miles per hour are about 250 feet across and travel a few miles before dissipating. The most extreme tornadoes can attain wind speeds of more than 300 miles per hour are more than two miles in diameter and stay on the ground for dozens of miles.

Location:

The entire City is susceptible to tornados.

Extent:

The Fujita scale and the Enhanced Fujita Scale rate tornadoes by damage caused. The Enhanced Fujita (EF) Scale was an update to the older Fujita scale, by expert elicitation, using engineered wind estimates and better damage descriptions. The EF Scale was designed so that a tornado rated on the Fujita scale would receive the same numerical rating and was implemented starting in the U.S. in 2007. **Table 4.11** provides a description of the Fujita scale and associated damage.

Table 4.11: Fujita Scale and Damage

Damage f scale	Little Damage	Minor Damage	Roof Gone	Walls Collapse	Blown Down	Blown Away	
	f0	f1	f2	f3	f4	f5	
Windspeed F scale	17 m/s	32	50	70	92	116	142
	F0	F1	F2	F3	F4	F5	
	40 mph	73	113	158	207	261	319
To convert f scale into F scale, add the appropriate number							
Weak Outbuilding	-3	f3	f4	f5	f5	f5	f5
Strong Outbuilding	-2	f2	f3	f4	f5	f5	f5
Weak Framehouse	-1	f1	f2	f3	f4	f5	f5
Strong Framehouse	0	F0	F1	F2	F3	F4	F5
Brick Structure	+1	-	f0	f1	f2	f3	f4
Concrete Building	+2	-	-	f0	f1	f2	f3

Fig. 2.4-1 The Fujita tornado scale (F scale) pegged to damage-causing windspeeds. The extent of damage expressed by the damage scale (f scale) varies with both windspeed and the strength of structures.

Previous Occurrence:

There have been two recorded tornado/funnel cloud events with Contra Costa County since 1950. Both were F0-rated events that caused little damage. On January 23, 2010, an F1 tornado occurred in Brentwood. The tornado crossed power lines and destroyed a utility pole. Fifty-five customers lost power. Generally, tornados are not considered a high risk for the City.

Probability of Future Events:

The likelihood of a tornado in the City is small with a less than one in fifty probability in any year.

Location:

All of the City is vulnerable to the effects of winter storms and high winds year-round. Vegetation, debris, and electrical infrastructure knocked down or blown by severe weather has the potential to cause damage or additional hazards.

Extent:

The Beaufort Scale¹⁰ is a scale for measuring wind speeds. It is based on observation rather than accurate measurement. It is the most widely used system to measure wind speed today. The scale

¹⁰ <https://www.spc.noaa.gov/faq/tornado/beaufort.html>

was developed in 1805 by Francis Beaufort, an officer of the Royal Navy and first officially used by HMS Beagle. There are twelve levels, plus 0 for "no wind."

Table 4-12: Beaufort Scale			
Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects on Land
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Dust, leaves, and loose paper lifted; small tree branches move
5	17-21	Fresh Breeze	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Seldom experienced on land except during hurricane landfall, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	
12	64+	Hurricane	

Previous Occurrence:

Between 2000 and 2022, high winds occurred on 12 days in the San Francisco Bay Area East Bay Interior Valleys. No damage, injuries or deaths were reported. On one occasion winds speeds reached more than 75 knots or 86 mile per hour.¹¹

Probability of Future Events:

Based upon past occurrences, high and potentially damaging winds are likely to occur slightly less than one day a year.

Excessive Heat

¹¹ NOAA Storm Events Database

Description:

According to the National Weather Service (NWS), extreme heat occurs when the temperature reaches high levels or when the combination of heat and humidity causes the air to become oppressive and stifling. The NWS will issue advisories or warnings when the heat index is expected to have a significant impact on public safety. The common guidelines for the issuance of excessive heat warnings are when the maximum daytime index is expected to reach 105°F and the nighttime low temperature does not fall below 75°F.

Location:

All of the City is susceptible to severe heat conditions. **Figure 4.12** depicts the Heat Vulnerability Indicators for Contra Costa County based on demographic and climate conditions.

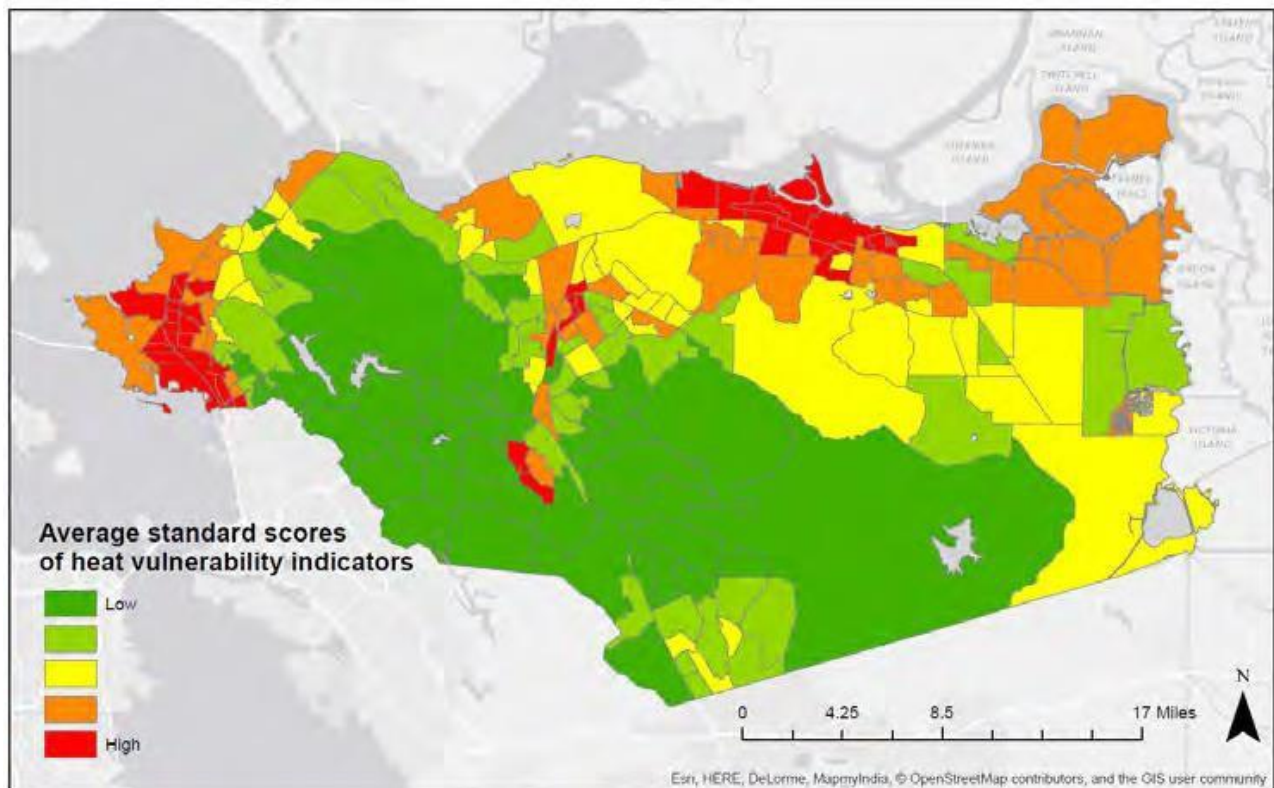


Figure 4-12: Scores on Heat Vulnerability Indicators

Extent:

Excessive Heat Outlook occurs when the potential exists for an excessive-heat event in the next three to seven days. The NWS will provide an indication of areas where people and animals may need to take precautions. The outlook is based on a combination of temperature and humidity, Heat Index,⁵ over a certain number of days. An outlook is used to indicate that a heat event may develop. It is intended to provide information to those who need lead time to prepare for the event, such as public

utilities, emergency management personnel, and public health officials. **Table 4-13** provides a description of heat-related public notifications.

<p>Heat Advisories</p>	<p>The Heat Index has to remain at or above 100°F for a minimum of two hours. Heat advisories are issued by zone when any location within that zone is expected to reach criteria. For example: If you expected the heat index to reach 100°F in Visalia, a heat advisory would be issued for that county.</p> <p>A heat advisory means that people can be affected by heat if precautions are not taken. The issuance of a heat advisory is important to raise public awareness that these precautions need to be taken. Heat advisories are also used to trigger other actions and regulations such as no evictions, no turning off of power, changing outdoor work requirements, etc.</p>
<p>Excessive Heat Watches</p>	<p>Issued when Heat Warning criteria is possible (50-79%) 1 to 2 days in advance.</p>
<p>Excessive Heat Warnings</p>	<p>Criteria for an Excessive Heat Warning is a Heat Index of 105°F or greater that will last for two hours or more. Heat Warnings are issued by zone when any location within that zone is expected to reach criteria. For example: If you expected the Heat Index to reach 105°F in Visalia an Excessive Heat Warning would be issued for that zone.</p> <p>A heat warning means that some people can be seriously affected by heat if precautions are not taken. Studies in Canada, Europe, and the U.S. have indicated that mortality begins to increase exponentially as the heat increases or stays above a Heat Index of 104°F. Note:</p> <p>In addition to raising public awareness, the issuance of a heat warning will alert hospitals and officials to take certain actions to prepare and respond to an increase in emergency calls, and activate programs to check on elderly and the home-bound. In some cases, cooling centers can be open or designated and donation programs activated for fans and air conditioners. As in the case of an advisory, certain regulations may change such as turning off people's electricity, evictions, and outside work requirements.</p>

Previous Occurrences:

Between 2000 and 2022, excessive heat has occurred on 26 days in California resulting in 10 injuries or deaths. There was a major heat wave in California from mid- to late July 2006, with 10 days of record-breaking temperatures. Across the state, researchers estimate the heat wave resulted in 16,166 more emergency department visits than average¹².

Impact of Climate Change:

Climate change is resulting in more annual days with excessive heat. More areas in the City will likely be affected

by excessive heat more often, more severely, and for longer periods of time. An increase in the high daily temperature means less “cooling off” occurs at night. Hotter temperatures increase the likelihood and severity of wildland fires.

Probability of Future Events:

Depending on low and high emission scenarios, and the location within the region, in the future the City may experience an average of anywhere from 20 to 80 extreme heat days in a year. Cal-Adapt, California’s database of climate data and visualization tools, provides five different ways to define the extreme heat hazard: (1) number of extreme heat days by year, (2) number of warm nights by year, (3) number of heat waves by year (heat wave is defined as 5 consecutive extreme heat days), (4) timing of extreme heat days by year (i.e. which months do extreme heat hazards occur), (5) the maximum duration of heat wave by year. These metrics are projecting both the intensity and the temporal nature of extreme heat.

Climate change is expected to generate an increase in ambient average air temperature, particularly in the summer. The outer Bay Area will likely experience greater temperature increases than coastal or bayside jurisdictions, though likely not as great as in the eastern-most inland communities. The frequency, intensity, and duration of extreme heat events and heat waves are also expected as regional climate impacts.

According to California Climate Change Center, by mid-century, extreme heat in urban centers could cause two to three times more heat-related deaths than occur today.¹² Statewide, temperatures could increase anywhere from 3 to 10.5° depending on CO₂ emission levels, leading to more frequent, hotter days throughout the year.

Due to climate change, an increasing number of days of extreme heat may be expected to occur. Since Pittsburg is in a high heat vulnerability area, future heat events are likely to have a more severe impact.

4.3.10 Terrorism

Pittsburg is home to businesses and government agencies, transportation infrastructure, tourist attractions, historic sites, and cultural facilities that are vulnerable to terrorist attack. Terrorism is a continuing threat throughout the world and within the U.S. A variety of political, social, religious, cultural, and economic factors underlie terrorist activities. Terrorists typically target civilians with a goal of instilling fear to advance their agenda. The media interest generated by terrorist attacks makes this a high visibility threat. Although the City is not likely to be the target of extreme terrorism, the threat of such an attack will continue to be evaluated by the Pittsburg Police Department in collaboration with state and federal agencies to mitigate this threat to the extent possible.

Incidents generating significant mass casualties make preparedness and the mechanisms for effective response essential. Terrorists typically use one or more of the following types of weapons: chemical

¹² California Climate Change Center (2006)

biological, incendiary, radiological, or explosive. In addition to large-scale attacks, a full range of assault styles must be considered, including simple bombings, assassinations with small arms, major bombings, and others. Use of explosive devices remains the weapon of choice for terrorist activity. Related activities include bomb threats which disrupt the normal operations of transit systems, government or corporate facilities. Primary locations likely to be targets include airports, mass transit targets, ports, government facilities, utilities, and high population density locations, although so-called “soft targets” such as schools, local entertainment facilities, etc. are at risk. The potential for nuclear, biological, or chemical terrorism is also a concern. These types of emergencies would necessitate detailed contingency planning and preparation of emergency responders to protect their communities.

The City has anti-terrorism programs in place, which include continually gathering intelligence; monitoring events to assess credible threat potential; and issuing warnings to the participating agencies and to the citizenry. The U.S. Federal Bureau of Investigation (FBI) is the lead federal agency for all terrorist activities within the U.S. and coordinates this activity with local law enforcement through the Joint Regional Intelligence Center.

Description:

The definition of terrorism by the FBI is “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.”

The formal definition of Weapons of Mass Destruction (Title 18 USC section 2332a) is: (1) Any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of toxic or poisonous chemicals or their precursors; a disease organism; or radiation or radioactivity; (2)(a) any explosive, incendiary, or poison gas, bomb, grenade, or rocket having a propellant charge of more than four ounces, or a missile having an explosive or incendiary charge of more than one quarter ounce, or mine or device similar to the above; (b) poison gas; (c) any weapon involving a disease organism; or (d) any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.

Weapons of mass destruction (WMD) typically used by terrorists are categorized by an acronym that lists the types of materials/weapons: CBRNE stands for chemical, biological, radiological, nuclear, and explosives – BNICE stands for biological, nuclear, incendiary, chemical, and explosives. The nature of each category of weapon is described briefly below:

Chemical: chemical weapons include blood and choking agents, nerve agents, blister agents, and toxic industrial chemicals. The advantages of using chemical weapons for a terrorist include they are easy to make, readily available, inexpensive, have an immediate effect, and are easily spread. The

disadvantages are they require significant quantities for a mass effect, and the production and deployment are potentially hazardous to the terrorist. Some chemical agents are odorless and tasteless and are difficult to detect, while others have distinct odors. They can have an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days). Routes of exposure for chemical weapons are inhalation, ingestion, absorption, and injection. Unlike many of the biological weapons, first responders can take self-protective measures by wearing personal protective equipment, first aid measures and effective medical interventions are available, and chemical agent exposures can be decontaminated and agents neutralized.

Biological: biological weapons are defined as bacteria, viruses, or toxins used to produce illness or death in people, animals, or plants. The advantages of biological weapons are that they are easy to make, readily available, and relatively inexpensive. The disadvantages include delayed effects and potential deployment hazards to the terrorist. Routes of exposure for biological weapons are inhalation, ingestion, absorption, and injection. Biological agents can be dispersed as airborne particles or aerosols on food items or in water, or through an injection. Terrorists may use biological weapons because the agents odorless, tasteless, and extremely difficult to detect.

Radiological / Nuclear: radioactive or nuclear weapons are typically in the form of a traditional fission device such as an atom bomb, a radiological dispersal device, often called a dirty bomb, or a conventional explosion at a nuclear facility. The advantages of radiological or nuclear weapons are that the materials are available, cause devastating effects and a great psychological impact on the population. The disadvantages include delayed effects, deployment is hazardous to the terrorists, and they are extremely expensive – in the millions of dollars for a nuclear weapon. Radiation cannot be detected by human senses. Consequences may include death, severe health risks to the public, damage to the environment, and extraordinary loss of, or damage to, property. The health effects of radiological or nuclear materials include radiation burns, fragmentation wounds, acute radiological poisoning, and long-term effects, such as cancers and birth defects.

Explosives: explosive weapons are most terrorist's weapon of choice. 86% of domestic terrorist incidents involve the use of explosives. Explosives are readily available and have dramatic results, are low risk, require few skills to build and use, are easy to execute, allow for remote attacks, and don't require many people to execute. There are low explosives and high explosives. The effects include blast pressure, both positive and negative, fragmentation, and thermal. There are pipe bombs or bombs that can be easily concealed into a backpack, box, vehicles, or virtually any type of container, with numerous trigger mechanisms to set off the bomb. Bombings account for up to 50% of worldwide terrorist attack patterns.

Cyber-terrorism: according to the FBI, cyber terrorism is any "premeditated, politically motivated attack against information, computer systems, computer programs, and data which results in violence

against non-combatant targets by sub-national groups or clandestine agents.” As nations and critical infrastructure became more dependent on computer networks for their operations, new vulnerabilities are created. A cyber terrorist attack is designed to cause physical violence or extreme financial harm. Possible cyber terrorist targets include the banking industry, military installations, power plants, air traffic control centers, and water systems, but could be against any facility that relies on computers, computer systems and programs for their operations.

Active Shooter: The U.S. Department of Homeland Security¹² (DHS) defines the active shooter as "an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms and there is no pattern or method to their selection of victims." Active shooters may also use explosive devices during assaults to increase the likelihood of casualties or to commit suicide. Most incidents occur at locations in which the killers find little impediment in pressing their attack. Locations are generally described as soft targets that have limited security measures to protect members of the public. In most instances, shooters commit suicide, are shot by police, or surrender when confrontation with responding law enforcement becomes unavoidable.

History:

Although the City has not had a terrorist attack, there have been many incidents within Contra Costa County. The following table shows the terrorism related incidents that have occurred in Contra Costa County:

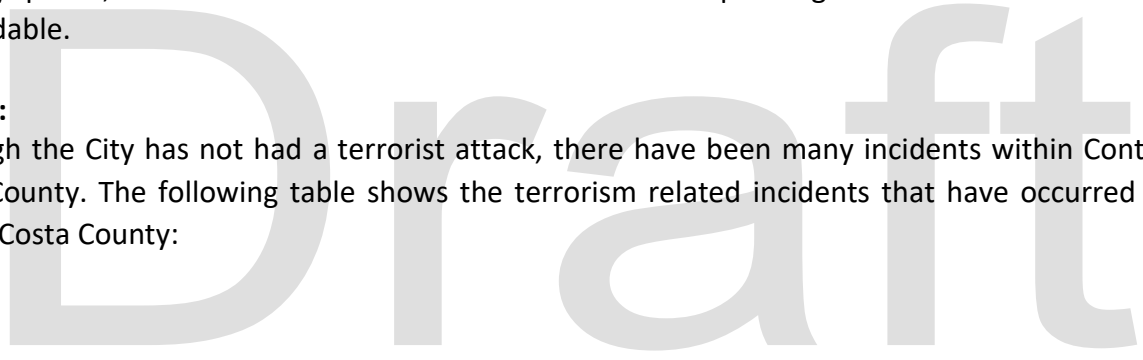


Table 4-14: Terrorists Incidents within Contra Costa County and Bay Area		
Date	Type	Affiliation
April 2013	<p>An unknown person with technical knowledge of utility systems entered an underground utility vault in San Jose and cut fiber optic cables to knock out 911 and cell phone service. Within half an hour, sniper/s opened fire on a nearby electrical substation. Within 20 minutes, 17 large transformers that funnel power to Silicon Valley were destroyed from bullet damage to their cooling units. A minute before a police car arrived, the shooters disappeared into the night.</p> <p>To avoid a blackout, electric-grid officials rerouted power around the site. It took utility workers 27 days to make repairs and restore the substation. No one has been arrested in connection with the attack.</p>	Domestic terrorism
November 1978	<p>Shortly before he was to hold a news conference, Mayor George Moscone was shot to death in his office; moments later, Supervisor Harvey Milk, a leader of San Francisco’s homosexual community, was shot and killed down the hall. A former member of the Board of Supervisors, Dan White, surrendered to police and was charged with murder.</p>	Domestic terrorism

Information derived from: Local news sources.

Location:

The City is home to power plants, water utilities, refineries, rail stations, colleges, and chemical manufacturers, all of which could be a target for terrorism. There is a wide range of motivations for terrorist attacks They can be for or against almost any issue, religious belief, political position, or group of people of one national origin or another. Because of the tremendous variety of causes supported by terrorists and the wide variety of potential targets, there is no place that is truly safe from terrorism. Primary locations likely to be targets include airports, mass transit targets, ports, government facilities, utilities, and high population density locations, although so-called “soft targets” such as schools, local entertainments facilities, etc. are also at risk. The potential for

nuclear, biological, or chemical terrorism is also a concern. The entire Bay Area is considered at risk for a nuclear event. These types of emergencies could be devastating to any community and would necessitate detailed contingency planning and preparation of emergency responders prior to such an attack.

Extent:

As outlined in the 2010 National Security Strategy, there is no greater danger to the Nation than a terrorist attack with a weapon of mass destruction. Terrorist acts may cause casualties, extensive property damage, fires, flooding, and other subsequent hazards. Incidents generating significant mass casualties make preparedness and the mechanisms for effective response essential. In addition to large-scale attacks, a full range of terrorism tactics must be considered, including simple bombings, chemical or biological incidents, explosions and cyber-attacks, bomb threats, and the use of radiological and nuclear materials. Use of explosive devices remains the weapon of choice for terrorist activity. The possibility exists that a terrorist organization might acquire the capability of creating a small nuclear detonation. A single nuclear detonation in the United States would likely produce fallout affecting an area many times greater than that of the blast itself, certainly the entire Bay Area region.

The damage caused by a terror attack is dependent on the method of attack. Large bomb attacks could destroy major infrastructure, kill many people, and disrupt regional functioning for a significant time. Cyber-terrorism would cause very different types of damage, possibly severely hampering local government operations and local business with no direct injuries or loss of life. In addition to direct physical damage, terrorist attacks breed fear. Even an unsuccessful attempt to attack the region would seriously impact the comfort level of residents and could affect local business.

Terrorism cannot be forecast with any accuracy. There is, therefore, some potential for most, if not all, types of terrorist acts to occur anywhere and at any time. Terrorism can strike not just large cities, but in any community of any size. While no amount of planning and mitigation can remove 100-percent of the risk from terrorism, hazard mitigation and preparedness can help reduce the risk. The Department of Homeland Security requires many businesses and governments facilities that are at risk to prepare security and emergency plans assessing for threats and prevention. DHS requires measures to minimize threats in these plans with actions such as limited entries, barriers, security cameras, specialized access, escorts and many others. The City has facilities that require these types of measures. Given the lack of information on observed historical damages, frequency of occurrence, intensity and damage parameters, no estimate is available for the probability of a future occurrence of a terrorist event.

It is not possible to estimate the probability of a terrorist attack. The approach experts use to

prioritize mitigation and preparedness efforts is to identify critical sites and assess the vulnerability of these sites to terrorist attack. Vulnerability of these sites is determined subjectively by considering factors such as visibility (e.g., does the public know this facility exists in this location?), accessibility (e.g., is it easy for the public to access this site?) and occupancy (e.g., is there a potential for mass casualties at this site?).

Buildings and other structures constructed to resist earthquakes and fires usually have qualities that also limit damage from blasts and resist fire spread and spread of noxious fumes. Efforts to retrofit buildings to resist earthquakes often provide cost-effective opportunities to incorporate measures to mitigate against attacks using bombs, chemical and biological agents.

Probability:

While terrorism is a serious concern, there is a low probability of a terrorist event in the City due to its low population density and distance from the larger cities of San Francisco, San Jose and Oakland.

4.3.11 Transportation Incidents – Air, Rail, Highway and Water

Description

The City is vulnerable to transportation incidents involving airplanes, rail (freight and passenger), vehicles, or seafaring vessels on the Delta.

History:

A query of the National Transportation Safety Board Aviation Accident Database indicates there has been one aircraft accident in the City. See Table 4-15 for the list of air accidents closest to Pittsburg:

Table 4-15: Air, Rail, Highway, and Water Incidents in or near the City	
Year	Event
1992	A CESSNA 150-L crashed in Pittsburg on July 15, 1992. Two passengers were uninjured but the aircraft sustained a total loss.
1996	A train carrying government ordnance supplies derailed.
2003	On December 30, 2003 a propane-laden train derailed including 7 cars with hazardous liquid gas.
2003	On July 17, 2003 a train pulling tanks with sulfuric acid derailed.
2016	On October 25, 2016, about 1220 Pacific daylight time, a Textron Aviation (formerly Beechcraft) A36 Bonanza, N364RM, was destroyed when it impacted powerlines and terrain during a steep descent near Pittsburg, California. Both occupants were killed.

<https://data.nts.gov/Docket/Forms/searchdocket>

Location:

The airports closest to the City are Buchanan Field Airport, Byron Airport, Oakland International Airport, Rio Vista Municipal Airport, Livermore Municipal Airport, Napa County Airport, Nut Tree Airport, and San Francisco International Airport. The county lies along the West Coast air corridor and traffic patterns for Bay Area and Sacramento airports traverse the area. Many smaller private aircraft often fly in and out of Contra Costa County. The primary risk facing the City regarding airplane accidents would be the crashing of a light aircraft or helicopter. Although the incident would be traumatic for the immediate impact area, it is not expected that this would have a long-term impact on service operations within the City. The crash of a major airliner in the City would be catastrophic. A large area would be affected with plane wreckage, burning fuel, destroyed buildings, and casualties beyond the capability of local fire and emergency medical services personnel. Media attention would be overwhelming. Any air accident will involve coordination among federal, state, and local agencies to provide the necessary resources to manage such an event. Mass casualty transportation accidents typically require these agencies to establish a unified command post; disaster mortuary teams; set up medical aid stations; and develop a plan for moving patients and resources.

Military aircraft also travel through the air space above the City. Although the occurrence of an aircraft accident is rare, such an incident can result in extensive casualties, both in the aircraft and on the ground.

The Burlington Northern Santa Fe Railroad runs through the City. These trains may carry both cargo and/or passengers. The most recent train derailments that occurred in Pittsburg include a train vs. truck accident on July 14, 2009, an 11-car derailment that occurred on November 10, 2009, and a locomotive derailment that occurred on January 29, 2010. Many of these trains carry hazardous materials that if spilled could cause mass evacuation of surrounding neighborhoods, or order to shelter in place, depending on the chemical involved. There are schools and homes near the train tracks that would need to be evacuated if a hazardous materials spill occurred as a result of a train derailment.

The Bay Area Rapid Transit (BART) rail runs through Pittsburg. The heavy rail for current BART service runs to the Pittsburg-Bay Point station (and a bit beyond) west of Bailey Road. The eastern Contra Costa County BART extension scheduled for completion by 2017 will continue the service line through Pittsburg approximately parallel to Highway 4 to Hillcrest Avenue in Antioch. A derailment of a BART train could be devastating for passengers and shut down commuter rail traffic for considerable periods of time. Alternate transportation would have to be provided while the train was cleared and tracks repaired.

Highway 4, which runs through the City, is a designated route for transporting hazardous materials. A trucking incident on a main transportation artery could result in considerable loss of life and property and hamper traffic through the county. The primary highways through Contra Costa County are Interstate 680, State Route 24, and State Route 4, which runs through Pittsburg. These routes are used heavily during most hours of the day and the control of vehicular traffic in

and around the affected area of a multi-casualty or hazardous materials incident will be a considerable problem.

Casualty transportation resources will be in great demand; therefore, it is vital that casualties be transported on the basis of medical triage priorities. Patient tracking will begin at the scene using a Patient Tracking Tag which will be attached to the patient during triage operations. This tag will remain with the patient until the final medical treatment facility is reached.

Trucks and buses will be used to transport the evacuated casualties. However, ambulances from unaffected areas will be primarily needed for the transport of casualties from the receiving sites in reception areas to definitive care facilities. Regional Disaster Medical Health Coordinators (RDMHCs) have the responsibility to support the mutual aid requests of the Medical Health Operational Area Coordinator (MHOAC) for disaster response within the region and provide mutual aid support to other areas of the state in support of the state medical response system. The RDMHC also serves as an information source to the state medical and health response system.

Pittsburg borders on Suisun Bay which contains a navigable channel that leads to the Ports of Sacramento and Stockton. Maritime transportation accidents such as grounding, collision and allision are possible. The most likely result of a maritime transportation accident is an oil spill that can affect nearby shorelines causing harm to animals and posing a health hazard to people who may come into contact with the oil. Release of hazardous materials is also possible, depending on the cargo of the vessel.

Extent:

Both air and rail hazards encompass many threats, such as hazardous materials incident, fire, explosion, severe damage to rail lines, roadways, adjacent buildings, or vehicles, roadway closures, evacuations, and loss of life if pedestrians or those in either the adjacent buildings or vehicles are affected by the incident.

Any air accident will involve coordination among federal, state and local agencies. The Contra Costa Fire Protection District will coordinate with the Federal Aviation Administration, and agencies from Contra Costa County, and State of California to provide the necessary resources to manage such an event. The nature of an air mass casualty transportation accident will require these agencies to establish a unified command post; disaster mortuary teams; set up medical aid stations; and develop a plan for moving patients and resources.

A rail accident would be less devastating and typically involve vehicles driving on the city streets at a train crossing. A railcar accident would most likely also be a hazardous materials incident. The railroad crosses major streets in the commercial zone of the City. The tankers leaving or enroute to the refinery are typically loaded with crude oil or other refined oil products. When a rail car is involved in an accident or derailment, a combination of products and materials that are extremely hazardous

and/or flammable may be released and cause a rupture or burst into flames.

Probability of Future Events:

Transportation incidents occur on a nearly daily basis. Most are minor traffic accidents with no injuries. Major transportation incidents that result in multiple deaths/injuries or release of large amounts of hazardous materials are relatively rare with a probability of less than 10 percent occurrence annually.

4.3.12: Wildland Fire

Description:

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.

There are three (3) different classes of wild land or wildfires:

- 1) A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees;
- 2) A ground fire is usually started by lightning and burns on or below the forest floor;
- 3) Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees.

Wildfires are usually signaled by dense smoke that fills the area for miles around. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity and low precipitation during the summer and spring and moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Wildfires are a necessary part of the natural ecosystem in California, but they become a hazard when they extend out of control into developed areas, with the resultant of loss of property, injuries or the loss of life. The wildfire risk in the United States has increased in the last few decades with the increasing encroachment of residences and other structures into the wild land environment and the increasingly larger number of people living and playing in wild land areas.

While the primary fire threat in the Bay Area is from wildfire, urban conflagration, or a large disastrous fire in an urban area, as a major hazard that can occur due to many causes such as wildfires, earthquakes, gas leaks, chemical explosions, or arson. The urban fire conflagration that followed the 1906 San Francisco Earthquake did more damage than the earthquake itself. A source of danger to cities throughout human history, urban conflagration has been reduced as a general source of risk to life and property through improvements in community design, construction materials, and fire protection systems.

The Contra Costa County Fire Protection District (CCCFPD) provides fire prevention, suppression, and

emergency medical response for advanced and basic life support to nine cities and much of the unincorporated territory in the central and western portions of Contra Costa County, including the City and the project site. The CCCFPD operates 30¹³ stations throughout its jurisdictional area and has a staff of over 250 uniformed personnel. Within the Pittsburg Planning Area, there are three (3) CCCFPD fire stations.

History:

Contra Costa County has received two state and no federal disaster declarations related to fire between 1950 and 2022. The SCU (Santa Clara Unit) Lightning Complex fires were wildfires that burned in the Diablo Range in California in August and September 2020 as part of the 2020 California wildfire season. The fire complex consisted of fires in Santa Clara, Alameda, Contra Costa, San Joaquin, Merced, and Stanislaus counties. The name is derived from the three-letter designation given to the California Department of Forestry and Fire Protection (Cal Fire) division responsible for the Santa Clara, Alameda, Contra Costa, and parts of San Joaquin and Stanislaus counties, and the complex consisted of several distinct fires occurring in this region.

The complex fire burned a total of 393,624 acres from August 16 to October 1, 2020. Cal Fire maintained responsibility for the incident through its duration. 222 structures were destroyed and six (6) injuries were reports.

There have been numerous small fires that did not result in disaster declarations. Typically, there are several fires a year, predominantly in the Diablo Range/East Bay Hills.

Location:

In Contra Costa County, 118,509 acres are located in WUI areas and approximately 37,721 acres are in a high, very high or extreme Fire Hazard Severity Zone (FHSZ). The geography, weather patterns and vegetation in the East Bay area provide ideal conditions for recurring wildfires. Especially vulnerable are the East Bay Hills in Lamorinda (which includes Lafayette, Moraga, and Orinda). Parts of Walnut Creek, including the area surrounding Rossmoor, are vulnerable to WUI fires, as are Clayton, the Danville/San Ramon area, and the San Pablo - El Cerrito, El Sobrante area.

Additionally, peat fires, which occur in the Sacramento/San Joaquin Delta on reclaimed land east of the City can result in heavy smoke. This can affect air quality and result in hazardous atmospheric particulate matter.

Figure 4-13 illustrates the areas at risk to a wildfire event. The area with the highest risk of wildfire is in the southern portion of the City.¹⁴

¹³ <https://cccfd.org/station-address/>

¹⁴ <https://egis.fire.ca.gov/FHSZ/>

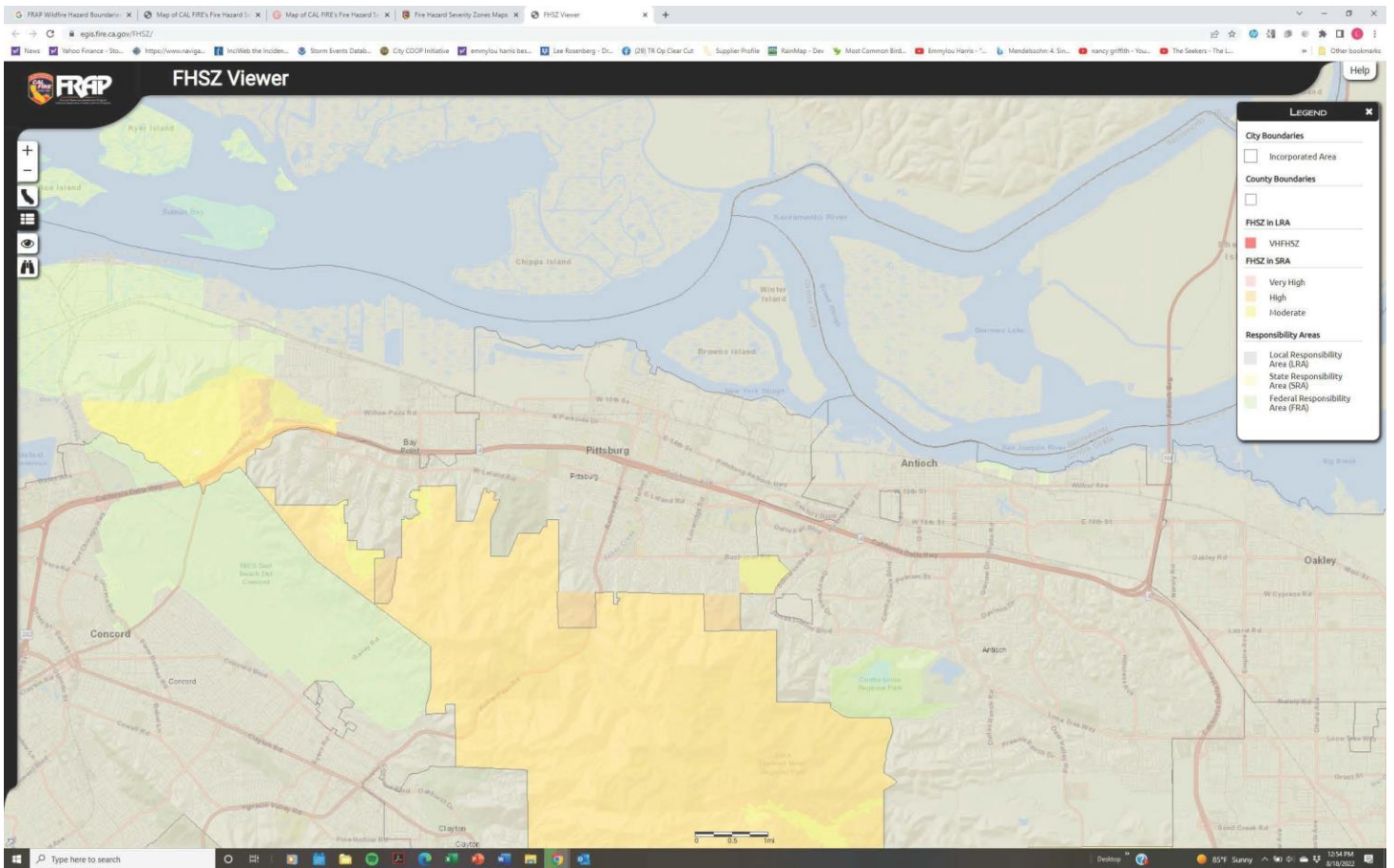


Figure 4-13

Extent:

Fire Severity Zones are used in determining additional protective measures required when building new structures or remodeling older structures within the particular zone. Additional measures must be taken on the property around a structure in the higher ranked fire Severity Zones.

Fire hazard mapping is a way to measure the physical fire behavior to predict the damage a fire is likely to cause. Fire hazard measurement includes vegetative fuels, probability of speed at which a wildfire moves the amount of heat the fire produces, and most importantly, the burning fire brands that the fire sends ahead of the flaming front.

The model used to develop the information in accounts for topography, especially the steepness of the slopes (i.e. fires burn faster as they burn up-slope). Weather (e.g. temperature, humidity, wind) also significantly influence fire behavior. The areas depicted as moderate and high in are of particular concern and potential fire risk in these areas are constantly increasing as human development, and the wildland urban interface areas expand.

Earthquakes can cause multiple ignitions distributed over a broad geographic area. Fires can be ignited by a variety of sources, including arcing downed electrical lines, sparks near ruptured gas pipelines, overturned electrical appliances, such as water heaters and spills of reactive chemicals. If the earthquake has also impaired the water distribution system, limiting the water available to fight these fires and fire personnel are busy conducting search and rescue operations, earthquake induced fires have the potential to be the worst-case fire-suppression scenarios for the City.

Impact of Climate Change:

Wildfire risk increases due to climate change because of higher temperatures and longer dry periods over longer fire seasons. Additionally, wildfire risk will also be influenced by potential changes in vegetation.

Research produced by UC Merced has projected the future fire risk, impacted by climate change, compared to existing fire risk. In the Bay Area the results are mixed. The research projects some locations in the East Bay and South Bay to exhibit decreased fire risk, while areas on the Peninsula and North Bay exhibit a 150 percent increase in fire risk by 2085. Generally, across the Bay Area there is fairly limited change in fire risk in the year 2050, with the greatest change in occurring between 2050 and 2085, especially in the high emission scenario. The Cal Adapt data suggests that some jurisdictions might have to adapt more aggressively compared to others.

The future fire risk model analyzes two primary variables: fuel availability and flammability of fuel. In California, the change in fire risk is a result of either a densely forested ecosystem becoming drier, or a dry climate experiencing large vegetation growth after a year of above average precipitation. In the first scenario the suite of climate impacts (higher temperatures, less snowpack, earlier springs) result in previously wet dense fuel ecosystems becoming dry – increasing the fire risk. In the second ecosystem, dominated by grass and low-density shrubs, the risk is often unchanged or decreased because the availability of fuel is the governing variable for fire risk, which remains unchanged or decreases as a result of projected precipitation. These modeling characteristics are reflected in the Bay Area's future fire risk map.

The Bay Area, compared with other portions of California, especially those near the Oregon border, has a much lower projected increase in fire risk due to climate change. Near the Oregon border, many areas are expecting a 500 percent increase in fire risk by 2085, with some areas projected to see their fire risk increase more than 10 times.

Future Probability:

Wildfires cannot be accurately predicted. It is possible that a fire in the wildland/urban interface south of the City could impact City communities. Recent, northern California wildfires have demonstrated

more destructive behavior than in the past, burning paths down from the hills and into residential neighborhoods. Additionally, peat fires which occur in the Sacramento/San Joaquin Delta on reclaimed land east of the City can result in heavy smoke. This can affect air quality and result in hazardous atmospheric particulate matter.

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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 populations, 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 HAZARD RISK RATING

For the 2022 HMP the risk for each hazard was rated using the Calculated Priority Risk Index (CPRI). The CPRI examines four criteria for each hazard (probability, magnitude/severity, warning time, and duration (**Table 5-1**)). 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 5-2 is an overall summary of the hazard evaluations for the City.

Table 5-1: Calculated Priority Risk Index				
CPRI Category	Degree of Risk Chart			Assigned Weight
	Level ID	Description	Index Value	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 0.001.	1	45%
	Possible	Rare occurrences with at least one documented or anecdotal historic event. Annual probability of between 0.01 and 0.001.	2	
	Likely	Occasional occurrence with at least two or more documented historic events. Annual probability of between 0.1 and 0.01.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 0.1.	4	
Magnitude-Severity	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths.	1	30%
		Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.		

	Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries and illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructures). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.	4	
Warning Time	< than 6 hours	Population receives less than 6 hours of warning.	4	15%
	6 to 12 hours	Population receives between 6-12 hours of warning.	3	
	12 to 24 hours	Population receives between 12-24 hours of warning.	2	
	> than 24 hours	Population receives greater than 24 hours of warning.	1	
Duration	< than 6 hours	Disaster event will last less than 6 hours.	1	10%
	6 to 24 hours	Disaster event will last between 6-24 hours.	2	
	24 hrs. to 1 week	Disaster event will last between 24 hours and 1 week.	3	
	> than 1 week	Disaster event will last more than 1 week.	4	

Table 5-2: Calculated Priority Risk Index Summary

Hazard	Probability	Weighted 45%	Magnitude Severity	Weighted 30%	Warning Time	Weighted 15%	Duration	Weighted 10%	CPRI Ranking
Civil Unrest	2	0.90	1	0.30	3	0.45	2	0.20	1.85
Climate Change – Air Pollution, Rising Tides	4	1.80	4	1.20	1	0.15	4	0.40	3.55
Drought	4	1.80	2	0.60	1	0.15	4	0.40	2.95
Earthquake – Seismic Hazards	3	1.35	3	0.90	4	0.60	4	0.40	3.25
Flooding – Localized Storms, Seiches	4	1.80	2	0.60	2	0.30	3	0.30	3.00
Hazardous Materials – Chemical Storage	4	1.80	3	0.90	2	0.30	3	0.30	3.30
Pipeline – Oil Spills	1	0.45	2	0.30	4	0.60	2	0.20	1.55
Public Health – Epidemic, Pandemic	3	1.35	4	1.20	1	0.15	4	0.40	3.10
Severe Weather – Wind, Tornadoes, Heat	4	1.80	1	0.30	2	0.30	3	0.30	2.70
Terrorism – Cybersecurity	2	0.90	4	1.20	4	0.60	4	0.40	3.10
Transportation Incidents – Air, Rail, Highway, and Water	4	1.80	1	0.30	4	0.60	2	0.20	2.90
Wildland and Urban Fires	4	1.80	2	0.30	4	0.60	2	0.20	2.90

CPRI Hazard Risk Scoring

Risk Level	Severe	High	Moderate	Low
Rank Score	4	3 – 3.9	2 – 2.9	1 – 1.9

5.2 POPULATIONS AND INFRASTRUCTURE AT RISK

Residential population data for Pittsburg was obtained from the State of California Department of Finance E-1 Population Estimates for Cities, Counties, and the State — January 1, 2021/2022. The population is estimated to be 75,156. The zoning district map below shows the distribution of residential and business districts throughout the city.

5.2.1 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) that defines critical facilities as shelters, hospitals EOCs, data centers, utility plants or high hazardous materials facilities, as well as the FEMA Hazard Mitigation Handbook that described three categories of facilities for analysis to revise the list: critical facilities such as City operations and public safety; high potential loss facilities such as businesses, churches, schools, and facilities with hazardous materials; and critical infrastructure such as streets and bridges, airports, and oil refineries. **Table 5-3** lists the critical facilities for the 2022 HMP.

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Table 5-3: Pittsburg Critical Facilities		
Facility Name	Category	Site Purpose
Pittsburg Public Library	Critical Infrastructure	Shelter Location
Pittsburg City Hall	Critical Facility	Public Safety/Continuity of Operations
Pittsburg Corporation Yard	Critical Facility	Public Safety
Pittsburg Environmental Center/Yard	Critical Facility	Public Safety
Pittsburg Marina Waterfront	Critical Facility	Public Safety
Pittsburg Senior Center	Critical Facility	Shelter Location
California Theatre	Critical Facility	Shelter Location
City Park Facility	Critical Facility	Evacuation Site
Buchanan Community Center	Critical Facility	Evacuation Site/Shelter
Buchanan Swim Center	Critical Facility	Evacuation Site
John Henry John Park	Critical Facility	Evacuation Site/Shelter
Marina Community Center	Critical Facility	Shelter Site/Evacuation
Pittsburg Water Treatment Plant	Critical Infrastructure	Water Services
Reservoir 1	Critical Infrastructure	Water Services
Reservoir 2	Critical Infrastructure	Water Services
Reservoir 3	Critical Infrastructure	Water Services
Reservoir 4	Critical Infrastructure	Water Services
Reservoir 5	Critical Infrastructure	Water Services
Reservoir 6	Critical Infrastructure	Water Services
Reservoir 7	Critical Infrastructure	Water Services
Pump Station 1	Critical Infrastructure	Water Services
Wastewater Collection System	Critical Infrastructure	Sanitation Services
Non-City Owned Critical Infrastructure and High Potential Loss Facilities		
Contra Costa Fire Protection District: - Station 84 - 1903 Railroad Ave. - Station 85 - 2331 Loveridge Rd. - Station 87 - 800 W Leland Rd.	Critical Infrastructure	Public Safety
Contra Costa County Superior Court	Critical Infrastructure	Continuity of Operations
Los Medanos College	Critical Facility	High Population / Target Site
Contra Costa Community College District	Critical Facility	High Population / Target Site

Pittsburg Unified School District	Critical Facility	Shelter/Evacuation Center
Chamber of Commerce	Critical Facility	Business Coordination
Corteva Corporation	High Potential Loss Facility	High Hazard Site
K2Pure	High Potential Loss Facility	High Hazard Site
U.S. Steel Company	High Potential Loss Facility	High Hazard Site
Delta Diablo Sanitation District	High Potential Loss Facility	Sanitation Utility
Contra Costa Water	High Potential Loss Facility	Water Resource Utility
Mt Diablo Resource Recovery – RCTS	High Potential Loss Facility	Garbage Recycling Facility
Kinder Morgan, Concord	High Potential Loss Facility	High Hazard Site
Shell Oil, Martinez	High Potential Loss Facility	High Hazard Site
Chevron, Richmond	High Potential Loss Facility	High Hazard Site
Bay Area Rapid Transit	High Potential Loss Facility	Mass Transportation
E-Bart Station – Pittsburg	High Potential Loss Facility	Mass Transportation
Railway – BSNF / Union Pacific	High Potential Loss Facility	High Hazard Site
Trans Bay Cable LLC	High Potential Loss Facility	Electrical Distribution
Los Medanos Energy Center	High Potential Loss Facility	Electrical Distribution
Delta Energy Center	High Potential Loss Facility	Electrical Distribution
Columbia Solar Facility	High Potential Loss Facility	Electrical Distribution
Kock Carbon	High Potential Loss Facility	High Hazard Site
HASA Chemical	High Potential Loss Facility	High Hazard Site
Praxair/Linde/Airgas	High Potential Loss Facility	High Hazard Site

5.3 EXISTING LAND USE

The City of Pittsburg has an ambitious goal to redefine the City’s land use approach, with a goal of 52% Parks and Open Spaces by the year 2020. The General Plan2040 Draft Land Use Element describes land use classification system, projects build-out of various land uses through 2020 and provides both City-wide and sub-area specific policies to guide land use decisions. **Table 5-4** depicts land use as of 2022.

Table 5-4: Land Use		
City of Pittsburg and Southern Hills		
Land Use Category	Acreage	Percent of Total
Residential	5,234.9	23%
Mixed-Use	232.8	1%
Commercial	1,386.6	6%
Industrial	1,364.5	6%
Parks	2,866.1	13%
Open Space	8,647.0	39%
Public / Institutional	1,182.3	5%
Utility/ROW/Water/Roadway	1,300.0	6%
Landfill	195.7	1%
Total Planning Area	22,409.9	100%

There is limited availability of vacant land within the City limits. Single-family homes, multi-family units, and mobile homes are the range of housing types.

The population density is 4,323 per square mile. There are only 64 acres in the City currently devoted to business and office uses. The City currently does not have any large-scale office developments.

Industrial uses continue to dominate the waterfront. Large manufacturing operations such as US Steel and the Dow Chemical plant are located along the eastern waterfront, while the Mirant (formerly PG&E) power plant, lies on the western waterfront. There are issues related to physical and visual buffering between industrial facilities and residential neighborhoods.

Pittsburg area comprises a total of 22,410 gross acres. More than half of this will remain in Open Space and Parks.

Cultural and Natural Resources

Development and human intervention have altered the landscape in Pittsburg, restricting natural vegetation primarily to undeveloped hillside areas. The southern third of the Planning Area is largely undeveloped open space with large expanses of rolling grassy hills, while the northern edge consists of salt and brackish marshlands at New York Slough.

Several threatened and endangered plant and animal species may find these natural areas suitable for their living, such as the western pond turtle, California red-legged frog, San Joaquin kit fox, Berkeley kangaroo rat, Tricolored blackbird, White-tailed kite, Mt Diablo manzanita, Alkali milk-vetch, Diamond-petaled poppy, and Mason’s lilaepsis.

Areas of particular biological concern within Pittsburg include Browns Island Regional Shoreline and Black Diamond Mines Regional Preserve and environs. An extensive list of Special Status Species Known to Occur or Potentially Occurring within Pittsburg Planning Area is located in Element 9, Resource Conservation, of

the Pittsburg General Plan.

5.4 RISK ASSESSMENT AND POTENTIAL LOSS

A risk assessment determines the vulnerability of assets within the City by evaluating the inventory of City owned existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure of people, buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that have the ability to cause damage to buildings and infrastructures, therefore, hazardous materials, drought, public health and climate change are not included in the assessment. More detailed assessments of risk that would include deaths and injuries, and economic losses, are beyond the scope of this plan. **Table 5-5** provides an analysis of Pittsburg’s critical infrastructure.

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Table 5-5: Impacting Hazards and Total Exposure

Critical Facilities	Impacting Hazards											Facility	Contents	Total Value	
	Civill Unrest	Climate Change	Drought	Earthquake	Flooding	HazMat	Pipeline Failure	Public Health	Severe Weather	Terrorism	Transportation				Wildland Fire
Pittsburg City Hall	X	X		X		X	X	X	X	X	X		24,767,836	2,428,418	\$27,196,254
Pittsburg Corporation Yard	X	X		X		X	X	X	X	X	X		\$4,225,503	\$2,006,089	\$6,231,592
Pittsburg Power Company		X		X		X	X	X	X	X	X		\$7,913,781	\$71,729	\$7,985,510
Pittsburg Marina & Waterfront	X	X		X	X	X	X	X	X	X	X		\$80,428,831	\$934,371	\$81,363,202
Pittsburg Parks & Recreation Department	X	X	X	X	X	X	X	X	X	X	X		\$1,709,330	\$1,023,270	\$2,732,600
Pittsburg Community Center (Senior Center)	X	X		X		X	X	X	X	X	X		\$4,437,600	\$371,859	\$4,809,459
City Park Facility	X	X	X	X		X	X	X	X	X	X		\$383,118	\$109,560	\$492,678
Buchanan Community Center & Swimming Pool	X	X		X		X	X	X	X	X	X		\$3,058,577	\$99,540	\$3,158,117
Delta View Golf Course Facilities	X	X	X	X	X	X	X	X	X	X	X	X	\$2,733,271	\$677,405	\$3,410,676
Pittsburg Water Treatment Plant	X	X		X	X	X	X	X	X	X	X		\$53,825,465	\$5,690,916	\$59,516,381
Reservoirs	X	X		X		X	X	X	X	X	X		\$23,943,368	\$0	\$23,943,368

Wells	X	X		X		X	X			X	X		\$1,272,370	\$0	\$1,272,370
Pump Stations	X	X		X	X	X	X	X	X	X	X		\$6,278,476	\$125,640	\$6,404,116
Wastewater Collection System	X	X		X	X	X	X	X	X	X	X		\$199,452	0	\$199,452
California Theater	X	X		X		X	X	X	X	X	X		\$4,106,500	\$10,596	\$4,117,096
Vincent A. Davis Library	X	X		X		X	X	X	X	X	X		\$5,575,091	\$1,620,188	\$7,195,279
Environmental Center	X	X		X		X	X	X	X	X	X		\$1,621,853	\$355,196	\$1,977,049
Small World Park	X	X	X	X		X	X	X	X	X	X		\$2,665,224	\$111,424	\$2,776,648
Marina Community Center – Law Enforcement Training Facility	X	X		X		X	X	X	X	X	X		\$4,310,750	\$0	\$4,310,750
Totals:													\$233,456,396	\$15,636,201	\$249,092,597

5.4.1 Analysis of Potential Losses

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table 5-5** used the best data currently available to produce the estimations of loss. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-City owned facilities, even though they are deemed critical. The City does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches. A mitigation action was developed to acquire that information so a complete analysis of critical facilities could be completed to show total potential loss in the City.

A quantitative assessment has been prepared for the critical facilities affected by each hazard assessed and multiplied by a value of percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles.

Table 5-5: Summary of Potential Loss

Hazard Type	Critical Facilities	Percent Damage	Replacement Value	Content Value	Estimated Replacement Loss	Estimated Content Loss	Total Estimated Loss
Civil Unrest	18	5	\$225,542,615	\$15,564,472	\$11,277,130	\$778,223	\$12,055,354
Climate Change	19	10	\$233,456,396	\$15,636,201	\$23,345,639	\$1,563,620	\$24,909,260
Drought	4	10	\$7,490,943	\$1,921,659	\$749,094.30	\$192,165.90	\$941,260
Earthquake	19	20	\$233,456,396	\$15,636,201	\$46,691,279	\$3,127,240	\$49,818,519
Flooding	6	20	\$145,174,825	\$781,810	\$29,034,965	\$156,362	\$29,191,327
HazMat	19	5	\$233,456,396	\$15,636,201	\$11,672,820	\$781,810	\$12,454,630
Pipeline Failure	19	5	\$233,456,396	\$15,636,201	\$11,672,820	\$781,810	\$12,454,630
Public Health	0	0	-	-	-	-	-
Severe Weather	19	5	\$233,456,396	\$15,636,201	\$11,672,820	\$781,810	\$12,454,630
Terrorism	19	10	\$233,456,396	\$15,636,201	\$23,345,639.60	\$1,563,620.10	\$24,909,260
Transportation	19	5	\$233,456,396	\$15,636,201	\$11,672,820	\$781,810	\$12,454,630
Wildland Fire	1	30	\$2,733,271	\$677,405	\$819,981	\$203,222	\$1,023,203

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SECTION 6: MITIGATION STRATEGY AND ACTION PLAN

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 example goals and objectives and determined which goals best met the City’s objectives for mitigation. The goals also align with the hazards in the 2022 plan and input provided by stakeholders and the public. **Table 6-1** lists the goals for the 2022 HMP.

Table 6-1: 2022 Hazard Mitigation Goals
Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.
Goal 2: Improve public understanding, support and need for hazard mitigation measures.
Goal 3: Promote disaster resistance for Pittsburg’s natural, existing, and future built environment.
Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.
Goal 5: Enhance the City’s ability to effectively and immediately respond to disasters.

6.1 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 2017 HMP. With information from the risk assessment, capability assessment, and status of the actions implemented since the 2017 HMP, the planning team developed XX new mitigation or continuing actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure. **Table 6-2** lists the status of the 2017 mitigation actions.

Table 6-2: 2017 HMP Mitigation Action Status		
#	Mitigation Action	Status
1.1	Develop a program to assess the City for soft story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	Keep this to put in the next plan.
1.2	Encourage seismic strength evaluations of critical facilities in the City to identify building integrity.	Keep this to put in the next plan.
1.3	Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.	Keep this in the next plan. Should revisit the memorandum of understanding (MOA) with Contra Costa County and/or the Bay Area Red Cross to share shelter database information. The MOA like needs to be updated to take Covid-19 rules into consideration. There are no new shelters identified.



1.4	Identify and pursue funding opportunities to develop and implement local mitigation activities.	There is a lot of mitigation grant money from the large fires and COVID disasters. The state is working very hard to distribute this money. Sometimes projects are in 7-8 figure range, and it is often worthwhile to get a consultant that is familiar with grant application/support process.
1.5	There has been damage to roadway embankment due to flooding at Buchanan Rd & Kirker Creek. Provide engineering and technical services to investigate the underlying cause of the damage and provide a recommendation to repair and prevent future damage/damage.	Flood – excellent opportunity for a grant application for each of these as individual projects. Put in a Notification of Intent to apply for the grant to Cal OES. If you are approved, you put in a full grant application with a benefit cost analysis to show that the benefit outweighs the cost.
1.6	Flood damage to the Sugartree and Birchwood drainage system resulted from previous flooding which affected nearby housing and roadways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Flood – excellent opportunity for a grant application for each of these as individual projects. Put in a Notification of Intent to apply for the grant to Cal OES If you are approved, you put in a full grant application with a benefit cost analysis to show that the benefit outweighs the cost.
1.7	Recent storms resulted in flooding along Parkside Dr. and caused damage to roadway. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Flood – excellent opportunity for a grant application for each of these as individual projects. Put in a Notification of Intent to apply for the grant to Cal OES If you are approved, you put in a full grant application with a benefit cost analysis to show that the benefit outweighs the cost.
1.8, 1.9	Recent storms resulted in flooding in Buchanan Park damaging and undermining walkways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage. Recent winter storms resulted in damage and erosion to Riverview Breakwater due to wind and rain. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Same as above for floods
2.1	Develop a public outreach and awareness program about the hazards in Pittsburg and mitigation actions community members can do in their homes	As simple as putting something on the webpage that refers to Ready.gov or COVID protective measures. Best to come up with a long-term plan that covers a series of topics.



<p>2.2, 2.3</p>	<p>Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.</p> <p>Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.</p>	<p>Engagement opportunities with partners and business can be done through Safety Nights, community fairs and/or social media.</p>
<p>2.4</p>	<p>Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.</p>	<p>Priority would be to protect the water tanks. They have a potential to fail during a large earthquake and result in loss of water service to large numbers of people.</p> <p>Add specific mitigation item to develop a wastewater distribution system/pipe replacement program.</p> <p>Note, that the City has their own two wells and can purchase water from Contra Costa Water District canal.</p> <p>The City has its own water treatment plant with large storage reservoirs.</p> <p>Another specific mitigation item could be to buy new steel reservoirs and retrofit others at the water treatment plant.</p> <p>San Marco tanks – 7-10 years old Buchanan – 40 years old Asbestos/lead pipes are also a concern.</p> <p>In response to a question, Lee said that the City can get a grant to make the engineering assessment, and then get a bigger grant to complete the work.</p>
<p>2.5</p>	<p>Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, man-made, and technological hazards.</p>	<p>Keep</p>
<p>2.6</p>	<p>Place more stress on the risks associated with natural and manmade hazards at public awareness campaigns conducted by various City departments.</p>	<p>Create a public awareness program to inform the public; can be at fairs or over social media.</p>
<p>3.1</p>	<p>Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for</p>	<p>Ongoing</p>



	existing development in areas vulnerable to natural, man-made, and technological hazards.	
3.2	Seek to implement codes, standards, and policies that will protect life and property from the impacts of hazards.	<p>The City does an annual progress report for the General Plan that addresses all the elements. This is ongoing. [Lee suggested they may want to make this a separate line item]</p> <p>The City is in the process of updating their 20-year General Plan. The City just adopted local codes.</p> <p>Add: “Continue to enforce the City’s stormwater abatement/runoff requirement to mitigate runoff in any new development.” <i>(Background: The General Plan did not include development standards that we have been implementing since 2005 regarding mitigation of runoff from new developments so that it doesn’t provide more runoff from the previous development state. (Put in place through the City stormwater permit).</i></p>
3.3	Inventory and develop replacement values for all City-owned assets and non-city assets to help the City better understand the values of assets at risk.	This is ongoing (confirmed; just done by Maria)
3.4	Integrate appropriate items from the Hazard Mitigation Plan (HMP) into the Health and Safety Element of the 2020 General Plan and other regulatory documents as appropriate.	Complete and ongoing. Lee suggested that as the City updates the General Plan and the 2017 HMP they should make sure this is coordinated and collaboration between the appropriate groups.
3.5 / 3.6	<p>Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.</p> <p>Inspect and repair the City reservoirs.</p>	<p>May want to remove and be more specific on what critical utilities and infrastructure (water, wastewater) May have your own IT backbone and cable infrastructure. Specifically for water/wastewater can be for piping and distribution or reservoirs.</p> <p>Yes, the City’s wastewater treatment pump stations. The City does not own its wastewater treatment plant.</p> <p>Public Works is putting in a request for money in a future budget for wastewater plant generators. Laura reminded the participants that there is a list of critical facilities and infrastructure identified.</p> <p>Richard – we put our waste in their trunkline. We don’t have the plant itself.</p>



4.1	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business and industry to create interest in the implementation of mitigation measures.	Consolidate or direct these engagement activities into something more specific
4.2	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.	There are specific grants that buy vehicles, response equipment, but other grant funding is available from Cal FIRE or other agencies that could support building an EOC.
4.3	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.	Fairly generic
4.4	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.	We have received other grants to boost our radio comms. Our application to UASI for EOC/OES funding was denied. The City is going to keep trying. The City bought a marine safety vessel under grant funding around 2017. The City applied for additional vehicles just before COVID when money wasn't as available as now.
4.5	Continue to develop mutual aid agreements and memorandum of understanding with agencies to serve emergency and disaster purposes.	Change this to long-term Laura wanted everyone to be aware there are now many different MOA/MOUs available to support different departments during response or recovery operations. "It's not just law enforcement anymore, and every department should be developing MOA/MOUs."
5.1	Create a redundant data center and complete fiber to that location.	Leave this in; there is progress on this program. The City is about six months from city-wide fiber installation; connecting 15 city buildings that will be connected to a fiber network.
5.2	Coordinate with the utility companies and vendors to strengthen, safeguard, or take other appropriate measures such as providing supplemental services, to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.	Ongoing; will look at opportunities to develop more action items.
5.3	Build a cadre of committed, trained, volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency	CERT has essentially hit a wall due to COVID restrictions. The City's CERT program was not robust before COVID, but it worked out.



	Response Team, communications staff, medical and health, and human services, during and after a disaster.	
5.4	Decentralize key components of the City's core network to allow the network to survive the failure of any one site from a disaster.	Table for later review.
5.5	Coordinate with Contra Costa County in hazard mitigation efforts for Pittsburg to protect two-way radio equipment from hazards by bracing antennas, securing repeaters, etc., from hazards.	The group talked about the two-way radio equipment. Police may want to reach out to the County regarding the maintenance and generator for EBRCS (East Bay Regional Communication System), did not know the status.

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 developed 18 mitigation actions and projects to reduce the effects of hazards, with emphasis is 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: goal, mitigation action, mitigation type, hazard(s) addressed, and implementing organization.

Table 6-3: Potential Mitigation Actions 2022					
Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
Goal 1: Protect life and property and reduce potential injuries from natural caused hazards.	1.1	Develop a program to assess the City for soft story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	Structural	Earthquake	Community Development
	1.2	Encourage seismic strength evaluations of critical facilities in the City to identify building integrity.	Critical facilities protection	All Hazards	Community Development
	1.3	Evaluate City and non-City facilities	Critical facilities protection	All Hazards	Public Works



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
		identified as potential shelter sites for structural integrity.			
	1.4	Identify and pursue funding opportunities to develop and implement local mitigation activities.	All	All natural	All
	1.5	There has been damage to roadway embankment due to flooding at Buchanan Rd & Kirker Creek. Provide engineering and technical services to investigate the underlying cause of the damage and provide a recommendation to repair and prevent future damage/damage.	Prevention	Flooding	Public Works
	1.6	Flood damage to the Sugartree and Birchwood drainage system resulted from previous flooding which affected nearby housing and roadways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Education and outreach	Flooding	Public Works
	1.7	Recent storms resulted in flooding along Parkside Dr. and caused damage to roadway. Provide engineering and technical services to	Critical Infrastructure	Flooding	Public Works



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
		investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.			
	1.8	Recent storms resulted in flooding in Buchanan Park damaging and undermining walkways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Prevention	Flooding	Public Works
	1.9	Recent winter storms resulted in damage and erosion to Riverview Breakwater due to wind and rain. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Prevention	Flooding	Public Works
	1.10	The Buchanan Park Pond serves as a detention basin. Over the years, it has filled with silt and does not perform its purpose. Dredge the pond to sufficient depth to support its function.	Prevention	Flooding	Public Works, Parks and Recreation



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
Goal 2: Improve public understanding, support and need for hazard mitigation measures.	2.1	Develop a public outreach and awareness program about the hazards in Pittsburg and mitigation actions community members can do in their homes.	Education and outreach	All Hazards	Public Information Officer
	2.2	Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.	Education and outreach	All Hazards	City Manager's Office Public Information Officer
	2.3	Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.	Education and outreach	All Hazards	All
	2.4	Develop an outreach program to create inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	Education and outreach	All Hazards	All
	2.5	Work with community organizations to provide information on programs and activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, man-	Education and outreach	All Hazards	All



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
		made, and technological hazards.			
	2.6	Place more stress on the risks associated with natural and manmade hazards at public awareness campaigns conducted by various City departments.	Education and outreach	All Hazards	All
Goal 3: Promote disaster resistance for natural, existing, and future built environment.	3.1	Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural, man-made, and technological hazards.	Prevention	All	Community Development
	3.2	Seek to implement codes, standards, and policies that will protect life and property from the impacts of hazards.	Regulatory	All	Community Development
	3.3	Inventory and develop replacement values for all City-owned assets and non-city assets to help the City better understand the values of assets at risk.	Prevention	All Hazards	City Manager's Office
	3.4	Integrate appropriate items from the Hazard Mitigation Plan (HMP) into the Health and Safety Element of the 2040	Regulatory	All	City Manager's Office, Community Development



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
		General Plan and other regulatory documents as appropriate.			
	3.5	Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.	Education and outreach	Drought	Public Works
	3.6	Inspect and repair/replace the City reservoirs.	Critical Infrastructure	Drought	Public Works
	3.7	Install emergency generators at the Senior Center (300 Presidio Lane) and other locations such as 340 Marina Blvd. that are potential shelters.	Critical Infrastructure	Fire, Flood, Earthquake	Community Development, Public Works
	3.8	Upgrade emergency generators at wastewater lift stations	Critical Infrastructure	Flood, Earthquake	Public Works
	3.9	Conduct an engineering assessment of Loveridge Road overpass on Kirker Creek Flood Channel; Inspect and engineer pile wall to prevent undermining of Pittsburg Antioch Highway east of Loveridge Rd	Critical Infrastructure	Flood	Public Works
	3.10	Assess flooding along Los Medanos Wasteway Channel and develop a mitigation approach.	Critical Infrastructure	Flood	Public Works
	3.11	Conduct an engineering assessment and develop a project to replace seawalls at the Marina	Critical Infrastructure	Climate change, Flood	Public Works



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.	4.1	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business and industry to create interest in the implementation of mitigation measures.	Education and outreach	All Hazards	All Departments
	4.2	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.	Education and outreach	All Hazards	Police Department
	4.3	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.	Education and outreach	All Hazards	City Manager's Office, Police Department
	4.4	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.	Education and outreach	All Hazards	City Manager's Office, Police Department
	4.5	Continue to develop mutual aid agreements and memorandum of understanding with agencies to serve emergency and disaster purposes.	Education and outreach	All Hazards	City Manager's Office, Police Department
Goal 5: Enhance the City's ability to effectively	5.1	Implement program for routine monitoring of weather channel and	Prevention	Extreme Heat, Flood, High Wind/	Police Department



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
and immediately respond to disasters.		NOAA advisories for early warning of severe weather		Winter Storm	
	5.2	Coordinate with the utility companies and vendors to strengthen, safeguard, or take other appropriate measures such as providing supplemental services, to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.	Critical Infrastructure	All Hazards	Public Works
	5.3	Build a cadre of committed, trained, volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency Response Team, communications staff, medical and health, and human services, during and after a disaster.	Structural	Earthquake	Police Department
	5.4	Decentralize key components of the City's core network to allow the network to survive the failure of	Prevention	All	IT



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
		any one site from a disaster.			
	5.5	Coordinate with Contra Costa County in hazard mitigation efforts for Pittsburg to protect two-way radio equipment from hazards by bracing antennas, securing repeaters, etc., from hazards.	Critical Infrastructure	All	Police Department
	5.6	Develop needs, assessment and locations of Emergency/Logistic Supplies for various emergencies from pandemics to earthquakes (i.e. lighting, portable generators, large tents, medical supplies, food supplies, radios, etc.).	Preparedness	All	City Manager's Office, Police Department
	5.7	Develop and implement a Continuity of Government Plan.	Preparedness	All	All
	5.8	Support creating as Community Animal Rescue Team – CART) and develop a best practice document for emergency animal shelters.	Preparedness	All	Police Department
	5.9	Coordinate with the Pittsburg Chamber of Commerce to create and train businesses to be prepared during disaster response and recovery events	Preparedness	All	City Manager's Office, Community Development



Table 6-3: Potential Mitigation Actions 2022

Goal	Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Organization
		(Business Emergency Response Teams – BERT) for the community and their employees to be able to keep operations functioning after the event.			

6.2 MITIGATION ACTION PLAN

The mitigation action plan developed by the planning team includes the action items that Pittsburg intends to implement during the next five years, assuming funding availability. The action plan, shown in **Table 6-4**, 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. The prioritization of projects in the HMP 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 take into account 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 3, 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-year life cycle of the HMP?
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 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:	
<p>1–6 = Low priority 7–12 = Medium priority 13–18 = High priority</p> <p>Using the criteria above, the planning team employed the Social, Technical, Administrative, Political, Legal, Economic, Environmental (STAPLEE) priority method to rank actions in the mitigation action plan. The results are contained in Appendix F.</p>	

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 one of three categories as a tentative schedule for implementation; short-range, mid-range, and long-range. Projects that are currently being

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implemented by various departments are assigned to the ongoing category. Implementation of short-range projects will typically

Table 6-4: Mitigation Action Plan					
Action Item #	Priority	Action Description	Timeline	Funding Source	Implementing Department
1.1	High	Develop a program to assess the City for soft story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	Long-range	General Fund or Other	Community Development
1.2	High	Encourage seismic strength evaluations of critical facilities in the City to identify building integrity.	Mid-range	General Fund	Community Development
1.3	High	Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.	Long-range	General Fund	Community Development
1.4	High	Identify and pursue funding opportunities to develop and implement local mitigation activities.	Short-range	Operating Budget	City Manager's Office, Police Department, Community Development
1.5	High	There has been damage to roadway embankment due to flooding at Buchanan Rd & Kirker Creek. Provide engineering and technical services to investigate the underlying cause of the damage and provide a recommendation to repair and prevent future damage/damage.	Short-range	Grant Funding	Engineering, Public Works
1.6	High	Flood damage to the Sugartree and Birchwood drainage system resulted from previous flooding which affected nearby housing and roadways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Short-range	Grant Funding	Engineering, Public Works
1.7	High	Recent storms resulted in flooding along Parkside Dr. and caused damage to roadway. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Short-range	Grant Funding	Engineering, Public Works
1.8	High	Recent storms resulted in flooding in Buchanan Park damaging and undermining walkways. Provide engineering and technical services to investigate the underlying cause of the flooding and	Short-range	Grant Funding	Engineering, Public Works



Action Item #	Priority	Action Description	Timeline	Funding Source	Implementing Department
		provide a recommendation to repair and prevent future damage/damage.			
1.9	High	Recent winter storms resulted in damage and erosion to Riverview Breakwater due to wind and rain. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Short-range	Grant Funding	Engineering, Public Works
1.10	High	The Buchanan Park Pond serves as a detention basin. Over the years, it has filled with silt and does not perform its purpose. Dredge the pond to sufficient depth to support its function.	Short-range	Operating Budget	Public Works, Parks & Recreation
2.1	High	Develop a public outreach and awareness program about the hazards in Pittsburg and mitigation actions community members can do in their homes.	Short-range	Operating Budget	City Manager's Office, Police Department
2.2	High	Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.	Short-range	Operating Budget	City Manager's Office, Police Department
2.3	High	Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.	Mid-range	Operating Budget	All Departments
2.4	High	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	Mid-range	General Fund	Community Development
2.5	High	Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, man-made, and technological hazards.	Long-range	Operating Budget	Community Development
2.6	High	Place more stress on the risks associated with natural and manmade hazards at public awareness campaigns conducted by various City departments.	Short-range	Operating Budget	All Departments



Action Item #	Priority	Action Description	Timeline	Funding Source	Implementing Department
		Improve hazard assessment information to make recommendations for avoiding new development in high hazard			Community
3.2	High	Seek to implement codes, standards, and policies that will protect life and property from the impacts of hazards.	Mid-range	Operating Budget	Community Development
3.3	High	Inventory and develop replacement values for all City-owned assets and non-City assets to help the City better understand the values of assets at risk.	Mid-range	General Fund	City Manager's Office
3.4	High	Integrate appropriate items from the Hazard Mitigation Plan (HMP) into the Health and Safety Element of the General Plan and other regulatory documents as appropriate.	Short-range	Operating Budget	City Manager's Office, Community Development
3.5	High	Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.	Mid-range	Operating Budget	All Departments
3.6	High	Inspect and repair the City reservoirs.	Ongoing	Water Utility	Water Utilities
3.7	High	Install emergency generators at the Senior Center (300 Presidio Lane) and other locations such as 340 Marina Blvd. that are potential shelters.	Long Range	Grant (BRIC)	Public Works, Community Services
3.8	High	Upgrade emergency generators at wastewater lift stations	Mid-range	Grant, Water Utility	Public Works, Water Utility
3.9	High	Conduct an engineering assessment of Loveridge Road overpass on Kirker Creek Flood Channel; Inspect and engineer pile wall to prevent undermining of Pittsburg Antioch Highway east of	Mid-range	Grant (FMA), Operating Budget	Public Works
3.10	High	Assess flooding along Los Medanos Wasteway Channel and develop a mitigation approach.	Mid-range	Grant (FMA), Operating Budget	Public Works
3.11	High	Conduct an engineering assessment and develop a project to replace seawalls at the Marina	Mid-range	Grant (FMA), Operating Budget	Public Works



Action Item #	Priority	Action Description	Timeline	Funding Source	Implementing Department
4.1	High	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business and industry to create interest in the implementation of mitigation measures.	Short-range	Operating Budget	All Departments
4.2	High	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.	Mid-range	General Fund	Police Department
4.3	High	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.	Short-range	Operating Budget	City Manager's Office, Police Department
4.4	High	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.	Mid-range	Operating Budget	City Manager's Office, Police Department
4.5	High	Continue to develop mutual aid agreements and memorandum of understanding with agencies to serve emergency and disaster purposes.	Short-range	Operating Budget	City Manager's Office, Police Department

Draft



Action Item #	Priority	Action Description	Timeline	Funding Source	Implementing Department
5.1	High	Create a redundant data center and complete fiber to that location.	Short-range	General Fund	City Manager's Office
5.2	High	Coordinate with the utility companies and vendors to strengthen, safeguard, or take other appropriate measures such as providing supplemental services, to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.	Short-range	Operating Budget	Community Development,
5.3	High	Build a cadre of committed, trained, volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency Response Team, communications staff, medical and health, and human services, during and after a disaster.	Short-range	Operating Budget	City Manager's Office, Police Department
5.4	High	Decentralize key components of the City's core network to allow the network to survive the failure of any one site from a disaster.	Mid-range	General Fund	City Manager's Office
5.5	High	Coordinate with Contra Costa County in hazard mitigation efforts for Pittsburg to protect two-way radio equipment from hazards such as bracing antennas, securing repeaters, etc., from hazards.	Short-range	Unknown	Police Department
5.6	High	Develop needs, assessment and locations of Emergency/Logistic Supplies for various emergencies from pandemics to earthquakes (i.e. lighting, portable generators, large tents, medical supplies, food supplies, radios, etc.).	Mid-range	Grant Funding	Police Department, Public Works
5.7	High	Develop and implement a Continuity of Government Plan.	Mid-range	General Fund	City Manager's Office
5.8	High	Support creating as Community Animal Rescue Team – CART) and develop a best practice document for emergency animal shelters.	Mid-range	General Fund	Police Department



Action Item #	Priority	Action Description	Timeline	Funding Source	Implementing Department
5.9	High	Coordinate with the Pittsburg Chamber of Commerce to create and train businesses to be prepared during disaster response and recovery events (Business Emergency Response Teams – BERT) for the community and their employees to be able to keep operations functioning after the event.	Mid-range	General Fund	City Manager's Office

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SECTION 7: PLAN MAINTENANCE, MONITORING AND EVALUATION

FEMA REGULATION CHECKLIST: PLANNING PROCESS

Documentation of the Planning Process

44 CFR § 201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Elements

A5. Is there discussion on how the community will continue public participation in the plan maintenance process? 44 CFR 201.6(c)(4)(iii)

A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? 44 CFR 201.6(c)(4)(i)

Source: FEMA, *Local Mitigation Planning Handbook Review Tool*, March 2013.

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 HMP 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 HMP, 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 2022 plan. 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 development. This philosophy will be continued 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 HMP and its implementation. The planning team will include representation from residents, citizen groups, and stakeholders within the planning area.

If planning team members can no longer serve on the planning team, the Department Director 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 Manager's Office will have primary department responsibility for the HMP'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 Manager and Department Directors will be jointly responsible for the plan's implementation and maintenance through existing City programs. Department Managers will be responsible for implementing mitigation strategies and actions specific to their department operations. The EOC Liaison will assume the lead responsibility for facilitating plan maintenance and coordinating the planning team.

Each August the planning team will begin the process of reviewing the HMP 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 to incorporate information. As updates to the HMP are completed, the public will be made aware of the changes to the HMP and make recommendations or comments.

The planning team will monitor 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 2022 HMP. 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 2022 HMP;
- 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 5-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 HMP 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 (6) months prior to the expiration date of the 2022 HMP, the planning team will implement a plan revision schedule to formally update the 2022 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.

7.3 CONTINUED PUBLIC INVOLVEMENT

The overall success of the HMP 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 HMP and must be given the opportunity to provide input to the continuous cycle of HMP planning.

The City will strive to keep the public aware of hazard mitigation projects that take place as a result of the HMP. Public information will be released through press releases, City website announcements, public hearings, council and commission meetings, and the City e-news blast to subscribers.

Projects that mitigate hazards are included in the City's annual budget planning process. City workshops are held, and meetings are convened, and the public is made aware of the planning through City Council meetings, open workshop sessions, 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 developed to gather input on how the community feels about the progress being made



on HMP activities. The City will also provide press releases and information about hazard mitigation projects to the public on a regular basis, but at a minimum, the public will be engaged to learn about current HMP activities and given the opportunity to provide comments and information on an annual basis to update and maintain the HMP. The Emergency Preparedness Coordinator will be responsible to ensure the public is included and involved in the annual public plan update and outreach.

When the time comes to begin revising the 2022 HMP, 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 HMP according to the five-year cycle. **Table 7-1** summarizes successful public involvement efforts previously conducted by the City, and 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		
Department	Public Involvement Activity or Opportunity	
	Past	Proposed
Administration	HMP Survey conducted online.	Conduct annual surveys online and at the annual National Night Out or a Public Safety Event.
All		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.



Table 7-1: Past and Proposed Continued Public Involvement

Department	Public Involvement Activity or Opportunity	
	Past	Proposed
Police Department, Administration	City agencies, such as Law Enforcement and Human Resources, and federal and congressional officials have conducted training events such as first aid and CPR, active shooter, school lockdown drills, emergency alert notification, American Red Cross training, as ways to educate the public and community leaders in responding to circumstances and situations.	<p>Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.</p> <p>Place more stress 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.</p>
Police Department		Procure funding and develop a City CERT. Encourage citizens to join the CERT. Employ the CERT and conduct outreach at City events and festivals.

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SECTION 8: PLAN ADOPTION

FEMA REGULATION CHECKLIST: PLAN ADOPTION

Adoption by the Local Governing Body

44 CFR § 201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. 44 CFR §201.6(c)(5)

Element

E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval?

Source: FEMA, *Local Mitigation Planning Handbook Review Tool*, March 2013.

Per 44 CFR 201.6(d)(1), the Pittsburg hazard mitigation plan must be submitted to the State Hazard Mitigation Officer (SHMO) for review. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. The State will coordinate with Pittsburg and between Pittsburg and FEMA, once the plan is sent to FEMA for the final review and approval. FEMA has the authority to conduct the final review and approve the HMP.

The 2022 Pittsburg Hazard Mitigation Plan meets all requirements on the regulation checklist and was adopted by City Council of the City of Pittsburg on [date added]. A scanned copy of the resolution is included on the following page. Accordingly, the City of Pittsburg meets the requirements of the Stafford Act, as amended, and 44 CFR § 201.6(c)(5).



APPENDICES:

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Appendix A: Acronyms and Abbreviations

2017 HMP	2017 City of Pittsburg Hazard Mitigation Plan
Cal OES	California Governor's Office of Emergency Services
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosive
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CRS	Community Rating System
DMA 2000	Disaster Mitigation Act of 2000
DPH	Department of Public Health
DPW	Department of Public Works
DWR	California Department of Water Resources
EPA	United States Environmental Protection Agency
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FMA	Flood Mitigation Assistance (grant program)
FY	Fiscal Year
GIS	Geographic Information System
GP	General Plan
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
M	Magnitude
Mw	Moment Magnitude
MMI Scale	Modified Mercalli Intensity scale
NFIP	National Flood Insurance Program
PG&E	Pacific Gas and Electric
PDM	Pre-Disaster Mitigation
RFC	Repetitive flood claims
RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SRL	Severe Repetitive Loss
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
STAPLEE	
UCERF	Uniform California Earthquake Rupture Forecast
USC	United States Code



USGS United States Geological Survey
WMD Weapon of Mass Destruction
WGCEP Working Group on California Earthquake Probabilities

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Appendix B: References

This section lists reference materials used to prepare the 2022 City of Pittsburg HMP :

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2. ABAG. (2013). ABAG Interactive Liquefaction Susceptibility Map. Retrieved from <http://gis.abag.ca.gov/website/Hazards/?hlyr=liqSusceptibility>
3. ABAG, (2010). Taming Natural Disasters: Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, <http://resilience.abag.ca.gov/2011mitigation/>
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5. Brocher, T.M., et al, (2015) The M6.0 24 August 2014 South Napa Earthquake. https://profile.usgs.gov/myscience/upload_folder/ci2015Jan2212351337182SRL%20Paper%20Brocher%20et%20al.pdf
6. California Adaptation Planning Guide, (2012). Planning for Adaptive Communities http://resources.ca.gov/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf
7. California Climate Change Center (2006). Our Changing Climate: Assessing the Risks to California. A Summary Report from the California Climate Change Center http://meteora.ucsd.edu/cap/pdffiles/CA_climate_Scenarios.pdf
8. California Climate Change Center, (2012). Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. A Summary Report on the Third Assessment from the California Climate Change Center, <http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf>
9. California Department of Conservation, (2010) Fault Activity Map, <http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html>
10. California Governor's Office of Emergency Services. (2013). State Hazard Mitigation Plan. Retrieved from <http://www.caloes.ca.gov/HazardMitigationSite/Documents/006-SHMP%202013%20Chapter%205.pdf>
11. California Department of Forestry, Cal Fire (2016) http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps
12. Cayan, D., et al. (2009). Climate Change Scenarios and Sea Level Rise Estimates for California - 2008 Climate Change Scenarios Assessment - Final Report. Scripps Institution of Oceanography - California Nevada Applications Program. <http://www.energy.ca.gov/publications/displayOneReport.php?pubNum=CEC-500-2009-014-F>
13. City of Pittsburg Emergency Operations Plan, (2014)
14. Committee on Sea Level Rise in California, Oregon, and Washington, and Board on Earth



Sciences and Resources and Ocean Studies Board, Division on Earth and Life Studies, (2012). Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, The National Academies Press,

<http://ssi.ucsd.edu/scc/images/NRC%20SL%20rise%20W%20coast%20USA%2012.pdf>

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16. Plan Bay Area. (2013, March). Draft Plan Bay Area. Retrieved from http://planbayarea.org/pdf/Draft_Plan_Bay_Area/00-Overview.pdf
17. United States Geological Survey. (2016, April). Earthquake hazard. Retrieved from USGS: <http://earthquake.usgs.gov/learn/glossary/?term=earthquake%20hazard>
18. United States Geological Survey. (2016, April). Liquefaction Hazards Map. Retrieved from USGS: <http://earthquake.usgs.gov/regional/nca/qmap/>
19. United States Geological Survey. (2016, June). Earthquake Hazards Program. Retrieved from <http://earthquake.usgs.gov/regional/nca/wg02/results.php>
20. United States Geological Survey. (2016) http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

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Appendix C: Local Mitigation Plan Review Tool

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community. This section was completed by the City of Pittsburg to ensure the HMP met the requirements of 44 CFR §201.6.

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Appendix D: Stakeholder & Public Outreach Documentation

Appendix D contains documentation of the planning process including meetings, presentations held for the stakeholders and public, and other stakeholder/public outreach efforts.

Activity Date	Meeting Audience/ Activity	Documentation
8/18/2022 – 9/15/2022	Survey posted on City Website with links provided in social media accounts.	Documentation 1 – Survey Documentation 2 – Posting on City Facebook Account Documentation 3 – Posting on City Webpage Documentation 4 – Posting on City Twitter Account
8/118/2022 – 9/15/2022	Public hazard mitigation survey conducted.	Documentation 5: Survey results in English and Spanish
	Draft LHMP provided for public review.	
	Draft LHMP provided to neighboring jurisdiction for review and comment.	

Documentation 1 – Survey:

Below is the survey posted to the City’s website.

LHMP Community Survey Overview

A Plan for Reducing Disaster Risk

The City is updating our Local Hazard Mitigation Plan or LHMP. The purpose of an LHMP is to 1) evaluate the threat posed by natural disasters and 2) establish a strategy for managing that risk. This plan will allow the City to receive both state and federal hazard mitigation grants and disaster relief funds. Moreover, it will guide our efforts to minimize the impact of disasters and climate change on Pittsburgh’s residents and businesses.

Public Input is Critical

Public input and feedback are crucial to building an effective LHMP. This is because hazard mitigation is a whole-community effort. As such, there will be multiple opportunities for you to share your thoughts, concerns, and interests. However, the first step is to help us understand YOU.

Help Us to Help You

Fill out the attached survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a natural disaster. All survey answers are anonymous and will only be used to help develop the City’s disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space.



LHMP Community Survey Questions

Residents and businesses in the City face a number of potential hazards. How concerned are you about the following hazards? (Check one for each hazard)

	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned
Civil Unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cyber Attack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extreme Heat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flooding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous Materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High Winds/Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pandemic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pipeline Spill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrorism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transport Accident	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pandemic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildland/Urban Fire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. How prepared is your household to cope with a hazard event? (Check one)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not sure	Not at all prepared	Somewhat prepared	Adequately prepared	Well prepared	Very well prepared

2. Which of the following actions has your household taken to prepare for hazard events? (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Prepare a disaster kit | <input type="checkbox"/> Stored non-perishable food |
| <input type="checkbox"/> Stored water (one gallon/person per day) | <input type="checkbox"/> Received First Aid/CPR training |
| <input type="checkbox"/> Purchased earthquake insurance | <input type="checkbox"/> Purchased flood insurance |
| <input type="checkbox"/> Installed smoke detectors on each level of the house | <input type="checkbox"/> Installed carbon monoxide detectors on each level of the house |
| <input type="checkbox"/> Taken a Community Emergency Response Team (CERT) Course | <input type="checkbox"/> Have fire extinguishers in appropriate areas of the house |
| <input type="checkbox"/> Stored medical supplies (first aid kit, prescription & over the counter meds) | <input type="checkbox"/> Stored a battery powered radio, flashlights, and extra batteries |
| <input type="checkbox"/> Created a home evacuation plan | <input type="checkbox"/> Identified utility shut-offs / have shut-off tools available |
| <input type="checkbox"/> Designated a family meeting place | <input type="checkbox"/> None |
| <input type="checkbox"/> Purchased/installed backup power capability (generator/solar) | |
| <input type="checkbox"/> Other (please specify): | |

3. Which of the following sources of information have helped you to prepare for a hazard event? (Check all that apply)

- Emergency preparedness information from a government source
- Attending meetings that have provided disaster preparedness information
- Community Emergency Response Team (CERT) Training
- Disaster exhibit at a local fair or community event
- Church disaster preparedness event
- Civic organization disaster preparedness (Red Cross, etc.)
- Personal experience with previous hazards or disasters
- School or other academic institution distribution of materials
- Locally news or regional media source
- Phone book or marketing distribution of materials
- Other (please specify):

4. How important do you find the following community-wide actions or activities that may reduce the risk of hazards?

	Not Important	Somewhat Important	Very Important	Extremely Important
<u>Prevention activities</u> such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning, & building codes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Property protection actions</u> that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Structural projects intended to lessen hazard impact</u> by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Emergency services actions</u> that protect people and property during and immediately after a hazard event, such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Public education and awareness activities</u> to inform community members about hazards and the techniques they can use to protect and prepare their property and themselves, including outreach projects, CERT, school programs, library materials, and safety fair events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Other (Please Specify):</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Do you or anyone in your household have disabilities and/or access and functional needs and would you be interested in early warning notifications or specialized response to evacuate during disasters?

- Yes
- No
- Other (Please Specify):

6. If you answered yes to Question 6: do you have a certified service animal that you would be interested in evacuating with you or a household member to a shelter during a disaster?

- Yes
- No
- Other (Please Specify):

7. If you answered yes to Question 6: would you be interested in more information about Disaster Assistance for people with disabilities and / or access and functional needs?

- Yes
- No
- Other (Please Specify):

8. If you answered yes to Question 6: would you be interested in more information about Disaster Assistance for people with disabilities and / or access and functional needs?

- Yes
- No

9. Please indicate how you feel about the following statement: It is the responsibility of the government (local, state, and federal) to provide education and programs that promote citizen actions that will reduce exposure to the risks associated with hazards. Choose one

- Strongly Disagree
- Somewhat Disagree
- Neither Agree or Disagree
- Somewhat Agree
- Strongly Agree

10. Please indicate how you feel about the following statement: It is my personal responsibility to be educated and take actions that will reduce my exposure to the risks associate with hazards. Choose one

- Strongly Disagree
- Somewhat Disagree
- Neither Agree or Disagree
- Somewhat Agree
- Strongly Agree

11. Which of the following sources or methods of receiving hazard and disaster preparedness information do you think are most effective: (Check all that apply)

- Strongly Disagree
- Somewhat Disagree
- Neither Agree or Disagree
- Somewhat Agree
- Strongly Agree

12. Which of the following sources or methods of receiving hazard and disaster preparedness information do you think are most effective: (Check all that apply)

- Internet
- City Website
- City Newsletter
- Brochures
- Social Media (Facebook, Instagram, Twitter, etc.)
- Public Library
- Radio – 1670 AM City Emergency Radio
- Everbridge ALERTS
- Workshops, Neighborhood Meetings
- Schools and Academic Institutions
- Fire Department
- Law Enforcement

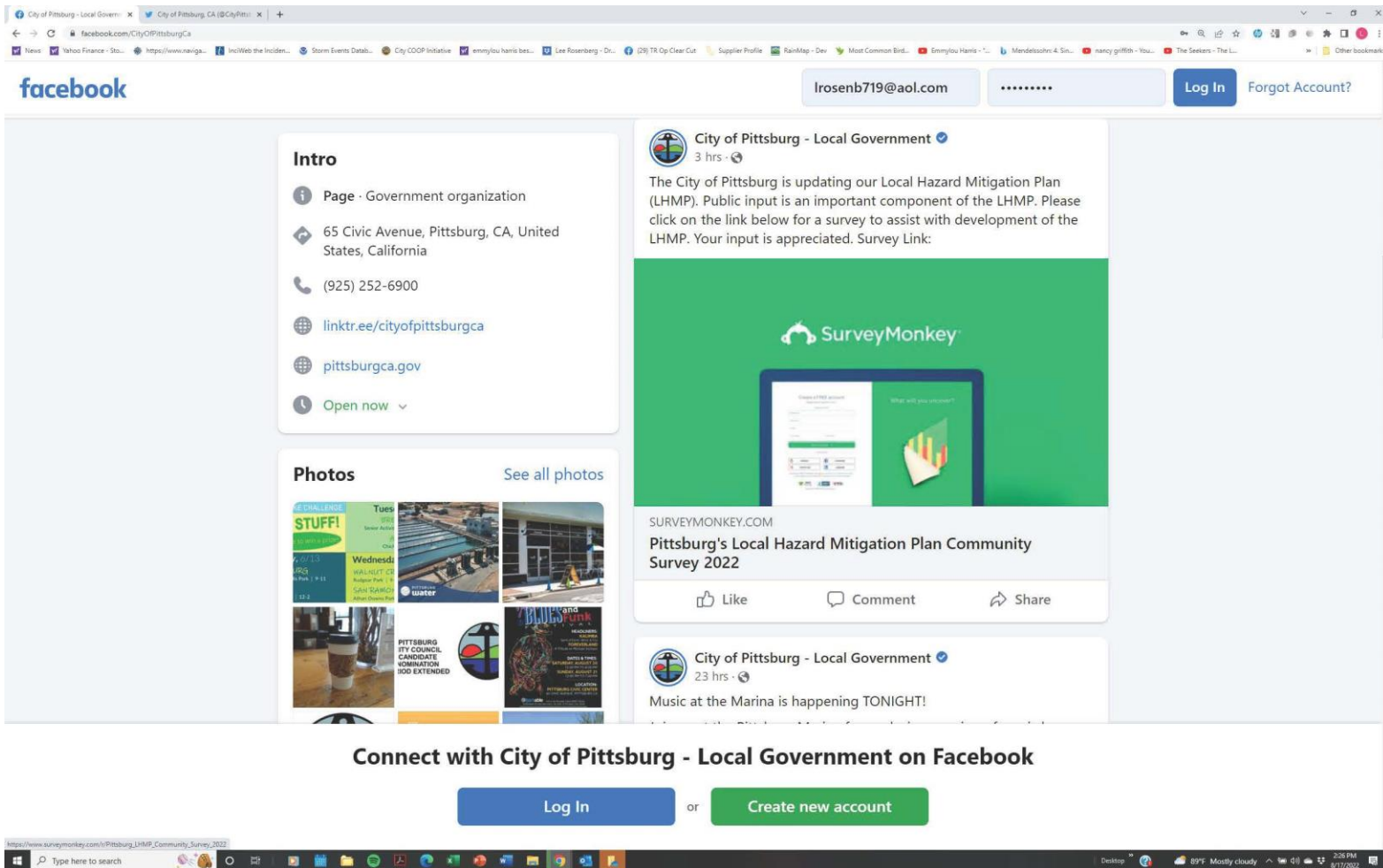
- American Red Cross
- Public Awareness Campaigns
- Word of Mouth
- Reverse 9-1-1 Notifications (TEMS, Everbridge)
- Other: Please specify _____

Additional Comments/Answer Space:

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Below are links to social media that were used to advertise the community survey.

Documentation 2 - Facebook Account:



Documentaion 3 – Website:

The screenshot shows the City of Pittsburg website. The top navigation bar includes links for Employment, Contact Us, Translate, and a search bar. Below this is a secondary navigation bar with categories: OUR CITY, GOVERNMENT (highlighted), BUSINESS, SERVICES, and HOW DO I... The main content area features a 'News' section with the article 'Pittsburg's Local Hazard Mitigation Plan Community Survey 2022'. The article text explains that the city is updating its Local Hazard Mitigation Plan (LHMP) in accordance with the Federal Disaster Mitigation Act of 2000 (DMA 2000). It also provides a link to the survey and a section titled 'What is Hazard Mitigation?' which defines the term and lists key steps for mitigation.

City of Pittsburg

Employment | Contact Us | Translate | I Want To | Search...

OUR CITY | GOVERNMENT | BUSINESS | SERVICES | HOW DO I...

City Council
Boards, Commissions and Committees
City Attorney
City Clerk
City Manager
Community Development
Community Services
Economic Development
Environmental Services
Finance
Human Resources
Police
Public Works
Parks and Recreation
Water Department
Pittsburg Municipal Code
Streaming Media
Archived Meeting Agendas & Minutes
5-Year Capital Improvement Program
Coronavirus Update
eNews Sign Up
News
Public Notices
Organization Chart
Public Reviews
ThinkPittsburg Site Selection

Government »

News

Font Size: [A] [AA] [AAA] | Share & Bookmark | Feedback | Print

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Post Date: 08/17/2022 2:00 PM

City of Pittsburg Local Hazard Mitigation Plan

The City of Pittsburg is updating our Local Hazard Mitigation Plan (LHMP) in accordance with the Federal Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 requires local governments to develop and submit LHMPs as a condition of receiving Hazard Mitigation Grant Program and other mitigation project grant funding. This includes potential pre-disaster mitigation funding and post-disaster mitigation funding for existing City facilities.

Take the Hazard Mitigation Plan survey
https://www.surveymonkey.com/r/Pittsburg_LHMP_Community_Survey_2022

What is Hazard Mitigation?

The Federal Emergency Management Agency (FEMA) describes hazard mitigation as "any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards." Although the requirement set by 44 Code of Federal Regulations (CFR), Subpart M Section 206.401 requires a planning area to describe only natural hazards that may affect the jurisdiction, most planning areas include technological and human-caused hazards in the LHMP to represent the total risk from hazards to the planning area. In addition, the State of California, enacted as SB 379, requires all local planning areas to assess vulnerabilities associated with climate change.

Hazards can result in death and destruction of property and infrastructure. The work done to minimize the impact of hazard events to life and property is called hazard mitigation. Often, these damaging events occur in the same locations over time (i.e. earthquakes along fault lines), and cause repeated damage. Because of this, hazard mitigation is often focused on reducing repetitive loss, thereby breaking the disaster cycle. The essential steps of hazard mitigation are:

- Identify and profile hazards that affect the local area analyze the people and facilities at risk from those hazards
- Develop mitigation actions to lessen or reduce the impact of the profiled hazards.

Type here to search | Desktop | 72°F Sunny | 9:12 AM 8/16/2022

Documentation 4 – Twitter Account:

City of Pittsburg, CA
276 Tweets

City of Pittsburg, CA
@CityPittsburgCA

Thanks visiting the official Twitter account for the City of Pittsburg, CA. Be sure to check us out on Facebook & Instagram @CityOfPittsburgCA!
Pittsburg, CA ci.pittsburg.ca.us Joined July 2019
130 Following 420 Followers

City of Pittsburg, CA @CityPittsburgCA · 24m
The City of Pittsburg is updating Local Hazard Mitigation Plan (LHMP). Public input is an important component of the LHMP. Survey Link:
surveymonkey.com
Pittsburg's Local Hazard Mitigation Plan Community Survey 2022
Take this survey powered by surveymonkey.com. Create your own surveys for free.

Don't miss what's happening
People on Twitter are the first to know.

Log in Sign up

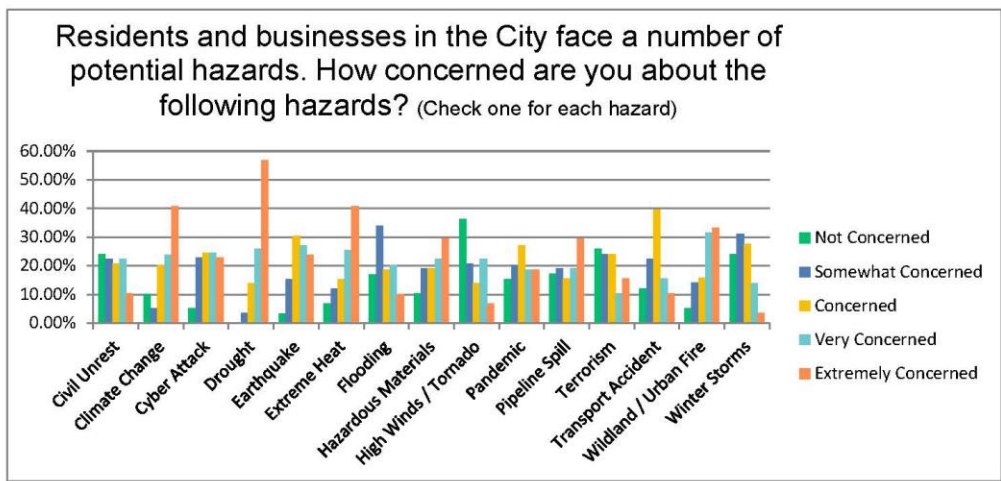
Documentation 5 – Survey results:

Below are the results of the 2022 public survey conducted to support gathering input to the updated LHMP. The City received 59 responses in English.

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Residents and businesses in the City face a number of potential hazards. How concerned are you about the following hazards? (Check one for each hazard)

Hazard	Not Concerned		Somewhat Concerned		Concerned		Very Concerned		Extremely Concerned		Total
	%	Count	%	Count	%	Count	%	Count	%	Count	
Civil Unrest	24.14%	14	22.41%	13	20.69%	12	22.41%	13	10.34%	6	58
Climate Change	10.17%	6	5.08%	3	20.34%	12	23.73%	14	40.68%	24	59
Cyber Attack	5.26%	3	22.81%	13	24.56%	14	24.56%	14	22.81%	13	57
Drought	0.00%	0	3.45%	2	13.79%	8	25.86%	15	56.90%	33	58
Earthquake	3.39%	2	15.25%	9	30.51%	18	27.12%	16	23.73%	14	59
Extreme Heat	6.78%	4	11.86%	7	15.25%	9	25.42%	15	40.68%	24	59
Flooding	16.95%	10	33.90%	20	18.64%	11	20.34%	12	10.17%	6	59
Hazardous Materials	10.34%	6	18.97%	11	18.97%	11	22.41%	13	29.31%	17	58
High Winds / Tornado	36.21%	21	20.69%	12	13.79%	8	22.41%	13	6.90%	4	58
Pandemic	15.25%	9	20.34%	12	27.12%	16	18.64%	11	18.64%	11	59
Pipeline Spill	17.24%	10	18.97%	11	15.52%	9	18.97%	11	29.31%	17	58
Terrorism	25.86%	15	24.14%	14	24.14%	14	10.34%	6	15.52%	9	58
Transport Accident	12.07%	7	22.41%	13	39.66%	23	15.52%	9	10.34%	6	58
Wildland / Urban Fire	5.26%	3	14.04%	8	15.79%	9	31.58%	18	33.33%	19	57
Winter Storms	24.14%	14	31.03%	18	27.59%	16	13.79%	8	3.45%	2	58
Other (please specify)											7
									Answered		59
									Skipped		0



Other (please specify)

Crime and sanitation hazards related to vagrancy.

School shootings

Active shooter

We need to have an organized CERT community training effort so when the quake hits we have leaders to help in the aftermath.

Power grid stability

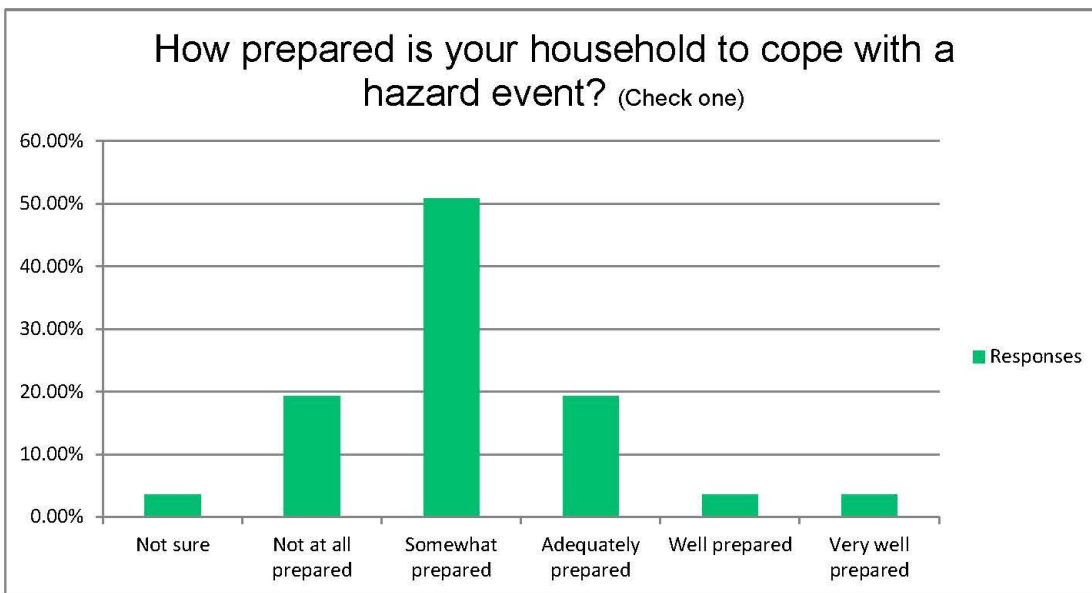
Some wacko with a gun establishing himself on a corner and randomly opening fire on our citizens.

Water supply security !!!

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

How prepared is your household to cope with a hazard event? (Check one)

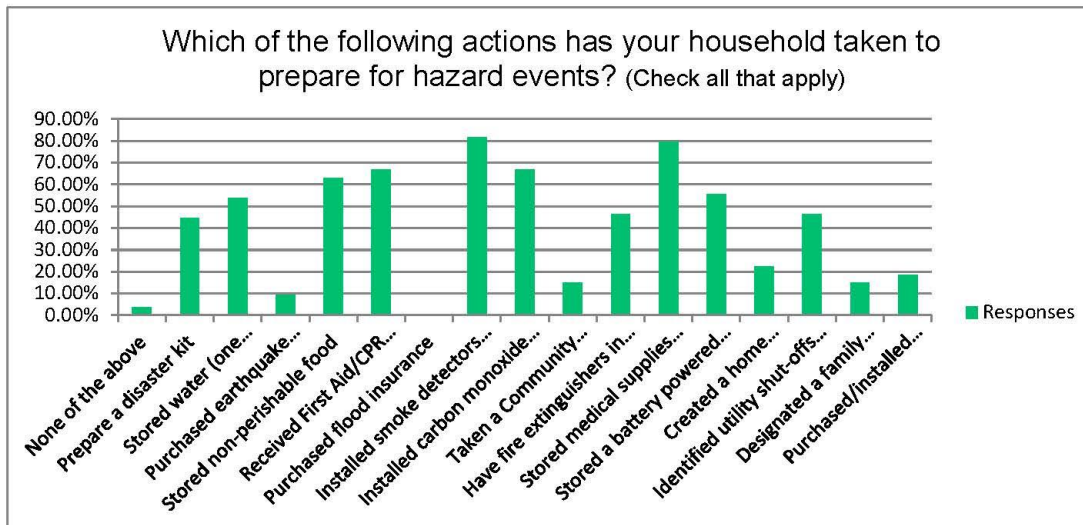
Answer Choices	Responses	
Not sure	3.51%	2
Not at all prepared	19.30%	11
Somewhat prepared	50.88%	29
Adequately prepared	19.30%	11
Well prepared	3.51%	2
Very well prepared	3.51%	2
	Answered	57
	Skipped	2



Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Which of the following actions has your household taken to prepare for hazard events? (Check all that apply)

Answer Choices	Responses	
None of the above	3.70%	2
Prepare a disaster kit	44.44%	24
Stored water (one gallon/person per day)	53.70%	29
Purchased earthquake insurance	9.26%	5
Stored non-perishable food	62.96%	34
Received First Aid/CPR training	66.67%	36
Purchased flood insurance	0.00%	0
Installed smoke detectors on each level of the house	81.48%	44
Installed carbon monoxide detectors on each level of the house	66.67%	36
Taken a Community Emergency Response Team (CERT) Course	14.81%	8
Have fire extinguishers in appropriate areas of the house	46.30%	25
Stored medical supplies (first aid kit, prescription & over the counter meds)	79.63%	43
Stored a battery powered radio, flashlights, and extra batteries	55.56%	30
Created a home evacuation plan	22.22%	12
Identified utility shut-offs / have shut-off tools available	46.30%	25
Designated a family meeting place	14.81%	8
Purchased/installed backup power capability (generator/solar)	18.52%	10
Other (please specify)		2
	Answered	54
	Skipped	5



Other (please specify)

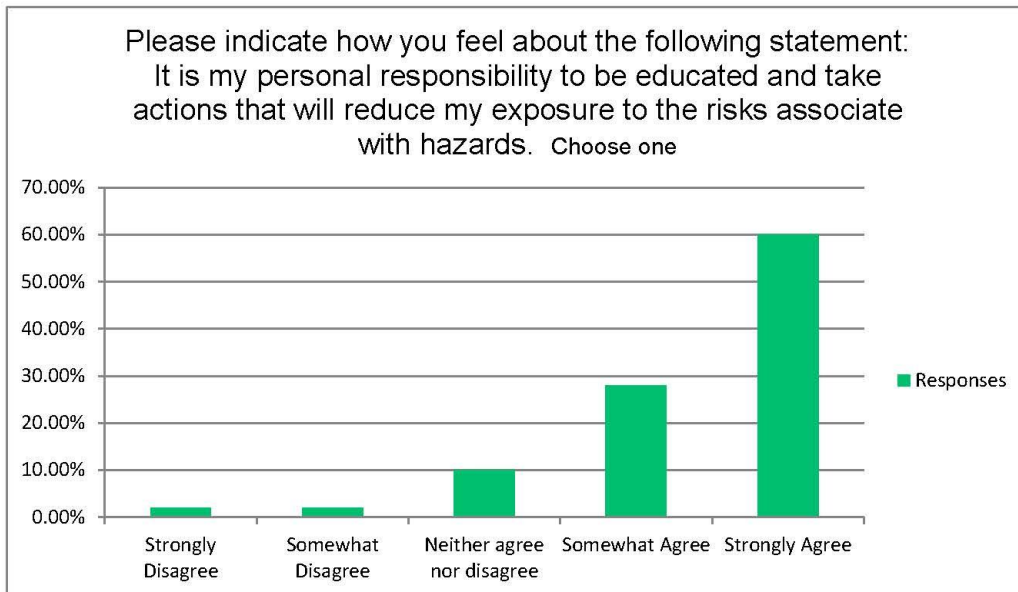
Satellite internet not dependent on AC ☐

Purchase propane tanks (stored appropriately), propane grill, wood grill, have generators available to borrow, have manual can opener, keep 20,000 gallons of water in storage tanks (have a well and use for fire suppression since no fire hydrants on my street). Keep chickens for both meat & eggs. Keep licenses for hunting/fishing up to date in case of food emergency, we don't use for sport.

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Please indicate how you feel about the following statement: It is my personal responsibility to be educated and take actions that will reduce my exposure to the risks associate with hazards. Choose one

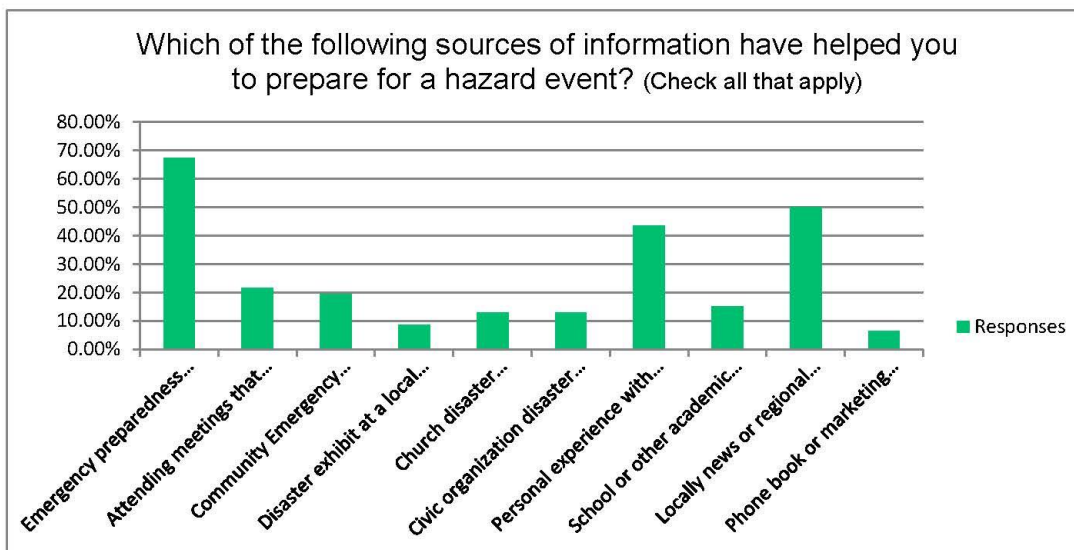
Answer Choices	Responses	
Strongly Disagree	2.00%	1
Somewhat Disagree	2.00%	1
Neither agree nor disagree	10.00%	5
Somewhat Agree	28.00%	14
Strongly Agree	60.00%	30
	Answered	50
	Skipped	9



Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

**Which of the following sources of information have helped you to prepare for a hazard event?
(Check all that apply)**

Answer Choices	Responses	
Emergency preparedness information from a government source	67.39%	31
Attending meetings that have provided disaster preparedness information	21.74%	10
Community Emergency Response Team (CERT) Training	19.57%	9
Disaster exhibit at a local fair or community event	8.70%	4
Church disaster preparedness event	13.04%	6
Civic organization disaster preparedness (Red Cross, etc.)	13.04%	6
Personal experience with previous hazards or disasters	43.48%	20
School or other academic institution distribution of materials	15.22%	7
Locally news or regional media source	50.00%	23
Phone book or marketing distribution of materials	6.52%	3
Other (please specify)		5
	Answered	46
	Skipped	13

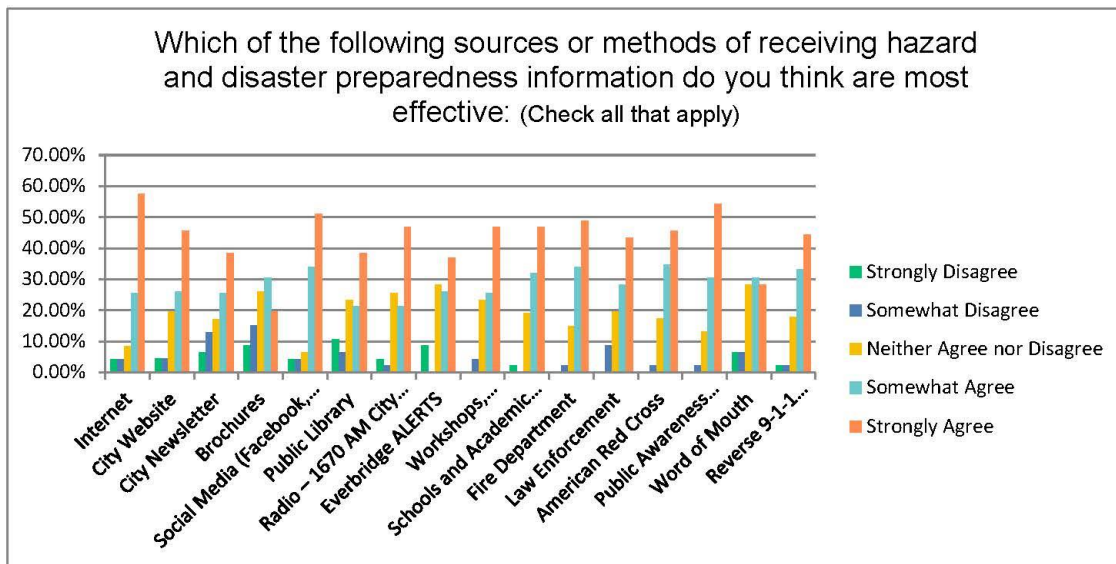


Other (please specify)
Common sense!!!
Hazard Preparedness guidelines from our local mosque
Military training
Random researching on the web
Growing up on a farm in a rural area with severe weather such as flooding, tornados, & snowstorms.

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Which of the following sources or methods of receiving hazard and disaster preparedness information do you think are most effective: (Check all that apply)

Source	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
Internet	4.26% 2	4.26% 2	8.51% 4	25.53% 12	57.45% 27	47
City Website	4.35% 2	4.35% 2	19.57% 9	26.09% 12	45.65% 21	46
City Newsletter	6.38% 3	12.77% 6	17.02% 8	25.53% 12	38.30% 18	47
Brochures	8.70% 4	15.22% 7	26.09% 12	30.43% 14	19.57% 9	46
Social Media (Facebook, Instagram, Twitter, etc.)	4.26% 2	4.26% 2	6.38% 3	34.04% 16	51.06% 24	47
Public Library	10.64% 5	6.38% 3	23.40% 11	21.28% 10	38.30% 18	47
Radio – 1670 AM City						
Emergency Radio	4.26% 2	2.13% 1	25.53% 12	21.28% 10	46.81% 22	47
Everbridge ALERTS	8.70% 4	0.00% 0	28.26% 13	26.09% 12	36.96% 17	46
Workshops, Neighborhood Meetings	0.00% 0	4.26% 2	23.40% 11	25.53% 12	46.81% 22	47
Schools and Academic Institutions	2.13% 1	0.00% 0	19.15% 9	31.91% 15	46.81% 22	47
Fire Department	0.00% 0	2.13% 1	14.89% 7	34.04% 16	48.94% 23	47
Law Enforcement	0.00% 0	8.70% 4	19.57% 9	28.26% 13	43.48% 20	46
American Red Cross	0.00% 0	2.17% 1	17.39% 8	34.78% 16	45.65% 21	46
Public Awareness Campaigns	0.00% 0	2.17% 1	13.04% 6	30.43% 14	54.35% 25	46
Word of Mouth	6.52% 3	6.52% 3	28.26% 13	30.43% 14	28.26% 13	46
Reverse 9-1-1 Notifications (TEMS, Everbridge)	2.22% 1	2.22% 1	17.78% 8	33.33% 15	44.44% 20	45
Other (please specify)						4
					Answered	47
					Skipped	12



Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Additional Comments/Answer Space:

Answered 15
Skipped 44

Responses

The government needs to keep their nose out of the people's business!

There hasn't been an update or availability of CERT training for Pittsburg since the pandemic, it would be a benefit to have this return as soon as possible.

Disaster preparedness fare, have the earthquake trailer out there that simulates earthquakes. Fire departments sometimes have smoke trailers that show how fast smoke moves.

Would love to attend CERT training if City offered

Makes you wonder what the crooks are planning...

I like the discussion but it does feel like two separate but related topics. Talking about how to prepare the community as a whole with preventive actions to minimize impact of hazards as well as how to prepare as individuals/families for when a hazard will happen. The more we can do for the former, hopefully the less we need of the latter. An ounce of prevention is worth a pound of cure.

It is equally the responsibility of the federal, state and local entities to provide these services to our citizens as well as allowing them to be accessible to all communities no matter their location or income status. The citizens should have access to all the resources needed to keep us safe and stable. The insurance providers should not prey on individuals who live in at risk areas, unfortunately we can't all live in less volatile areas in California. It is most important for all to be active and aware we need to continue to work together to create, provide and support these activities and services to maintain our safety and the planet's stability. Thank you for creating this survey, hopefully I will see some changes in the near future.

Flooding will be the most likely disaster to occur. Sewer systems back up in homes near the river. Keep storm drains clear of litter to avoid street flooding. Inform the public!

I would first identify the areas in City of Pittsburg that we are most vulnerable to: I am not sure if we ever are going to see a tornado, invest only what could really happen on our area, also looking at neighboring cities what could come from surrounding areas. Flooding, earthquakes, etc... Also we have to have improvements to prevent this from happening: alternatives projects for maintenance dredging, funding harbor maintenance programs, water supply conservation, drought emergencies, study of water system resources, flood reduction projects, data transparency, quality control, federal cost limitation for certain projects, drinking water infrastructure, set timeframe to apply for grants to help rebuild, timeframe, audits, etc...

Given today's climate change it is very important for local government to take action to better inform and educate its citizens on preparedness and prevention measures.

Please do not allow Pittsburg to be a pollutant industry.

Take care of our environment and increase the quality of life in this city.

It is not the City's RESPONSIBILITY to make sure everyone is prepared for disaster, but it sure would be appreciated for the City to provide information to those who are receptive.

CERT is very important for folks from all our neighborhoods to participate in.

A good plan can save so much work in the long run. I say just keep the information available and accessible anywhere people meet in our city. A lot of our people learn by doing. Maybe some video classes to learn once a month to keep everyone on their toes, hope it helps save lives and prosper this amazing city and community

Cost to prepare is always going to be an inhibitory factor for people to get prepared.

Other (please specify)

Law enforcement is the hazard!

It's important to share knowledge via a variety of platforms.

Centralizing this information on a crisis-dedicated web page is crucial so that ppl won't be subject to falsehoods and rumors

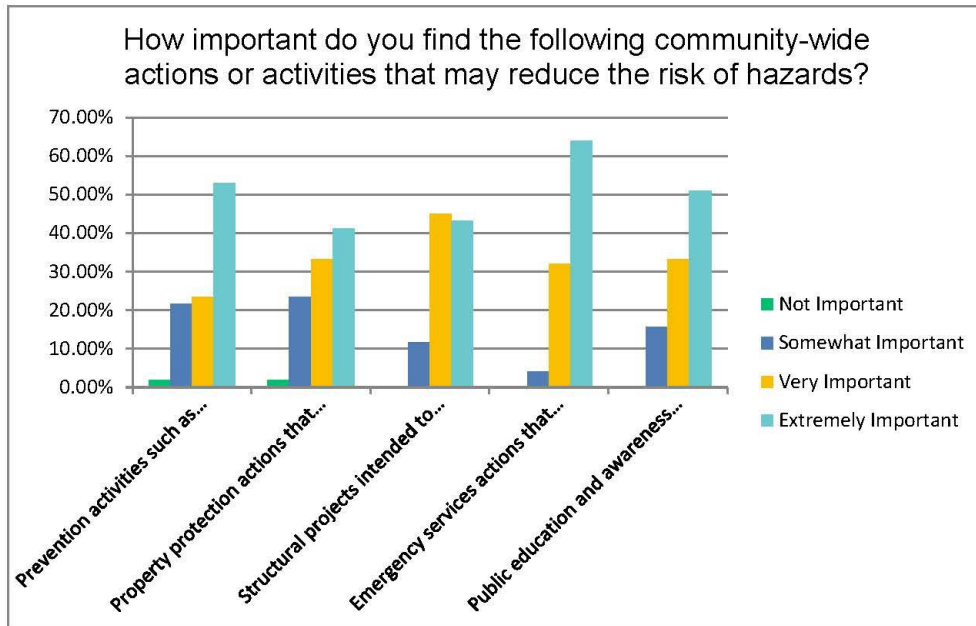
Some people need to be told to breathe.. some people lack common sense. One language in us should be English., now with a multitude of languages, YOU have a community communication problem.

I really trust none of these politicians or government agencies... liars, cheats, above the law they think, piss poor authorities that are there for  not humanity.

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

How important do you find the following community-wide actions or activities that may reduce the risk of hazards?

	Not Important		Somewhat		Very Important		Extremely		Total
Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning, & building codes)	1.96%	1	21.57%	11	23.53%	12	52.94%	27	51
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	1.96%	1	23.53%	12	33.33%	17	41.18%	21	51
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	0.00%	0	11.76%	6	45.10%	23	43.14%	22	51
Emergency services actions that protect people and property during and immediately after a hazard event, such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems	0.00%	0	4.00%	2	32.00%	16	64.00%	32	50
Public education and awareness activities to inform community members about hazards and the techniques they can use to protect and prepare their property and themselves, including outreach projects, CERT, school programs, library materials, and safety fair events	0.00%	0	15.69%	8	33.33%	17	50.98%	26	51
Other (please specify)									6
							Answered		51
							Skipped		8



Other (please specify)

I think it's ridiculous that you are asking the public these questions when all of these items are important to protect everyone in any American city. Please do your job and keep us all as safe as possible!

properly greenscaping with the correct tree types in public spaces to mitigate stormwater flooding and reduce harm from tailpipe/smoke emission exposure

beings? Does government need to dictate common sense, many are lacking brain activity of thinking for themselves...

I am a RN and educator and would like to help!

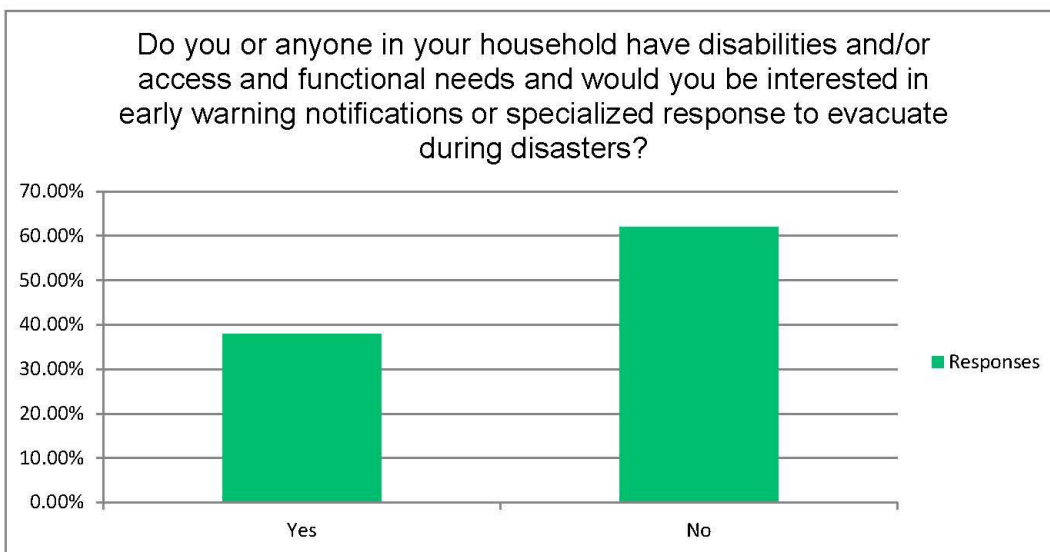
Public educación and awareness 1000%

It doesn't matter how much information is pushed at a person, if there is not a mandatory training most folks won't listen until it's on them.

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

would you be interested in early warning notifications or specialized response to evacuate during disasters?

Answer Choices	Responses	
Yes	38.00%	19
No	62.00%	31
Other (please specify)		3
	Answered	50
	Skipped	9



Other (please specify)
severe seasonal allergies

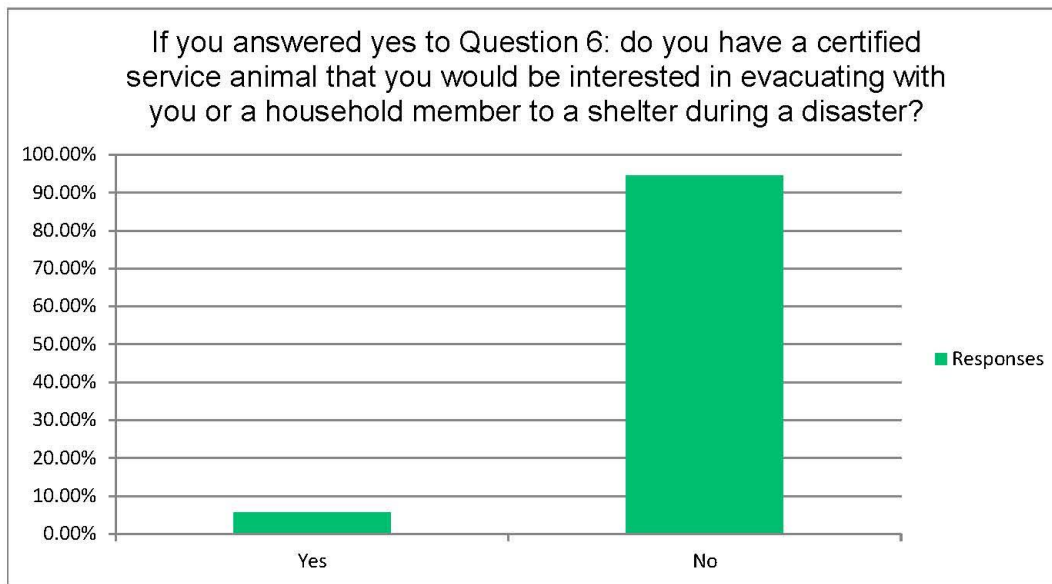
We have a 23-year-old severely autistic boy named XXXXXXXXX who lives in here at XXXXXXXXXXXXX and is very low functioning.

We have a 23 year old son, XXXXX who is severely autistic, he would need to be accounted for right away.

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

If you answered yes to Question 6: do you have a certified service animal that you would be interested in evacuating with you or a household member to a shelter during a disaster?

Answer Choices	Responses	
Yes	5.56%	1
No	94.44%	17
Other (please specify)		1
Answered		18
Skipped		41



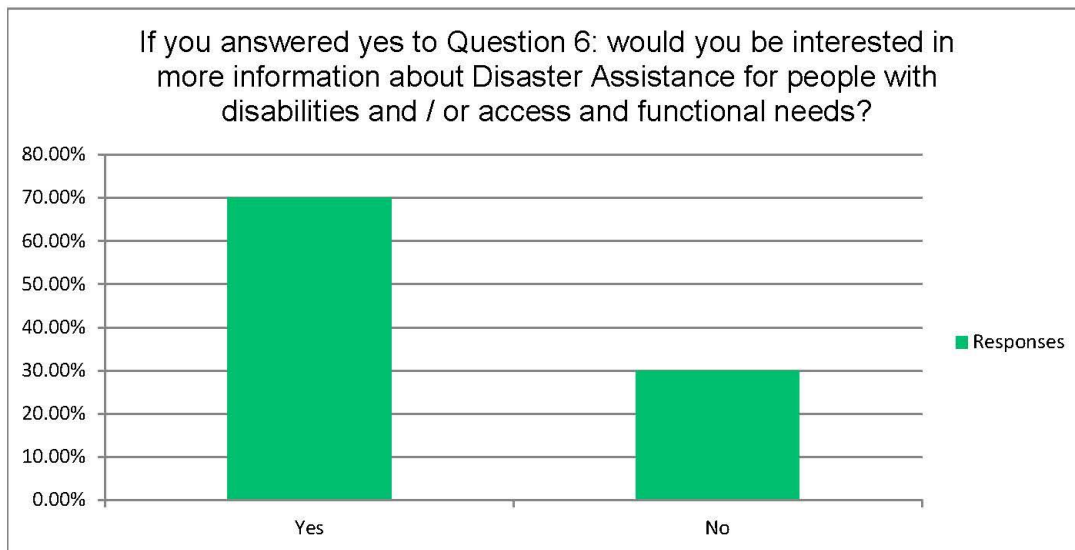
Other (please specify)

We have three dogs how could we get training for them?

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

If you answered yes to Question 6: would you be interested in more information about Disaster Assistance for people with disabilities and / or access and functional needs?

Answer Choices	Responses	
Yes	70.00%	7
No	30.00%	3
Other (please specify)		0
	Answered	10
	Skipped	49

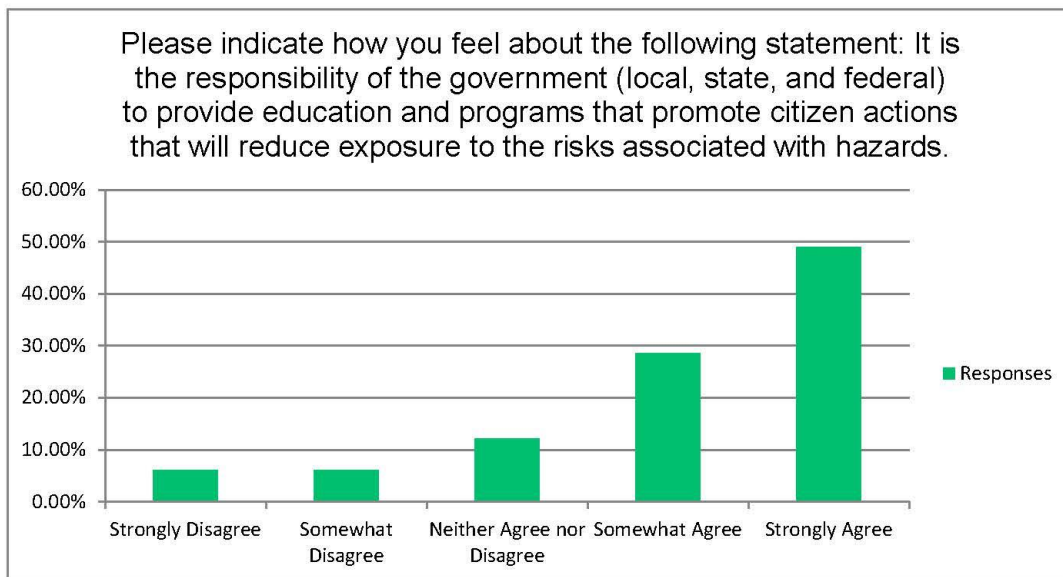


Draft

Pittsburg's Local Hazard Mitigation Plan Community Survey 2022

Please indicate how you feel about the following statement: It is the responsibility of the government (local, state, and federal) to provide education and programs that promote citizen actions that will reduce exposure to the risks associated with hazards. Choose one

Answer Choices	Responses	
Strongly Disagree	6.12%	3
Somewhat Disagree	6.12%	3
Neither Agree nor Disagree	12.24%	6
Somewhat Agree	28.57%	14
Strongly Agree	48.98%	24
	Answered	49
	Skipped	10



Appendix E: Planning Process Documentation

Appendix E contains documentation of the planning process for the HMP planning team, including meetings, presentations, emails, etc. [Insert meeting agenda, sign-in sheets, handouts, etc.]

Meeting Date	Meeting Title	Meeting Handouts, Presentation Included in HMP
8/31/2022	Planning Meeting Nr. 1	<ul style="list-style-type: none">• Invitation• Presentation• Sign In• Notes
9/30/2022	Planning Meeting Nr. 2	<ul style="list-style-type: none">• Invitation• Presentation• Sign In• Notes

Draft

Documentation Planning Meeting Nr. 1:

Invitation:

Good afternoon everyone,

The city is required to review and update a Local Hazard Mitigation Plan (LHMP) every 5 years. We reviewed the 2017-2022, back in April, now we are preparing a new 5 year LHMP and we need your help again.

The importance of this plan is to apply for future grants, and funding that would help us pay for some projects. In our last meeting, we discuss the current Mitigation Actions (Table 4.5 - below) which identified various Hazard Mitigation items. **Please take some time to review** the present mitigation items in order to update and modify present items/projects as well as add new ones. Make a list based on the goals below and bring to the meeting to discuss.

The meeting is scheduled for August 31, 2022 from 2pm -3:30pm, a Zoom invite will be coming your way soon. I will have trivia 5 minutes before the meeting for anyone who wants to participate. There will be a **LHMP trophy** for the person that gets most trivia correct.

As you are reviewing the table, think about CIP, other hazards at the water treatment plant, seismic safety of over passes (railroads)(this could be identified and get funding for a consultant to oversee), pump stations, IT items for security and /or continuity of government, standby generators, etc. Think about what has been experienced by the Covid-19 pandemic alone and what could be added to the action items below based on the feedback for the City's After Action Report for Covid-19. Look at the hazards below and think how these could affect facilities, parks, infrastructure, water, safety, public safety, AFN, communication, protection, etc.

The new LHMP 2022-2027, will have the main areas of hazards but revised with more specifics. We will try to provide the list of the updated hazards before the meeting.

Again, there is a lot of funding out there in the form of grants and this document will help us go after them.

We look forward to your participation and input as it will make the City and Community stronger.

If you have any questions, please let me know.

Table 3-1: Hazard Identification Table

2017 HMP Hazards
1. Flooding – Localized Storms, Seiches
2. Hazardous Materials – Chemical Storage
3. Earthquake – Seismic Hazards
4. Drought
5. Transportation – Air, Rail, Highway, and Water
6. Civil Unrest
7. Public Health – Epidemic, Pandemic

2017 HMP Hazards
8. Severe Weather – Wind, Tornados, Heat
9. Wildland and Urban Fires
10. Terrorism – Nuclear, Cybersecurity
11. Pipeline – Oil Spills
12. Climate Change – Air Pollution, Rising Tides

Table 4-5 2017 Mitigation Action Items and Projects

Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Department
Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.				
1.1	Develop a program to assess the City for soft story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	Prevention	Seismic	Community Development
1.2	Encourage seismic strength evaluations of critical facilities in the City to identify building integrity.	Prevention	Seismic	Engineering/ Public Works
1.3	Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.	Prevention	All Hazards	Engineering/ Public Works
1.4	Identify and pursue funding opportunities to develop and implement local mitigation activities.	Emergency Services	All Hazards	Engineering/ Public Works
1.5	There has been damage to roadway embankment due to flooding at Buchanan Rd & Kirker Creek. Provide engineering and technical services to investigate the underlying cause of the damage and provide a recommendation to repair and prevent future damage/damage.	Property Protection	Flood	Engineering/ Public Works
1.6	Flood damage to the Sugartree and Birchwood drainage system resulted from previous flooding which affected nearby housing and roadways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Property Protection	Flood	Engineering/ Public Works
1.7	Recent storms resulted in flooding along Parkside Dr. and caused damage to roadway. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and	Property Protection	Flood	Engineering/ Public Works

Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Department
	prevent future damage/damage.			
1.8	Recent storms resulted in flooding in Buchanan Park damaging and undermining walkways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Property Protection	Flood	Engineering/ Public Works
1.9	Recent winter storms resulted in damage and erosion to Riverview Breakwater due to wind and rain. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.	Property Protection	Flood	Engineering/ Public Works
Goal 2: Improve public understanding, support and need for hazard mitigation measures.				
2.1	Develop a public outreach and awareness program about the hazards in Pittsburg and mitigation actions community members can do in their homes.	Public Education	All Hazards	City Manager's Office, Police Department
2.2	Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.	Public Education	All Hazards	City Manager's Office, Police Department
2.3	Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.	Emergency Services	All Hazards	Community Development, City Manager's Office
2.4	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	Prevention	All Hazards	Community Development/Engineering
2.5	Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, man-made, and technological hazards.	Property Protection	All Hazards	Engineering/ Public Works
2.6	Place more stress on the risks associated with natural and manmade hazards at public awareness campaigns conducted by various City departments.	Public Education	All Hazards	All Departments
Goal 3: Promote disaster resistance for Pittsburg's natural, existing, and future built environment.				
3.1	Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and	Property Protection	All Hazards	Community Development

Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Department
	encouraging preventative measures for existing development in areas vulnerable to natural, man-made, and technological hazards.			
3.2	Seek to implement codes, standards, and policies that will protect life and property from the impacts of hazards.	Regulatory	All Hazards	Community Development
3.3	Inventory and develop replacement values for all City-owned assets and non-city assets to help the City better understand the values of assets at risk.	Emergency Services	All Hazards	City Manager's Office, Community Services
3.4	Integrate appropriate items from the Hazard Mitigation Plan (HMP) into the Health and Safety Element of the 2020 General Plan and other regulatory documents as appropriate.	Regulatory	All Hazards	City Manager's Office, Community Development
3.5	Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.	Prevention	All Hazards	All Departments
3.6	Inspect and repair the City reservoirs.	Structural Project	All Hazards	Engineering/Public Works
Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.				
4.1	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business and industry to create interest in the implementation of mitigation measures.	Emergency Services	All Hazards	All Departments
4.2	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.	Prevention	All Hazards	City Manager's Office, Police Department
4.3	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.	Emergency Services	All Hazards	City Manager's Office, Police Department, Community Development
4.4	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.	Emergency Services	All Hazards	All Departments
4.5	Continue to develop mutual aid agreements and memorandum of understanding with agencies to serve	Regulatory	All Hazards	All Departments

Action Item #	Action Description	Mitigation Type	Related Hazards	Implementing Department
	emergency and disaster purposes.			
Goal 5: Enhance the City's ability to effectively and immediately respond to disasters.				
5.1	Create a redundant data center and complete fiber to that location.	Technology	All Hazards	City Manager's Office, Community Development
5.2	Coordinate with the utility companies and vendors to strengthen, safeguard, or take other appropriate measures such as providing supplemental services, to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.	Prevention	All Hazards	Community Development, City Manager's Office, Police Department
5.3	Build a cadre of committed, trained, volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency Response Team, communications staff, medical and health, and human services, during and after a disaster.	Emergency Services	All Hazards	City Manager's Office, Police Department
5.4	Decentralize key components of the City's core network to allow the network to survive the failure of any one site from a disaster.	Technology	All Hazards	City Manager's Office, IT
5.5	Coordinate with Contra Costa County in hazard mitigation efforts for Pittsburg to protect two-way radio equipment from hazards by bracing antennas, securing repeaters, etc., from hazards.	Technology	Seismic	Police Department

Best regards,

Zuna Barker Portillo
Registered Environmental Health Specialist
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565
925-252-4129
zbarker@pittsburgca.gov



Presentation:



Planning Team
Meeting #1

CITY OF PITTSBURG

LHMP UPDATE PROJECT (2022)

August 31, 2022

Lee Rosenberg

Sign In:

City of Pittsburgh Attendees: (via Zoom)

Dick Abono	Engineering/Public Works	Sunil Gopala	IT Department
Chief Steve Albanese	Police Department	Bobby Joaquin	Public Works
Scott Alman	Engineering	Jitendra Kaneria	IT Department
Zuna Barker	Environmental Services	Jolan Longway	Engineering
Janielyn Bayona	Finance	Hilario Mata	Public Works
Sara Bellafronte	Environmental Services	Nikesh Patel	Engineering
Stephen Cardiel	Engineering	John Pebley	PW – Parks
Jordan Davis	Community Development	Paul Rodrigues	Finance
John Funderberg	CD - Planning	Kolette Simonton	Recreation
Jorge Esparza	PW – Water/Sewer		

Notes:

Local Hazard Mitigation Plan 2022-2027 Team Planning Meeting #1 - August 31, 2022

City of Pittsburg Attendees: (via Zoom)

Dick Abono	Engineering/Public Works	Sunil Gopala	IT Department
Chief Steve Albanese	Police Department	Bobby Joaquin	Public Works
Scott Alman	Engineering	Jitendra Kaneria	IT Department
Zuna Barker	Environmental Services	Jolan Longway	Engineering
Janielyn Bayona	Finance	Hilario Mata	Public Works
Sara Bellafronte	Environmental Services	Nikesh Patel	Engineering
Stephen Cardiel	Engineering	John Pebley	PW – Parks
Jordan Davis	Community Development	Paul Rodrigues	Finance
John Funderberg	CD - Planning	Kolette Simonton	Recreation
Jorge Esparza	PW – Water/Sewer		

Consultants:

Lee Rosenberg, Navigating Preparedness

Laura Wright, Three Bridges Enterprises

Presentation Slides (PPT): LHMP Update Team Meeting #1 Presentation

NOTES:

Reviewed purpose of the meeting and role of the Planning Team in updating the LHMP by assisting with risk assessment, determine mitigation strategies and conduct public outreach to get stakeholder input.

Identified the Hazards to the Team:

- Civil Unrest
- Climate Change – Air Pollution, Rising Tides
- Drought
- Earthquake – Seismic Hazards
- Flooding – Localized Storms, Seiches
- Hazardous Materials – Chemical Storage
- Pipeline – Oil Spills
- Public Health – Epidemic, Pandemic
- Severe Weather – Wind, Tornados, Heat
- Terrorism – Cybersecurity
- Transportation Incidents – Air, Rail, Highway, and Water
- Wildland and Urban Fires

Checked with Team to ask if any other hazards to consider. Explained the weighting of the Degree of Risk for each hazard. Need to consider the Probability level of the hazard and the Magnitude/Severity of the hazard along with the Warning a time and Duration. These are determined on a scale of 1-4 into a formula to get a Calculated Priority Risk Index (CPRI) Ranking. The Team reviewed the 2017 Rankings and adjusted as follows:

Hazard: Probability (P); Magnitude/Severity (MS); Warning (W); Duration (D)

Civil Unrest

Present P – 2; MS – 1; W – 4; D – 2

The Team reviewed and discussed recent civil unrest in the City and in the region that occurred in June 2020 and determined it should be revised since the City would not be the center point. The Bay Area would have events providing warning times to local officials to time to respond. D. Abono and Chief Albanese

Change to: P – 2; MS – 1; W – 3; D – 2

Climate Change

Present: P – 4; MS – 4; W – 1; D – 4

The warning time is over a number of years and the duration a long time before it can be reversed.

No Change.

Drought

Present: P – 4; MS – 2; W – 1; D – 4

California experiencing 3rd drought in last ten years. Lots of warning time and can last for decades with severe effects.

No Change.

Earthquake

Present: P – 3; MS – 3; W – 4; D – 4

Earthquakes have no warning. Event impacts can last months or years. Team discussed that earthquakes mild and do not affect the City but also discussed pending earthquakes on Hayward/Calaveras which is long overdue and modeling indicates Pittsburg would be affected.

No Change.

Flood

Present: P – 2; MS – 2; W – 2; D – 3

Typically, the severity is not high but there is some warning to prepare and the duration usually not long. However, based on past storm experience and projections, it is expected to be a higher probability of flooding and should be modified. D. Abono

Change to: P – 4; MS – 2; W – 2; D – 3

Hazardous Materials

Present: P – 4; MS – 1; W – 4; D – 3

The City does have chemical plants within its limits but also is down wind from other refineries and chemical plants that can impact the City. Based on past impacts on the City and how the duration can last for days, the discussion between staff felt the severity is higher. J. Funderberg, Chief Albanese

Change to: P – 4; MS – 3; W – 2; D – 3

Pipeline

Present: P – 1; MS – 1; W – 4; D – 2

The City has a many pipelines carrying hazardous materials. Some of the lines are dormant but still active. A release or incident is relatively low but the event can have a strong impact on the local community. There can be some warning but not likely and the event usually doesn't last too long. Based on the hazardous materials, past events and discussion, an increase in the severity seemed warranted. Chief Albanese

Change to: P – 1; MS – 2; W – 4; D – 2

Public Health

Present: P – 3; MS – 4; W – 1; D – 4

Prior to the 2020 Covid-19 outbreak, the US experienced other pandemics in 1815, 1956, 1968 and 2009. The Team, based on experience, City statistics, and past events, Pittsburg would have a strong probability of being affected and it would last awhile but there would be an indication of what the public health threat would be to take some precautions.

No Change.

Severe Weather

Present: P – 4; MS – 1; W – 2; D – 3

The City experiences strong winds and heat. After reviewing past events and probability, the Team felt the rankings were satisfactory.

No Change.

Terrorism – Cybersecurity

Present: P – 3; MS – 2; W – 4; D – 4

Pittsburg not likely to experience ‘terrorism’ but could be affected by cybersecurity attacks. Systems can have the best firewalls but still get attacked daily. IT described how the City’s system is isolated and it is not likely computers or software systems operating facilities and infrastructure would be impacted. However, if an attack occurred, there would be huge impacts and therefore recommended the ranking adjustment. J. Kaneria, S. Gopala

Change to: P – 2; MS – 4; W – 4; D – 4

Transportation Incidents

Present: P – 4; MS – 1; W – 4; D – 2

The City has a major highway running through it, small airports in surrounding cities, and a large river connecting the bay, ocean and delta. Based on events in the City and surrounding areas, the Team reviewed the rankings and determined it was adequate.

No Change.

Wildland and Urban Fires

Present: P – 2; MS – 1; W – 4; D – 2

The region has experienced large wildland and urban fires. There have been a few in the County over the years. Based on recent events locally and statewide, it was felt the ranking needed adjustment.

D. Abono

Change to: P – 4; MS – 2; W – 4; D – 2

The numbers would be entered to determine the updated CPRI Ranking to share with the Team. Reviewed with the Team about Mitigation Objectives and Goals and the need to create S.M.A.R.T. action items to be able to create policies and programs as well as secure funding to mitigate hazards. Items in the old LHMP will be carried to the new LHMP and therefore the Team needs to come up with a new list. New maps of hazard zones or specialize mapping were asked to be shared to be included in new LHMP. Described to the Team how the data would be collected and incorporated into the LHMP to support mitigation action plans. Also shared the importance and requirement of public engagement to understand the community’s concerns on hazard priorities. Outreach being conducted via a survey in English and Spanish and promoted on social media.

Next meeting will focus primarily on mitigation action items.

Documentation Meeting Nr. 2

Invitation

From:

Sent: None

To: Zuna Barker; Dick Abono; Nikesh Patel; John Funderburg; Paul Rodrigues; Janielyn Bayona; Jitendra Kaneria; Sunil Gopala; Steve Albanese; Jolan Longway; Sara Bellafronte; Philip Galer; Bobby Joaquin; Lee; Jorge Esparza; Jason Moser; Lester Galer; Stephen Cardiel; Kolette Simonton; Melaine Venenciano; Laura Wright; Jordan Davis; Hilario Mata; Bryan Ballardo

Cc: Maria Aliotti

Subject: 2022-2027 Local Hazard Mitigation Plan

When: Friday, September 30, 2022 1:30 PM-2:30 PM (UTC-08:00) Pacific Time (US & Canada).

Where: <https://us02web.zoom.us/j/83565810714?pwd=M0NVQXhDQ3FTYk9XUjVBYVpJdUsxQT09>

My apologies for scheduling a meeting on a Friday afternoon, but it was the day with the most availability.

Zuna Barker is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting

<https://us02web.zoom.us/j/83565810714?pwd=M0NVQXhDQ3FTYk9XUjVBYVpJdUsxQT09>

Meeting ID: 835 6581 0714

Passcode: 296596

One tap mobile

+16694449171,,83565810714#,,,,*296596# US

+16699006833,,83565810714#,,,,*296596# US (San Jose)

Dial by your location

+1 669 444 9171 US

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 719 359 4580 US

+1 929 205 6099 US (New York)

+1 301 715 8592 US (Washington DC)

+1 309 205 3325 US

+1 312 626 6799 US (Chicago)

+1 386 347 5053 US

+1 564 217 2000 US

+1 646 931 3860 US

Meeting ID: 835 6581 0714

Passcode: 296596

Find your local number: <https://us02web.zoom.us/u/kcKsIMRUsB>

Best regards,

Zuna Barker Portillo
Registered Environmental Health Specialist City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565
925-252-4129
zbarker@pittsburgca.gov

Presentation



Planning Team Meeting #2

CITY OF PITTSBURG

LHMP UPDATE PROJECT (2022)

September 30, 2022

Lee Rosenberg

Sign In

Chief Steve Albanese	Police Department	Jolan Longway	Engineering
Bryan Ballardo	PW – Landscaping/Parks	Jason Moser	PW – Water Plant
Zuna Barker	Environmental Services	Michael Silva	PW – Water Plant
Jordan Davis	Community Development	Kolette Simonton	Recreation/Outreach
John Funderberg	CD - Planning		

Notes:**Local Hazard Mitigation Plan 2022-2027****Team Planning Meeting #2 – September 30, 2022****City of Pittsburg Attendees: (via Zoom)**

Chief Steve Albanese	Police Department	Jolan Longway	Engineering
Bryan Ballardo	PW – Landscaping/Parks	Jason Moser	PW – Water Plant
Zuna Barker	Environmental Services	Michael Silva	PW – Water Plant
Jordan Davis	Community Development	Kolette Simonton	Recreation/Outreach
John Funderberg	CD - Planning		
Sunil Gopala	IT Department		

Consultants:

Lee Rosenberg, Navigating Preparedness

Laura Wright, Three Bridges Enterprises

Presentation Slides (PPT): LHMP Update Team Meeting #2 Presentation**NOTES:**

Reviewed meeting purpose and role Planning Team to accomplish: Develop mitigation plan objectives; Select potential mitigation activities. Plans becoming more comprehensive with more requirements. The actional part of the Plan is the mitigation activities to be able to accomplish in the next 5 years. Mitigation goals/activities allow to apply and receive FEMA mitigation grant funding. (i.e. infrastructure funding, flooding funding, planning funding)

Team to verify Hazard Mitigation Goals below. Team confirmed Goals sufficient and cover mitigation activities.

Table 6-1: Hazard Mitigation Goals

Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.

Goal 2: Improve public understanding, support of and the need for hazard mitigation measures.

Goal 3: Promote disaster resistance for Pittsburg’s natural, existing, and future built environment.

Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.

Goal 5: Enhance the City’s ability to effectively and immediately respond to disasters.

Below are the ongoing and continuing Mitigation Actions from the 2017 LHMP the Team reviewed. Some of the items will be ongoing and included in future Plans. Some will be specific that can be used to apply for grant funding.

1.1	Develop a program to assess the City for soft story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.
1.2	Encourage seismic strength evaluations of critical facilities in the City to identify building integrity.
1.3	Evaluate City and non-City facilities identified as potential shelter sites for structural integrity.
1.4	Identify and pursue funding opportunities to develop and implement local mitigation activities.
1.5	There has been damage to roadway embankment due to flooding at Buchanan Rd & Kirker Creek. Provide engineering and technical services to investigate the underlying cause of the damage and provide a recommendation to repair and prevent future damage/damage.
1.6	Flood damage to the Sugartree and Birchwood drainage system resulted from previous flooding which affected nearby housing and roadways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.
1.7	Recent storms resulted in flooding along Parkside Dr. and caused damage to roadway. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.

1.8, 1.9	<p>Recent storms resulted in flooding in Buchanan Park damaging and undermining walkways. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.</p> <p>Recent winter storms resulted in damage and erosion to Riverview Breakwater due to wind and rain. Provide engineering and technical services to investigate the underlying cause of the flooding and provide a recommendation to repair and prevent future damage/damage.</p>
2.1	Develop a public outreach and awareness program about the hazards in Pittsburg and mitigation actions community members can do in their homes
2.2, 2.3	<p>Increase public awareness of the natural, human-caused, and technological hazards to businesses as a means to reduce the potential damage from each hazard through educational and outreach.</p> <p>Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.</p>
2.4	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.

2.5	Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, man-made, and technological hazards.
2.6	Place more stress on the risks associated with natural and manmade hazards at public awareness campaigns conducted by various City departments.
3.1	Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural, man-made, and technological hazards.
3.2	Seek to implement codes, standards, and policies that will protect life and property from the impacts of hazards.
3.3	Inventory and develop replacement values for all City-owned assets and non-city assets to help the City better understand the values of assets at risk.
3.4	Integrate appropriate items from the Hazard Mitigation Plan (HMP) into the Health and Safety Element of the 2020 General Plan and other regulatory documents as appropriate.
3.5 / 3.6	<p>Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.</p> <p>Inspect and repair the City reservoirs.</p>

4.1	Strengthen communication and coordination with public agencies, residents, non-profit organizations, business and industry to create interest in the implementation of mitigation measures.
4.2	Increase effectiveness of City emergency services by implementing mitigation programs and projects that aid emergency responders and public safety departments during emergencies.
4.3	Encourage leadership within the City and businesses to prioritize and implement local and regional hazard mitigation activities.
4.4	Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.
4.5	Continue to develop mutual aid agreements and memorandum of understanding with agencies to serve emergency and disaster purposes.

5.1	Create a redundant data center and complete fiber to that location.
5.2	Coordinate with the utility companies and vendors to strengthen, safeguard, or take other appropriate measures such as providing supplemental services, to protect and secure high-voltage lines, water, sewer, natural gas and petroleum pipelines, and trunk electrical and telephone conduits from hazards.
5.3	Build a cadre of committed, trained, volunteers to augment disaster response and recovery efforts in compliance with the California Disaster Service Worker program guidance, e.g., shelter workers, animal rescue and care, Community Emergency Response Team, communications staff, medical and health, and human services, during and after a disaster.
5.4	Decentralize key components of the City's core network to allow the network to survive the failure of any one site from a disaster.
5.5	Coordinate with Contra Costa County in hazard mitigation efforts for Pittsburg to protect two-way radio equipment from hazards by bracing antennas, securing repeaters, etc., from hazards.

New items to add to Mitigation Activities:

- Adding generators to Sr. Center (300 Presidio Lane) and other shelter locations i.e. 340 Marina Blvd. Potential upgrading generators at lift station. (Four Season, Summer Way)
- Integrity review/engineering assessment of Loveridge Road overpass on Kirker Creek Flood Channel; Inspect and engineer pile wall to prevent undermining of Pittsburg Antioch Highway east of Loveridge Rd.; Assess flooding along Los Medanos Wasteway Channel.
- Engineering Assessment to replace seawalls at Marina.
- Development and create of Continuity of Government Plan.
- Research and promote regional working group to develop and implement Public Works Mutual Aid Agreement Program (See LA County and San Mateo County examples) (Review Goal 4.5)
- Develop needs, assessment and locations of Emergency/Logistic Supplies for various emergencies from pandemics to earthquakes (i.e. lighting, portable generators, large tents, medical supplies, food supplies, radios, etc.).
- Determine need and size of a mobile trailer to cook and distribute food and supplies during emergencies.

Need to include Stormwater Program documents: Green Stormwater Infrastructure Plan; Countywide Stormwater Resources Plan. The projects pertinent should be included into the LHMP

Team discussed review of the City's Capital Improvement Projects(CIP) and adding projects related to hazard mitigation to the LHMP to be identified.

John F., Team Member, mentioned the inclusionary of language to reflect updated state requirements from General Plan 2040 Health and Resiliency Element.

Team members to provide additional mitigation activities after reviewing draft LHMP and remember to provide department responsible for action item.



Appendix F: Mitigation Action Prioritization (STAPLEE)

The following worksheets were developed to support the planning team evaluate hazard mitigation options using the STAPLEE method. These worksheets follow the FEMA State and Local Mitigation Planning How-To Guide: Developing the Mitigation Plan – Identifying Mitigation Actions and Implementation Strategies published by FEMA in 2003.

STAPLEE Prioritization Tool (Scoring: “+” = 1 point, “-” = -1 point, “n/a” = 0 point, “n/k” = not known)																								
Mitigation Action	S Social		T Technical			A Administrative			P Political			L Legal		E Economic			E Environmental			Priority Total (net)				
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water		Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Comm. Environmental Goals	Consistent with Federal Environmental Laws
1.1 Develop a program to assess the City for soft story buildings requiring seismic retrofitting. Consider implementing a Soft Story Seismic Retrofit Ordinance.	+	+	+	+	n/k	+	0	0	+	+	+	+	+	0	+	-	+	-	0	0	+	+	+	13



Draft