City of Albany
Local Hazard Mitigation Plan Update (2023-2028)
DRAFT as of 02-28-2023

To provide comments on the Draft LHMP, email ecarrade@albanyca.org.

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Executive Summary

Disasters can cause loss of life, damage buildings and infrastructure, and have devastating consequences for a community's economic, social, and environmental well-being.
Hazard mitigation, actions taken to reduce or eliminate long-term risk to life, property and the environment from hazards, can significantly reduce these impacts. This Local Hazard Mitigation Plan (LHMP) provides a direction for reducing the potential for loss of life, property damage, and environmental degradation from disasters, while accelerating economic recovery from those disasters. This 2023 LHMP is an adapted version that builds on the success of the 2018 LHMP.

The Plan focuses on the protection of the Albany community from risks associated with natural and human-caused hazards of greatest concern. A full range of hazards were considered during the original 2018 planning process. New hazards and information on existing hazards are included in the 2023 update. The following hazards have been identified as having the potential to threaten the City of Albany. Some hazards have sub-hazards or related hazards that have been identified. Their impact on Albany's population, property, and local economy are analyzed within each hazard analysis.

- **Earthquakes**
  - Aftershock
  - Liquefaction
  - Ground Failure
  - Tsunami and Seiche
  - Fire
  - Dam Failure
- **Public Health Epidemic**
- **Critical Infrastructure and Utilities Failure**
  - Electrical Grid Failure
  - Energy Shortage
  - Public Safety Power Shutoff
  - Natural Gas Pipeline Explosion
  - Freeway Damage
  - Water System Failure and Water Shortage
  - Information Technology Failure
  - Public Safety Power Shutoff
  - Cybersecurity Attack
- **Flooding**
  - Sea Level Rise
  - Storm Surge & High Tide Events

    - Groundwater Rise
    - Atmospheric River Events and Damaging Rains
- **Extreme Temperatures**
    - Extreme Heat
    - Extreme Cold
- **Damaging Winds**
- **Wildland and Urban Fire**
- **Hazardous Air Quality**
- **Slope Failure/Landslide**
- **Terrorism and Mass Violence**
- **Hazardous Materials Release**

In the Plan, each identified hazard is defined, and vulnerabilities and potential impacts of the hazard are further analyzed. Staff identified and analyzed each hazard with respect to its location, extent, previous occurrence, future probability, and vulnerability and any impacts to people, property, the local and regional economy and the environment. In the Mitigation Strategy, strategies for mitigating each hazard are identified, along with the responsible agency department and timeline for implementation. The Action Plan includes a description of how the actions identified in the Mitigation Strategy will be prioritized, implemented, and administered by the City.

This Plan continues Albany's emphasis on hazard mitigation prior to disasters, including maintenance of infrastructure, strict code requirements, and community outreach and education. The Community Development Department will update this Plan every five years, or sooner if new hazards are identified, if community priorities change, or if other major planning efforts affect the relevance of the information contained within this Plan. The Plan will be reviewed annually by City staff responsible for implementing mitigation strategies and actions, and implementation progress will be provided to the public at Climate Action Committee annually, with opportunities for public comment and engagement.

Part I: The Planning Area

City Profile

The City is situated in the northwestern corner of Alameda County in the San Francisco Bay Area. It is bordered to the south and east by Berkeley, to the north by the Contra Costa cities of El Cerrito and Richmond, and to the west by the San Francisco Bay. The City has a total area of 5.5 square miles (14 km^2), of which 1.8 square miles (4.7 km^2) is land and 3.7 square miles (9.6 km^2) (67.28%) is water.

The City's motto, "Urban Village by the Bay," illustrates its dense urban environment and small-town ambiance. Albany is the 5th most densely populated city in the Bay Area, with 10,905 residents per square mile.[1] With its traditional urban street grid and mixed-use neighborhoods, Albany is also the 6th most walkable city in California, with a Walk Score of 82.

Albany is a mature, built-out city, with much of its development completed before the 1950s. Much of its character comes from the modest single-family bungalows from the '20s and '30s, known colloquially as "MacGregors" for their creator, each one unique. Much of the housing built after 1950 has been multi-family housing, including University Village, a large UC Berkeley student family housing development comprising 15% of the City's total housing stock, as well as several large condominium complexes located by the I-80 freeway that comprise an additional 11%. A little over half of Albany residents are renters.

Albany also has three commercial districts, including the charming pedestrian-oriented Solano Avenue shopping district. Both Solano and San Pablo Avenues offer a variety of restaurants and retail stores, as well as financial, legal, dental, and medical services. San Pablo Avenue hosts more auto-oriented businesses, including car dealerships and automotive services. Cleveland Avenue and Eastshore Highway, both situated along the I-80 corridor, contain a mix of light industrial businesses and larger retail establishments.
The City of Albany is a full-service municipality, providing:

- Full-service Police Department with patrol, investigation, and administrative services;
- All-risk Fire Department, including fire/rescue response, paramedic ambulance services, hazardous materials response, fire prevention and emergency management divisions;

[1] ABAG. Sustainable Communities Strategy. Plan Bay Area 2040.

- Public Works Department managing municipal buildings, sanitary sewer, storm drain, and public park maintenance and upgrades;
- Recreation and Community Services Department including adult programs, senior centers, and youth programs;
- Community Development Department providing land use, transportation, and environmental planning, and building code and code enforcement services.

City facilities include the Civic Center Complex (City Hall, Fire Station, and Police Station), a Public Works Maintenance Center, a Community Center and Library, a Senior Center, several childcare centers, and various City parks and open spaces.

Other agencies with public service responsibility within the City of Albany include East Bay Municipal Utility District (EBMUD), which provides delivery of potable water and sewage treatment. Pacific Gas & Electric (PG&E) provides electricity and natural gas utility services. AT&T and Comcast provide communications utility services.

The Albany Unified School District provides K-12 education for Albany youth. The District operates one preschool, three elementary schools, one middle school, and one high school. There are private schools and childcare centers located within the City, including St. Mary's College High School.

In addition to the School District and City facilities, Albany has several large governmental facilities including the U.S. Department of Agriculture (USDA)'s Western Research Center, a State-operated Orientation Center for the Blind, and University Village, a housing development for UC Berkeley students.

Demographics

The 2021 Census reported that Albany's population estimate was 19,488. The City's population grew very rapidly between 1910 and 1950 and then declined during the 1950s and 60s. Since 1970, Albany has seen modest growth, with the greatest increase occurring between 2000 and 2010. Some of this growth is attributable to the reconstruction of University Village student family housing between 1999 and 2008 and some is due to an increase in average household size. By 2035, Albany is projecting a 10% increase in the number of households and a 17% increase in the number of jobs.

Albany has 7,661 households, out of which 2,909 (39.3%) have children under the age of 18 living in them. Residents are well-educated; 72.8% of residents over 25 are college graduates. The median household income in Albany is estimated at $103,132, and in inflation-adjusted terms, increased approximately on par with the regional household-income average gains. Approximately 10 percent of Albany's households earn less than $25,000 a year, and another 13

percent earn between $25,000 and $50,000 a year. About 51 percent of the City's households have incomes exceeding $100,000 a year.

The median age in Albany has been stable over the last 20 years. The median age was 36.3 in 2000,37.0 in 2010, and 36.2 in 2020. The fastest growing age cohort in the City consists of "baby boomers" (persons born between 1946 and 1964). The number of Albany residents between 55 and 64 years old stayed approximately flat from 2010 to 2020. The number of persons over 65 has remained stable, but it is expected to nearly double in the next 20 years based on projections from the Association of Bay Area Governments (ABAG).

Albany has become more diverse in the past two decades. The 2020 Census indicated the City was 48 percent White, 31 percent Asian, 12 percent multi-racial, 3 percent African-American, and 1 percent Other. 13 percent of Albany's residents were Hispanic. The percentage of Asian residents increased from 19 percent of the City's population in 1990 to 31 percent in 2020. In 2010, nearly 40 percent of Albany's residents spoke a language other than English at home.

The 2000 Census indicated that 13.3 percent of Albany's population was living with a disability. Today, the American Community Survey indicates the percentage is 7.2 percent based on 2008-2012 sample data. This may be the result of changes in methodology and definitions rather than a decrease in the number of disabled persons.

Economy

Approximately 67 percent of the City's residents age 16 and over (roughly 9,800 residents) are considered to be in the labor force, and 9,500 residents are employed. In March 2015, the State Employment Development Department indicated that Albany had a 3.1 percent unemployment rate. This was the second-lowest rate in Alameda County, which had a 4.8 percent unemployment rate. Only about 15 percent of Albany's employed residents work within Albany – 47 percent commute to another city in Alameda County and 37 percent commute to another county.

According to the most recent estimates from ABAG, Albany has approximately 5,070 jobs. This equates to a ratio of 0.69 jobs for every household in the city compared to a regional average of about 1.30. The data suggests that Albany is a housing "reservoir" for surrounding communities. Nearby cities, such as Berkeley and Emeryville, have more jobs than households and rely on Albany to some extent to meet their housing needs.

Commercial Storefronts on Solano Avenue
Photo courtesy of Doug Donaldson

Albany is home to several major employers and many small retail and service businesses. The largest employers include the Albany Unified School District, Target, the USDA Western Regional Research Center, and the Golden Gate Fields racetrack. The San Pablo and Solano Avenue corridors include restaurants, car dealerships, automotive service businesses, general merchandise stores, appliance stores, and other retailers. These areas also include banks and financial service companies, medical offices, dental offices, legal services, personal services, and other locally-oriented offices. The auto-oriented uses are located along San Pablo Avenue, while Solano Avenue includes smaller buildings in a pedestrian-oriented shopping environment. Another cluster of commercial uses exists along the Eastshore Highway south of Buchanan Street, including the Target department store, an auto dealership, and several construction suppliers. The City has a relatively small number of industrial uses that are generally located along Cleveland Avenue west of Interstate 80.

Critical Facilities and Infrastructure

Critical facilities and infrastructure are those that are essential to the health and welfare of the population. These become especially important after a hazard event. Critical facilities typically include police and fire stations, schools, and emergency operations centers. Critical infrastructure can also include the roads and bridges that provide ingress and egress and allow emergency vehicles access to those in need and to the utilities that provide water, electricity, and communication services to the community.

For the purposes of this Plan, Critical Facilities are defined as follows:

> *Any facility, whether publicly or privately owned, which includes infrastructure that is vital to the City's ability to provide essential services and protect life and property. Damage to such infrastructure that may cause a short or long-term loss of a critical facility would likely result in a severe economic, health and welfare, life-sustainment or other catastrophic impact.*

Critical Facilities are listed below in the following categories:

1. **Primary Facilities:** Facilities that are essential to the ability to immediately respond to and mitigate the impacts of hazards. This includes emergency operations centers needed for disaster response before, during, and after hazard events, facilities that house critical information technology and communication infrastructure, and vehicle and equipment storage facilities.
2. **Secondary Facilities:** Facilities that are essential in the recovery process of a hazard, such as facilities that can provide food and shelter. This includes educational facilities and community gathering places. The City of Albany has worked closely with the Alameda County Chapter of the American Red Cross and the Albany Unified School District to coordinate efforts to provide care and shelter to individuals impacted by a disaster. School site evaluations have been completed and contracts are in place.
3. **Priority Response Facilities:** Facilities that need early warning to enable them to prepare for and respond to the impacts of hazards. This includes facilities with vulnerable populations such as educational and medical facilities, as well as large multi-family buildings.
4. **Vulnerable Facilities:** Facilities with structures that are particularly vulnerable to hazards. This includes facilities that by the nature of their operations produce, manufacture, or store materials that create an exposure to secondary hazards of concern, such as highly volatile, flammable, explosive, toxic, and/or water-reactive materials.
5. **Critical Infrastructure and Utilities:** Public and private utilities and infrastructure vital to maintaining or restoring normal services to areas damaged by hazard events, such infrastructure for energy, communications, drinking water, wastewater, and stormwater, as well as major road and rail systems.

Some facilities may fall in multiple categories.

Primary Facilities

- Civic Center Complex
  - Emergency Operations Center (EOC)
  - Fire Station
  - Police Station
  - City Hall
- Public Works Center
- Community Center Auxiliary Emergency Operations Center
- Community Center & Library
- Senior Center Annex

City of Albany Emergency Operations Center

Secondary Facilities

- Senior Center
- Albany High School
- Albany Middle School
- Ocean View Elementary
- Cornell Elementary
- Marin Elementary
- St. Mary's College High School
- Sutter East Bay Medical Offices
- YMCA
- Safeway Grocery Store
- Sprouts Grocery Store
- Target
- CVS Pharmacy
- Golden Gate Fields Parking Lot

Vulnerable Facilities

- Veteran's Memorial Building
- USDA Laboratory
- Large Multi-Family Buildings Located on Kains, Adams, Brighton, and Pierce
- Single and Multi-Family Homes on Albany Hill

Priority Response Facilities

- City Child Care Centers (Ocean View & Memorial Parks)
- Community Center & Library
- Senior Center
- Senior Center Annex
- AUSD Children's Center
- Albany High School
- Albany Middle School
- Ocean View Elementary
- Cornell Elementary
- Marin Elementary
- St. Mary's College High School
- Orientation Center for the Blind
- University Village Student Housing
- Belmont Village Senior Housing

Critical Infrastructure and Utilities

Responsible Agency	Vulnerable Infrastructure in Albany
City of Albany	• City facilities • City streets • Storm drains • Sanitary sewer collection system connected to EBMUD wastewater treatment system • Creeks, open channels and creek culverts in right-of-way and on City property • Street lights and traffic signals, and conduits supplied from the PG&E system
EBMUD	• Potable and fire suppression water supply system consisting of pipelines and hydrants owned by the East Bay Municipal Utility District • Sanitary sewer transmission pipeline (EBMUD wastewater interceptor)
PG&E	• Electricity distribution system, including utility poles and substations owned by the Pacific Gas and Electric Company • Natural gas distribution system, including main and lateral pipelines
AT&T, Comcast, Sonic and other providers	• Telecommunications aerial and underground conduits • Telecommunications antennae • Fiber optic cabling
Kinder Morgan Corporation	• Aviation fuel pipeline
Union Pacific	• Railroad tracks
Caltrans	• I-80, I-580, and San Pablo Avenue (SR 123)
BART	• Rail transit system

Part II: The Planning Process

Planning Background

Per FEMA guidelines, a City must update its existing Local Hazard Mitigation Plan at least every five years to include new priorities, assess new or changed hazards, and to note progress in implementation. For the 2023 update to the LHMP, the City assessed hazards identified in the 2018 plan, analyzed changes in hazard profiles and reflected on events that occurred between the 2018 plan adoption and the 2023 update, and expanded upon information included in the original 2018 LHMP. This Plan update was developed using the guidelines provided in the FEMA Local Mitigation Planning Policy Guide, which will become effective on April 19, 2023.

Hazard Mitigation is defined as a way to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster through long and short-term strategies. Hazard mitigation is most effective when a long-term plan is developed *before* a disaster occurs. A hazard mitigation plan identifies the hazards a community or region faces, assesses their vulnerability to the hazards and identifies specific actions that can be taken to reduce the risk from the hazards. It involves strategies such as planning, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many, including private property owners, business and industry, and local, state, and federal government. Ultimately, Plan implementation should create a more resilient community that is better able to bounce back after a disaster.

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. Prior to 2000, federal disaster funding focused on disaster relief and recovery, with limited funding for hazard mitigation planning. However, the DMA has increased the emphasis on planning for disasters before they occur.

The DMA encourages state and local authorities to work together on pre-disaster planning and promotes sustainable practices as a form of disaster resistance. “Sustainable hazard mitigation” includes the sound management of natural resources and the recognition that hazards and mitigation must be understood in the largest possible social and economic context.

All citizens and businesses of the City of Albany are the beneficiaries of this hazard mitigation plan. The LHMP reduces risk for those who live in, work in, and visit the City. It provides viable planning frameworks for all foreseeable hazards that may impact the City of Albany. The resources and background information in the plan are applicable countywide, and the plan’s goals and recommendations can lay groundwork for the development and implementation of local mitigation activities and partnerships.

Preparedness, response and recovery aspects of emergency management are addressed in another document, the Emergency Operations Plan. This LHMP is essential for the City of Albany when preparing for future uncertainties and events. Though the effect of hazardous events cannot be eliminated or anticipated fully, this Plan and its updated elements lay out the ways in which the City of Albany can further understand and reduce extreme consequences of potential hazards and disasters. The Emergency Operations Plan

Previous Planning Initiatives

In 2005, the Association of Bay Area Governments (ABAG) prepared a multi-jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area. Cities or counties were permitted to adopt this multi-jurisdictional plan in lieu of preparing a Local Hazard Mitigation Plan themselves. However, they were required to participate in the development of the plan by submitting annexes describing local conditions. The City of Albany participated in the ABAG plan as an annex. FEMA does not require that the jurisdictions discuss progress in the local mitigation efforts from the ABAG annex because the mitigation actions were generic and applied to all the annexes in the ABAG plan.

The ABAG multi-jurisdictional Local Hazard Mitigation Plan was incorporated into the Environmental Hazards element of the City's General Plan. It was used to address the protection of life and property from natural and manmade hazards, including earthquakes, flooding, and wildfire. It was also used to address emergency preparedness.

The 2018 LHMP was revised from its original form as an ABAG annex to reflect changes in priorities and policies, including the Climate Action Plan adopted in 2010, the General Plan adopted in 2016, and the Council Strategic Plan adopted in 2017. Scientific findings on climate change, an increase in natural disasters in the Bay Area, and a new City Council and political climate have all contributed to revisions of the ABAG annex.

The 2023 Local Hazard Mitigation Plan update builds on the 2018 LHMP by including new findings and best practices in local hazard mitigation planning, including those informed by disasters that occurred between 2018 and 2023, including the COVID-19 pandemic, hazardous air quality events resulting from wildfires, Public Safety Power Shutoffs and rolling blackouts, and the atmospheric river events that occurred in late 2022 and early 2023. The 2023 LHMP also incorporates elements of the 2019 Climate Action and Adaptation Plan, and the Environmental Hazards and Safety Element of the City's General Plan. This Update follows the guidelines provided by FEMA in its 2023 Local Mitigation Planning Policy Guide, which takes effect in April 2023.

Planning Objectives

This update to the Local Hazard Mitigation Plan, building upon the 2018 LHMP, identifies resources, information, and strategies for reducing risk from natural hazards and will help guide and coordinate mitigation activities throughout the City. The plan aims to achieve the following goals:

1. Update information included in the 2018 LHMP, based on new findings and recent events
2. Meet or exceed requirements of the DMA
3. Enable the City to continue using federal grant funding to reduce risk through mitigation
4. Meet the needs of all state and federal requirements

Albany aims to be a resilient community that can survive, recover from, and thrive after a disaster, while maintaining its unique character and way of life. Albany envisions a community in which the people, buildings, and infrastructure are resilient to disasters, City government provides critical services in the immediate aftermath of a devastating event of any kind, and basic government and commercial functions resume within thirty days or as soon as possible after a damaging earthquake or other significant event. For many years, the City has pursued initiatives to identify and mitigate Albany's hazard vulnerabilities.

This Plan has three objectives for reducing disaster risk in Albany:

1. Reduce the potential for loss of life, injury and economic damage to Albany residents and businesses from hazards identified in the Risk Assessment.
2. Increase the ability of the City government to serve the community during and after hazard events by mitigating risk to key City functions such as response, recovery and rebuilding.
3. Encourage mitigation activities to increase the disaster resilience of institutions, private companies, and lifeline systems that are essential to Albany's functioning.

2023 Plan Update

The 2023 LHMP update was prepared by staff from the City's Community Development Department. The Community Development Department works closely with staff from other City departments on hazard mitigation strategies in a variety of contexts, including high level planning, special event management, and response to hazardous incidents. City staff used guidance provided from FEMA's Local Mitigation Planning Policy Guide that took effect in April 2023. Plan preparation in 2018 consisted of community outreach, hazard and risk assessments, and the development of hazard mitigation goals. The 2023 update built upon the foundation of the 2018 LHMP, and included stakeholder engagement with the City of Albany Community Emergency Response Team (CERT) Inc., staff from all City departments, appointed officials on the Climate Action Committee, and the City Council.

Community and Stakeholder Engagement

Public participation in the planning process helped ensure that diverse points of view about the City's needs were considered and addressed. The City of Albany Climate Action Committee, an advisory body with open public meetings, assisted with the preparation of this Local Hazard Mitigation Plan update. The Committee reviewed the initial plan update process, discussed potential hazards, reviewed plan outlines and drafts, and provided feedback to City staff during plan development. There was opportunity for public comment by members of the Albany community at Climate Action Committee meetings. The City's Planning and Zoning Commission reviewed the draft LHMP update at its February 22, 2023 public meeting.

More information about the public engagement process for the 2023 LHMP update will be included in the final draft of the LHMP, which will go to Council in March or April of 2023.

The City will continue to engage the community in the Plan maintenance and implementation process. City staff will make the plan available on the City website, provide annual status updates at a City advisory body meeting with opportunity for public comment, and will engage the public in any Plan update process. Community members can learn more about the City's disaster preparedness activities, find opportunities to take CPR and first aid trainings, and educate themselves on how to prepare for disasters at www.ReadyAlbany.org.

Part III: Risk Assessment

For the 2018 LHMP, the City of Albany considered the full range of natural hazards that could impact the City and then ranked the hazards that present the greatest concern based on previous incidents, Climate Action Committee discussions, and results from a community survey. The process incorporated review of the California State Enhanced Hazard Mitigation Plan and the ABAG Hazard Mitigation Plan. Also considered were local, state and federal information on the frequency, magnitude and costs associated with hazards that have impacted or could impact the City. Based on the review, the original Plan addressed the following natural hazards of concern:

- Earthquake
- Severe Weather
- Wildfire
- Flooding
- Landslide

While DMA regulations do not require consideration of human-caused hazards, City staff chose to include the following hazards in the 2018 LHMP based on the 2018 initial Risk Assessment and community input:

- Infrastructure Failure
- Terrorism
- Sea Level Rise
- Hazardous Materials Release
- Public Health Epidemic

For the 2023 LHMP update, the City included or expanded upon the following hazards and sub-hazards included in the Risk Assessment based on feedback provided at Climate Action Committee meetings, a Planning and Zoning Commission meeting, and events occurring between original LHMP adoption (2018) and LHMP Update (2023). The following additions and changes were made to the City's Risk Assessment for the 2023 Plan Update:

- Hazardous Air Quality added as its own hazard
- Public Safety Power Shutoffs included as a sub-hazard under Critical Infrastructure and Utilities Failure (previously "Critical Infrastructure Failure")
- Water Shortage and Drought included as sub-hazards under Critical Infrastructure and Utilities Failure
- Lessons learned from the COVID-19 Pandemic included under Public Health Epidemic
- Sea Level Rise incorporated under Flooding
- Mass Violence included in Terrorism section

Altogether, the City's Risk Assessment consists of the following hazards, ranked by potential risk to the community:

- Earthquakes
- Public Health Epidemic
- Critical Infrastructure and Utilities Failure
- Flooding
- Extreme Temperatures (Extreme Heat and Extreme Cold)
- Damaging Winds
- Wildland and Urban Fire
- Hazardous Air Quality
- Slope Failure/Landslide
- Terrorism and Mass Violence
- Hazardous Materials Release

Each of the hazards included in the Risk Assessment are analyzed with respect to:

- **Location:** where each hazard might affect the planning area
- **Extent:** its potential magnitude
- **Previous Occurrences:** how often events have happened in the past
- **Future Probability:** how likely they are to occur in the future
- **Impacts & Vulnerability:** the potential consequences to the community, including threats to life, property, and the economy in Albany; what parts of the community are most likely to be affected

These hazard analyses collectively result in the Plan's Risk Assessment. Per FEMA guidelines, the goal of the Risk Assessment is to provide the factual basis for mitigation activities and actions listed in the Mitigation Strategy.

To assess the risk of each of these hazards to the Albany community, the City's planning team assigned numerical values to each of the primary hazards based on probability and severity (impact on population, property, and economy). The total score that each hazard received determined its ranking.

Impact	Level of Concern	Risk Factor	Criteria
Probability	High	3	Hazard event is likely to occur within 25 years; hazard event occurred in last 5 years
	Medium	2	Hazard event is likely to occur within 100 years
	Low	1	Hazard event is not likely to occur within 100 years
	No Impact	0	There is no probability of occurrence
Population	High	3	50%-100% of the population is exposed
	Medium	2	25%-49% of the population is exposed
	Low	1	1%-25% of the population is exposed
	No Impact	0	None of the population is exposed
Property and Assets	High	3	High likelihood of property damage
	Medium	2	Medium likelihood of property damage
	Low	1	Low likelihood of property damage
	No Impact	0	No property damage will occur
Economy	High	3	Hazard will have major impact on local and regional economy
	Medium	2	Hazard will have moderate impact on local and regional economy
	Low	1	Hazard will have minor impact on local economy
	No Impact	0	No impact on local economy

The hazard ranking table below uses the criteria above to estimate a hazard's potential risk to the City (population, property, economy), and then ranks those hazards by estimated total risk to the community.

Hazard	Probability	Severity			Total	Ranking
		Population	Property	Economy		
Earthquake	3	3	3	3	12	**1**
Public Health Epidemic	3	3	0	3	12	**1**
Critical Infrastructure and Utilities Failure	3	3	0	3	9	**2**
Flooding	3	2	1	2	8	**3**
Wildland and Urban Fire	3	2	2	2	8	**3**
Extreme Temperatures (Severe Weather)	3	3	0	1	7	**4**
Damaging Winds (Severe Weather)	3	2	1	1	7	**4**
Terrorism and Mass Violence	1	3	1	2	7	**4**
Hazardous Air Quality	3	3	0	1	7	**4**
Hazardous Materials Release	2	2	1	1	6	**5**
Slope Failure/Landslide	2	1	2	1	6	**5**

Though scientific modeling and previous trends provide insight into probability and potential magnitude of some hazards (e.g. earthquakes), it is important to note that it is in many cases impossible to predict both the specifics of how a hazard may affect the City and on what timeline. For example, the 2018 LHMP ranked public health epidemic last in terms of risk to the community, with low levels of both probability and severity. Of all the hazards identified in the 2018 LHMP, the City spent the most time and resources responding to the COVID-19 pandemic between 2020 and 2023. The City of Albany plans to prepare for disasters related to all hazards identified in this Plan, implementing actions at the City government level and encouraging community members, residents, and businesses to prepare as well. A more detailed list of actions and a plan for prioritization is identified in the Mitigation Strategy section of the Plan.

Earthquakes

Earthquakes are the most concerning hazard in Albany because they have the potential for widespread damage, are impossible to predict, and are associated with other hazards including aftershock, liquefaction, slope failure and landslides, ground failure, tsunamis and sieches, and fires.

Hazard Analysis

The tectonic plates that make up the earth's crust are in continual movement. This movement causes strain to build at the plate boundaries, or faults. Strain accumulates until the plates can no longer sustain it, at which point there is an energy release. This energy release expresses itself as tectonic creep, fault ruptures, ground shaking and, more generally, earthquakes. Fault rupture or displacement is a sudden shifting of the ground along the trace of an earthquake fault, while ground shaking is the movement of the ground caused by the passage of seismic waves through the earth's outer crust during an earthquake.

Major earthquakes result when collisions of the plates occur at shallow depths or involve larger plates or longer faults, and usually have their epicenters on or near a fault. Earthquakes are common in California because the state's coastline is at the boundary of two tectonic plates. The coastline is part of the Circum-Pacific seismic belt, which extends the length of the western edge of the Western hemisphere, and is where over 80 percent of the world's earthquakes occur.

Albany is located in the seismically active San Francisco Bay Area. The region is susceptible to earthquakes generated by movement along the tectonic plate boundary between the North American and Pacific plates. A complex network of earthquake faults exists in response to the stress between the plates. When enough strain builds up along a fault line, the plates slip and an earthquake occurs.

Location

There are numerous active fault lines in the vicinity. Most earthquakes are associated with the San Andreas, Hayward, Calaveras, and Concord-Green Valley Faults. The Hayward Fault is located 1.6 miles east of the city and is the closest active fault to Albany. The San Andreas Fault is located approximately 17 miles west of the City and extends from the Mendocino coast south to the Gulf of California. The Calaveras Fault is located 17 miles southeast of the city and the Concord-Green Valley Fault is located 15 miles to the east.

Map of Bay Area Fault Lines

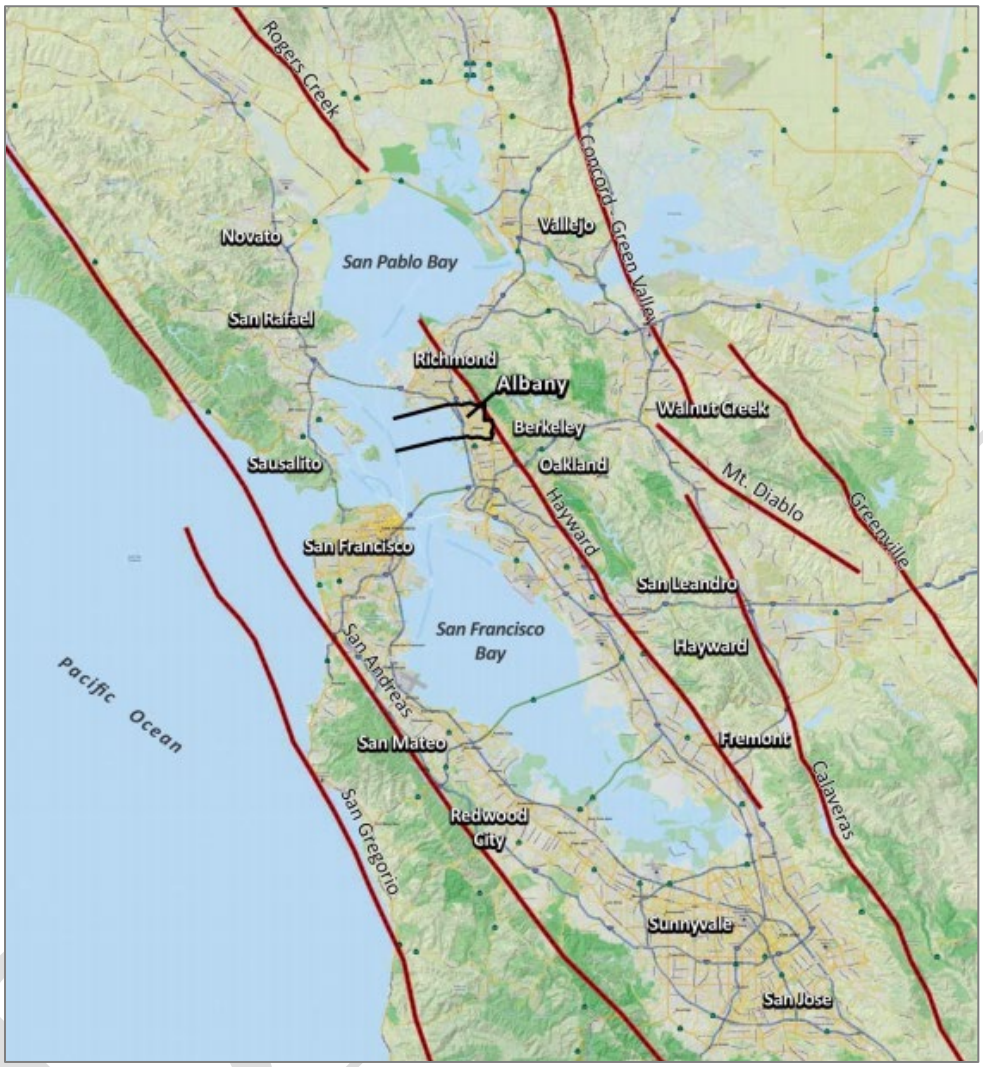


Image courtesy of the City of Albany General Plan

Extent & Future Probability

In a report published in 2015, the US Geological Survey estimated that there was a 72 percent probability that a magnitude 6.7 or greater earthquake will occur in the Bay Area between 2015 and 2045.[2]

The California Division of Mines and Geology considers the Hayward Fault capable of producing a 7.1 earthquake. Both the Calaveras Fault and the Concord-Green Valley faults are capable of producing earthquakes of magnitude 6.8-6.9.

[2] Field, E.H., and 2014 Working Group on California Earthquake Probabilities. (2015). UCERF3: A new earthquake forecast for California's complex fault system: U.S. Geological Survey 2015–3009. Retrieved from http://dx.doi.org/10.3133/fs20153009

The Association of Bay Area Governments (ABAG), the United States Geological Survey (USGS) and the California Geological Survey (CGS) developed a data set to demonstrate the probabilistic earthquake shaking hazard based on the probability of many different possible earthquakes, and the soil conditions of the area, which affects the velocity of ground shaking. Based on this analysis, there is a 10% in 50-year probability that Albany will experience a violent ground shaking event with a Modified Mercalli Intensity (MMI) of 9 in the next 50 years (see image below taken from the MTC/ABAG Hazard Viewer Map). Ground shaking can cause the top layer of soil to lose its strength, which can cause ground failure. This can damage buildings, disrupt roads, and crack or destroy utility lines, including gas mains and water mains.

The image below, taken from the ABAG Hazard Viewer Map, demonstrates that Albany and the surrounding region is subject to violent shaking (MMI 9). The image also demonstrated that areas to the east and west in Contra Costa County are subject to severe shaking (MMI 8)

The Bay Area has experienced significant well-documented earthquakes. There have been six earthquake-related declared disasters in the Bay Area since 1950, shown in the table below.

Previous Seismic Events Affecting the Bay Area

Disaster	Date	Counties Declared	Damage
M6.0 South Napa earthquake	August 24, 2014	Napa and Solano Counties	$362 million - $1 billion in damage
Tsunami resulting from M8.9 Honshu, Japan earthquake	March 11, 2011	Del Norte, Monterey, Santa Cruz	$39 million in damage
M5.2 Napa earthquake	September 3, 2000	Napa County	$15-70 million in estimated damage
M7.1 Loma Prieta earthquake	October 17, 1989	Alameda, Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz, San Francisco, Contra Costa, Marin, Solano	$5.9 billion in damage, 23,408 homes damaged, 3,530 businesses damaged, 1,018 homes destroyed, 366 businesses destroyed
M6.2 Morgan Hill earthquake	April 24, 1984	Santa Clara County	$7.265 million in damage to public, business, and private sectors
Tsunami warning resulting from Good Friday earthquake in Alaska	March 27, 1964	Marin County	No damage

Source: State of California Hazard Mitigation Plan, Appendix M; Governor's Office of Emergency Services

Magnitude 6.7+ Earthquake Likelihood 2015-2045	
San Andreas (Mendocino to San Benito County)	33%
Hayward	28%
Calaveras	24%
Hunting Creek, Berryessa, Green Valley, Concord	24%
Maacama	23%
Rodgers Creek	15%
San Gregorio	5%
Greenville	6%
Mt. Diablo	3%
West Napa	2%

Source: USGS Uniform Earthquake Rupture Forecast, Version 3 (2013)

Impacts and Vulnerability

The impact of an earthquake on structures and infrastructure is largely a function of weaknesses in the design of buildings, strength of ground shaking, and liquefaction of soils in which the soils weaken and lose their ability to ground motion waves as a unit, thereby allowing structure elements of a building to move in different directions as the ground waves flow through. The following table illustrates potential damage to structures based on shaking intensity.

MMI Intensity & Potential Structure Damage				
Intensity	**Building Contents**	**Masonry Buildings**	**Multi-Family Wood-Frame Buildings**	**1&2 Story Wood-Frame Buildings**
MMI 6	Some things thrown from shelves, pictures shifted, water thrown from pools.	Some walls and parapets of poorly constructed buildings crack.	Some drywall cracks.	Some chimneys are damaged, some drywall cracks. Some slab foundations, patios, and garage floors slightly crack.
MMI 7	Many things thrown from walls and shelves. Furniture is shifted.	Poorly constructed buildings are damaged and some well-constructed buildings crack. Cornices and unbraced parapets fall.	Plaster cracks, particularly at inside corners of buildings. Some soft-story buildings strain at the first floor level. Some partitions deform.	Many chimneys are broken and some collapse, damaging roofs, interiors, and porches. Weak foundations can be damaged.
MMI 8	Nearly everything thrown down from shelves, cabinets, and walls. Furniture overturned.	Poorly constructed buildings suffer partial or full collapse. Some well constructed buildings are damaged. Unreinforced walls fall.	Soft-story buildings are displaced out of plumb and partially collapse. Loose partition walls are damaged and may fail. Some pipes break.	Houses shift if they are not bolted to the foundation, or are displaced and partially collapse if cripple walls are not braced. Structural elements such as beams, joists, and foundations are damaged. Some pipes break.
MMI 9	Only very well anchored contents remain in place.	Poorly constructed buildings collapse. Well constructed buildings are heavily damaged. Retrofitted buildings damaged.	Soft-story buildings partially or completely collapse. Some well constructed buildings are damaged.	Poorly constructed buildings are heavily damaged, some partially collapse. Some well constructed buildings are damaged.
MMI 10	Only very well anchored contents remain in place.	Retrofitted buildings are heavily damaged, and some partially collapse.	Many well constructed buildings are damaged.	Well constructed buildings are damaged.

Source: ABAG Modified Mercalli Intensity Scale

Aftershocks

Following an earthquake, earthquakes of smaller magnitude may continue to occur in the days, weeks, or even years following the main earthquake. "Post-seismic slip" or "after-slip," sometimes referred to as "after shock," can be difficult to manage, according to ABAG, "as infrastructure may need to be continually re-straightened, complicating restoration of systems that cross the fault."[3] The City could also, under this scenario, issue building permits to reconstruct earthquake-damaged buildings which then are further damaged following additional quakes.

Liquefaction

Liquefaction happens during an earthquake when the ground shakes and the soil transforms into a fluid state which can damage the structural foundations of buildings. Liquefaction generally occurs in soft, unconsolidated sedimentary soils. A program called the National Earthquake Hazard Reduction Program (NEHRP) creates maps based on soil characteristics to help identify locations subject to liquefaction. NEHRP Soils B and C typically can sustain ground shaking without much effect, dependent on the earthquake magnitude. The areas that are commonly most affected by ground shaking have NEHRP Soils D, E and F. In general, these areas are most susceptible to liquefaction.

The below image, taken from the MTC/ABAG Hazard Viewer Map, identifies liquefaction susceptibility of different areas of the City. The liquefaction susceptibility map shows where the soil and groundwater conditions represent high to low susceptibility.

[3] Association of Bay Area Governments. (2014). Cascading Failures: Earthquake Threats to Transportation and Utilities. Retrieved from https://abag.ca.gov/abag/events/agendas/e011515a-Item%2008,%20Attachment%201%20Cascading%20Failures%20Abbreviated%20Report.pdf

The underlying soil on which a building is constructed is part of the structural system that supports the building. Geotechnical analysis of soils is a standard requirement as part of the design of all but the simplest and lightest-weight residential structures. Soil surveys from the U.S. Department of Agriculture[4] indicate that there are four basic soil-mapping units in Albany.

- Near the Bay, soils are classified as Urban Land Tierra, with moderate to high shrink-swell and moderate corrosivity.
- East of this area is a band of Urban Land Clearlake soil. These soils are typically very deep and poorly drained.
- A third mapping unit, Millsholm silt loam, exists on Albany Hill and in the northwestern part of the City. These soils are very deep and well-drained, with high shrink-swell potential.
- The northeastern part of the City is characterized by Tierra Loam soils. These soils are potentially productive but may be moderately corrosive. They also have high shrink-swell potential.

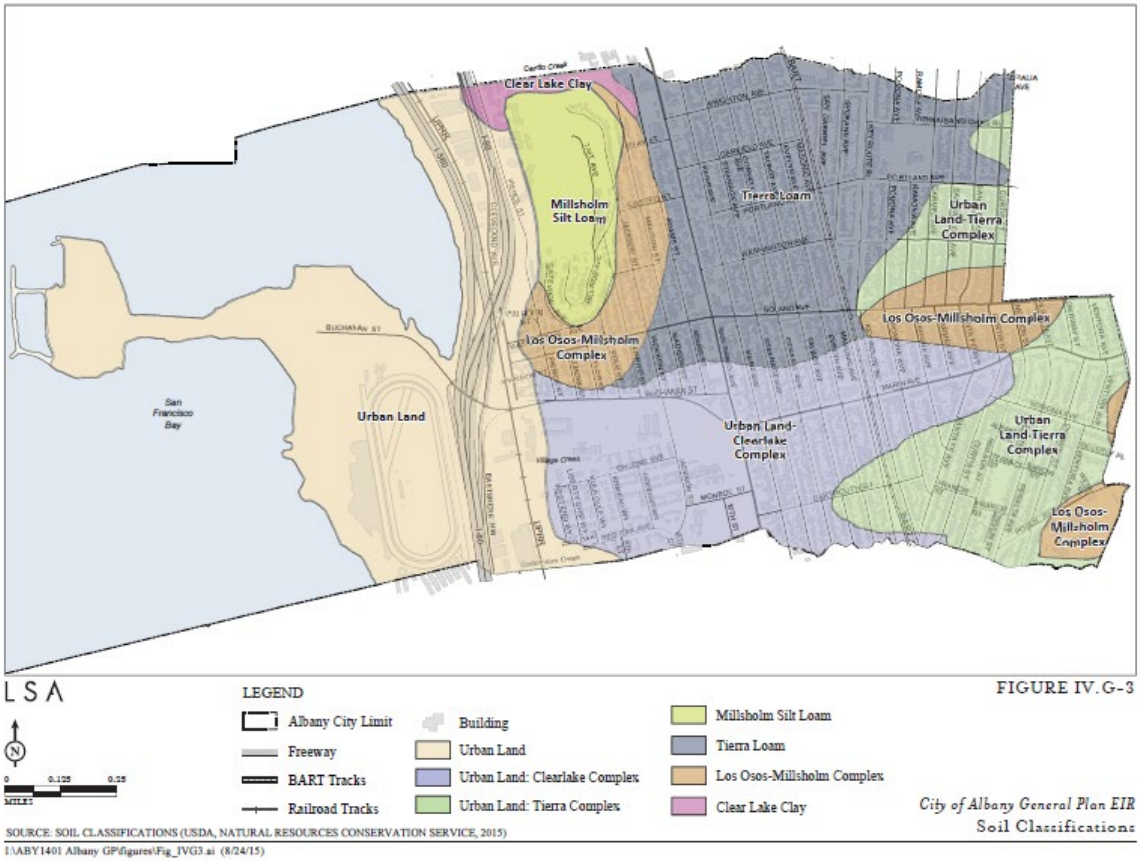


Image courtesy of the City of Albany General Plan

[4] U.S. Department of Agriculture. (2017). Natural Resources Conservation Service Web Soil Survey. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/

Ground Failure

Ground shaking resulting from an earthquake can cause the top layer of soil to lose its strength, which can cause ground failure. This can damage buildings, disrupt roads, and crack or destroy utility lines, including gas mains and water mains. Where the potential for liquefaction is high, site-specific studies are needed for new construction to determine the extent of the hazard and measures to reduce risks.

Slope Failure and Landslides

Seismic activity, or vibrations, change in groundwater content, frost, weathering of rocks and erosion and/or heavy rainfall are all naturally occurring factors that can cause slope instability, which can ultimately result in slope failure, or landslide or mudslide. Slope failures, including landslides, occur when large masses of soil are displaced by earth movement. This may occur suddenly, or as a slow continuous movement. The primary factors influencing slope failures are the characteristics of the underlying soils, the height and steepness of the slope, rainfall and degree of saturation, and the presence of previous landslide deposits.

Landslides are discussed in greater detail in the Slope Failure & Landslides hazard section of the Risk Assessment.

Tsunamis and Seiches

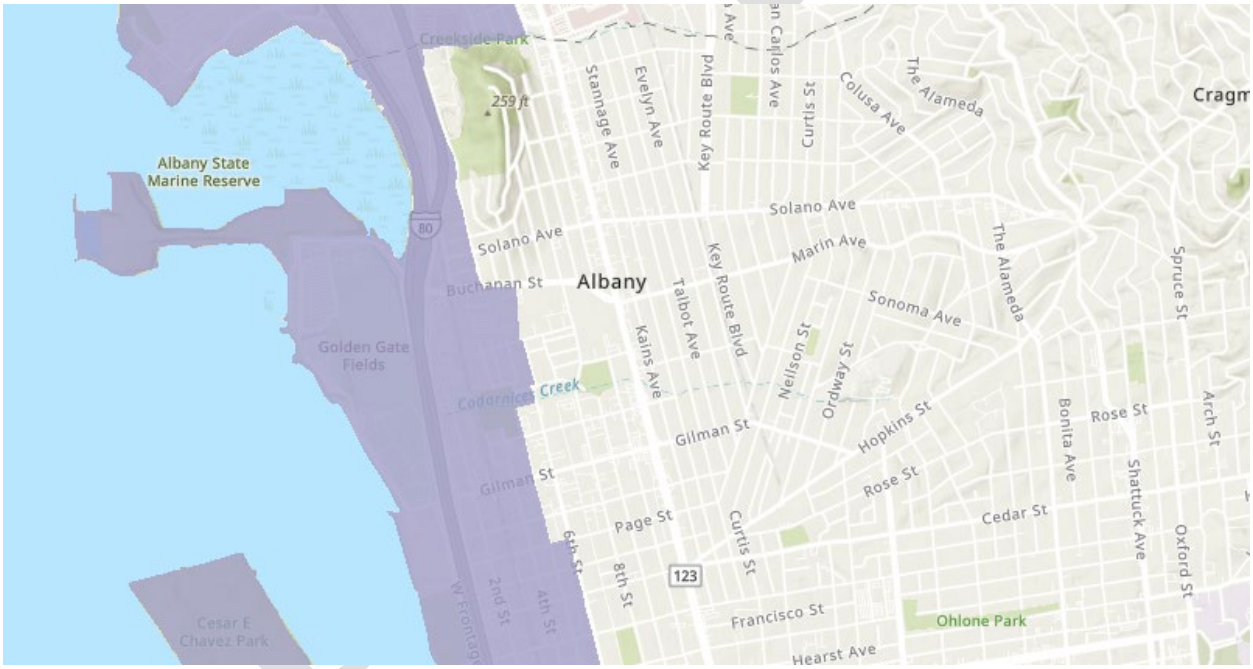
Tsunamis or seiches are waves created by undersea fault movement or by a coastal or submerged landslide. Since tsunamis have high velocities, the damage from a particular level of inundation is far greater than in a normal flood event.

Tsunamis can result from off-shore earthquakes within the Bay Area or from distant events. It is most common for tsunamis to be generated by offshore subduction faults such as those in Washington, Alaska, Japan, and South America. Tsunami waves generated at those far-off sites can travel across the ocean and can reach the California coast with several hours of warning time. Local tsunamis can also be generated from offshore strike-slip faults. Because of their close proximity, we would have little warning time. However, the Bay Area faults that pass through portions of the Pacific coastline or under portions of the Bay are not likely to produce significant tsunamis because they move side to side, rather than up and down, which is the displacement needed to create significant tsunamis. They may have slight vertical displacements, or could cause small underwater landslides, but overall there is a minimal risk of any significant tsunami occurring in the Bay Area from a local fault. The greatest risk to the Bay Area is from tsunamis generated by earthquakes elsewhere in the Pacific. While a tsunami entering the Bay through the Golden Gate would dissipate quickly as the Bay becomes wider and shallower, low-lying areas along the shoreline, including tidal flats, marshlands, and landfilled areas, would be vulnerable. The California Geological Survey has designated the entire area west of I-80 as being at risk of inundation.

Most recently, in January 2022, an eruption of the Hunga Tonga-Ha'apai volcano near Tonga caused waves to travel to the Bay Area and cause damage to ships and ocean surges of 1 to 2 feet in the region. Over 100 residents in the Berkeley Marina were told to evacuate.

According to the California Department of Conservation, areas in Albany listed as part of a forecasted Tsunami Hazard Area include all areas of the City of Albany that are located 1) both north of Buchanan Street and west of Pierce Street, and 2) south of Buchanan, and west of Kinkead Way (this includes the western half of University Village, the USDA facility, businesses fronting Eastshore Highway, and Golden Gate Field and its environs.

The below image, taken from the MTC/ABAG Hazard Viewer, identifies zones that may be affected by a tsunami. This image does not represent the inundation that could occur from a single tsunami, as it aggregates the inundation that could occur from multiple tsunami events. It can therefore be assumed that the entire area shown in purple would be inundated resulting from one tsunami event.



Seiches are standing waves in enclosed or partially enclosed bodies of water, such as lakes and bays. They may be caused by earthquakes, high winds, or tides. Due to the geometry and dimensions of San Francisco Bay, they are considered a negligible hazard to Albany.

Fire

Earthquakes can increase fire danger from damaged gas connections, appliances with pilot lights, or damaged electrical equipment. Fire following earthquake is especially challenging because there are often multiple ignitions at once (overwhelming fire crews), typical water supply for fighting fire may be reduced or unavailable, and maneuvering fire crews to the ignition can be difficult if streets are damaged or blocked by debris. Areas of liquefaction are more vulnerable to fire because of the greater potential for underground gas mains to break due to the ground displacements, and because the water lines in the area may also be damaged – preventing the ability to fight a fire with regular water resources. Areas that are largely wood frame or shingle roof may be less prone to earthquake damage, but are a heightened risk for the spread of fires. There is added concern in areas with hazardous materials with the potential for explosion, or with the potential to produce toxic smoke. Industrial facilities and labs are a high concern because of the hazardous and flammable materials they store at their facilities. Collaboration between residents, the City, and PG&E to electrify homes and decommission gas infrastructure will over time result in a decline in risk of earthquake-induced fires.

Dam Failure

The CalOES Dam Breach Inundation Maps indicate limited areas of possible inundation in the City of Albany following dam failure. There are two dams with proximity to the City, Lake Temescal and C.L. Tilden Park Dam, however, according to the CalOES Dam Breach Inundation Maps, neither dam poses risk of flooding to Albany if dam failure occurs. According to ABAG, the East Bay Municipal Utility District's (EBMUD) Berryman Reservoir Tank, located near Codornices Park in Berkeley at the Codornices Road/Euclid Avenue intersection, has the potential to cause flooding in Albany. Tank failure would cause water to flow west in the area between Cedar and Virginia Streets through Berkeley, and then north along the Eastshore Highway through the western part of Albany to the Codornices Creek channel. The risk has been reduced by the replacement of the former reservoir with a steel tank as part of EBMUD's seismic improvement program. The flood waters are expected to disperse north and south along I-80, affecting a small portion of the City of Albany between I-80 and the Eastshore Highway until reaching Buchanan Street. EBMUD has a Dam Safety Program that requires periodic safety reviews and inspections of dams to prevent failure. Further, EBMUD is in the process of improving its dams and reservoir tanks to make them more resilient to seismic activity.

The entire population of the City of Albany is potentially exposed to direct and indirect impacts from earthquakes. The degree of exposure is dependent on many factors, including the age and construction type of the structures people live in, and the soil type that their homes are constructed on. Whether directly or indirectly impacted, the entire population will have to deal with the consequences of earthquakes to some degree.

Many of the City's rental units are within buildings that may be more susceptible to damage after an earthquake, making many renters within Albany more vulnerable to the effects of earthquakes. The City has approximately 150 multifamily buildings in the City with 800 individual units that are classified as soft story buildings. A soft story building, otherwise

referred to as a wood frame target story, has significant instability in the ground level, due to a garage cutout or large window on the ground story walls, or short walls below the ground level that create a crawl space below the building. These buildings, due to the less stable first story, are more prone to damage or complete collapse during an earthquake. The City is currently developing a retrofit ordinance to address vulnerability of certain "soft story" buildings in Albany.


Soft Story Building in Albany
Photo courtesy of City of Albany General Plan

Even in well-constructed buildings, casualties can result from falling objects and debris. Disruption of communications, electrical power supplies, and gas, sewer, and water lines should be expected.

ABAG estimates a potential loss of 159,000 housing units in Bay Area communities after a large earthquake. This would have disastrous effects on local and regional economies. It also means that recovery, repair, and rebuilding time for each household would be very lengthy due to the number of homes that would need repairs or replacement. Most habitable structures in Albany are wood- frame houses built in the 1920s and 1930s. These structures pre-date the seismic requirements of the current building code, and are vulnerable to a variety of earthquake hazards. Common hazards include falling chimneys, toppling water heaters, cracked foundations, and failing cripple walls. Risks can be reduced through foundation bolding, shear wall installation, and basic seismic retrofit measures.
The City also has a significant number of soft story buildings, referenced above.

Business interruption could keep people from working, and school closures could further limit the ability of people to return to work and impact school calendars for months. Roadway damage and loss of utilities could affect populations that suffered no direct damage from an earthquake itself.

The City maintains critical public facilities such as City Hall, the police station, and the fire station in a manner that promotes resilience to earthquakes. Damage to critical infrastructure such as roadways, water and power systems, and telecommunications infrastructure could pose added difficulties when responding to an earthquake.

Mitigation & Response

There is currently no reliable way to predict when an earthquake will occur. Technology exists, however, that detects low energy waves at the beginning of a major earthquake. The low energy waves travel faster than the actual ground motion, giving brief advance alarm of imminent danger. The warning time is very short but could allow people to move away from a hazardous location. This has practical safety implications in the workplace too; construction workers can disable equipment, medical professionals can pause invasive procedures, and these valuable seconds are now available to most Californians. These warning systems are operational, and can be downloaded onto most smart phones. MyShake, created by researchers and students at UC Berkeley, launched in 2021, provides earthquake alerts in partnership with USGS ShakeAlert and California Office of Emergency Management (CalOES).

Although it is not possible to eliminate all the risks associated with earthquakes, the City can reduce risks by employing available tools, such as geotechnical studies, updates to electrical and natural gas infrastructure, and appropriate land-use decisions and adequate building codes. The City ensures that critical facilities such as City Hall, the police station, and the fire station are designed and maintained in a manner that guarantees their resilience to earthquakes. Moreover, the City provides fee waivers for earthquake retrofit projects on single-family homes and will continue to do so as a mitigation incentive. To improve on earthquake planning and policy capabilities, the City's Community Development Department plans to bring a comprehensive soft-story retrofit ordinance to the City Council in 2023.

With each major earthquake comes new understanding of the way in which buildings respond to them. Advances in the technology associated with testing systems, design and seismic modeling software, structural connections, structural forms, and seismic force resisting systems have accelerated dramatically. Structures can be constructed or retrofitted to have the strength and redundancy to withstand expected ground shaking of severe earthquakes. In addition, structures can safely be built or retrofitted on soils vulnerable to liquefaction.

The Fire Department currently provides earthquake safety training to staff and community members. The Department will continue to provide this training while focusing on increasing Citywide earthquake awareness and preparedness. Though no longer directly run by the Fire Department, the Albany Community Emergency Response Team (CERT) Inc., continues to engage with the public, fire and public safety officials, and City staff to engage Albany residents in disaster preparedness.

The City of Albany CERT Inc. has identified prioritizing emergency preparedness outreach to renters and vulnerable populations a priority for the CERT Inc. group. Helping all residents and community members in Albany to be more prepared for emergency situations will help prevent

loss of life and damage to property in the event of an earthquake. Prioritizing outreach to renters will ensure that this more vulnerable group, a significant percentage of which is living in older and more vulnerable housing stock, is better prepared.

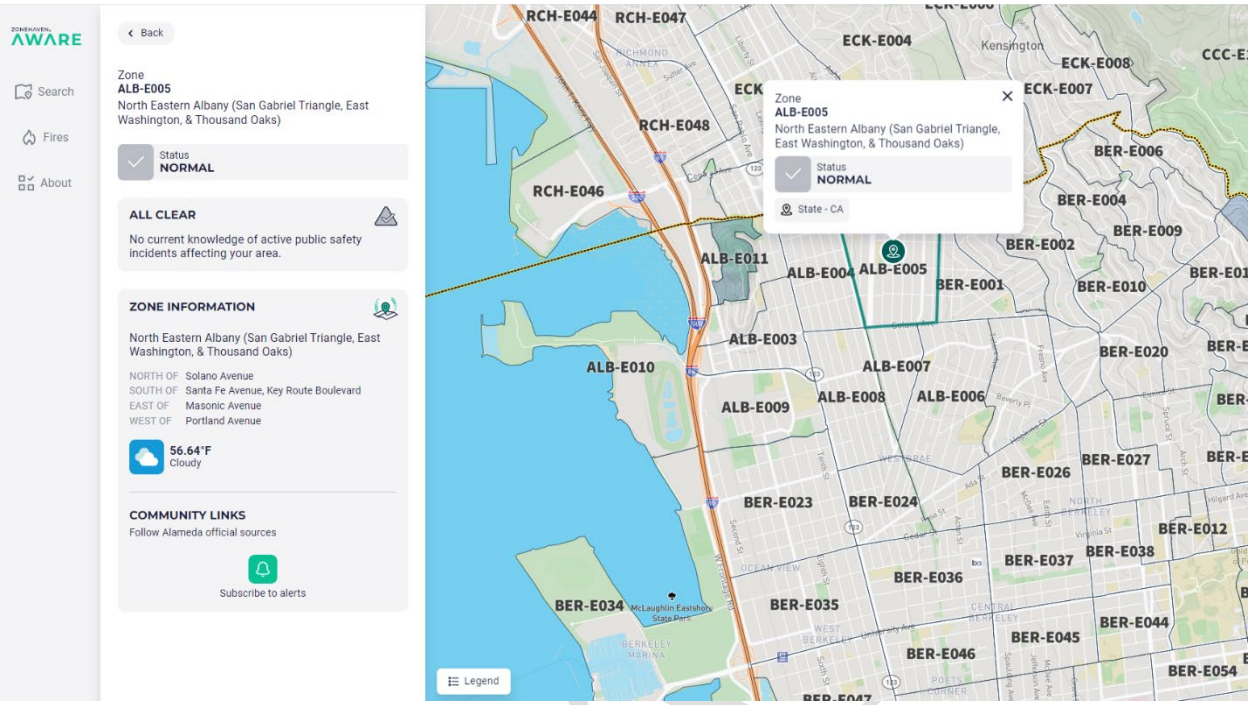
To prevent wildfires or other hazards resulting from earthquakes, the City and regional public and private entities can underground electrical infrastructure, as was done on Marin Avenue in Albany in 2013. This prevents trees or other structures from pulling down electrical wires, which could cause wildfire, injury, property damage, and prolonged periods of service disruption. The City will continue to seek opportunities to advance this action by utilities.

Wildfires, explosions and damage to property and human life can also result from severed natural gas pipelines damaged during an earthquake. To mitigate this, the City, along with PG&E and other regional jurisdictions, should implement strategies to decommission old and vulnerable natural gas pipelines. Decommissioning natural gas pipelines also helps reduce greenhouse gas emissions, an essential step in mitigating disasters resulting from climate change. The City took the first step toward reducing hazards related to natural gas hookups by enacting an all-electric requirement for new construction in 2022. The City continues to explore opportunities for gas pipeline decommissioning.

In the event of an earthquake or any earthquake-induced emergency, the City may require evacuations of all or part of the City. In the event of an emergency, the City's arterials would function as evacuation routes. San Pablo Avenue provides the primary north-south route, while Marin Avenue and Buchanan Street provide the primary east-west routes. In the event these roads are not passable, the grid layout of the City's street system facilitates the use of parallel streets as alternate routes.

Rather than having pre-determined evacuation maps, the City has adopted a more dynamic approach to directing evacuations in the event of an emergency. The City uses the evacuation management platform, Zonehaven, to virtually notify the community of evacuation requirements and to direct evacuations based on real-time conditions in specific zones of the City. The City of Albany has 8-10 emergency services staff with administrative log-in credentials, who are trained in operating the software, and can send out emergency alerts and provide evacuation directions virtually. In the event of a required evacuation, the City's Public Information Officer or a designated representative would send out emergency alerts via the City's email and website notification tools, and with AC Alert, the County's emergency notification system. The Alameda County Office of Emergency Services is also able to send emergency notifications to Albany residents, and would be the lead agency for issuing such notifications in the event of a Countywide evacuation.

The image below is taken from the Zonehaven Aware tool to demonstrate what users see when they visit the platform.



The City aims to increase awareness and usership of the Zonehaven Aware tool.

Public Health Epidemic

Hazard Profile

The City recognizes the great risk present from pandemics and viral outbreaks. Key naturally-occurring biological hazards of concern include Bird Flu, Ebola, Enterovirus, Influenza, Measles, Middle East Respiratory Syndrome, West Nile Virus, and Zika Virus. More recently, SARS-CoV-2 (COVID-19), and Monkeypox, are rapidly spreading and evolving viruses that will continue to impact the region.

Location

Public health emergencies have the potential to affect the entire City; it is unlikely that large-scale public health emergencies would be confined to specific areas of the City.

Extent

Biological threats can range from widespread pandemic and regional outbreaks to purposefully targeted bioterrorism. Viruses, bacteria, and toxins all pose as threats to our health; the number of outbreaks per year has more than tripled, with the number of new diseases per decade nearly

quadrupling over the past 60 years. Globalization, more efficient modes of traveling, and climate change are all factors contributing to a growing number of disease vectors carrying pathogens around the world. This rapid spread of disease can affect humans and other species.

Infectious diseases remain major causes of illness, disability, and death around the world. New infectious agents and diseases are being discovered regularly, and some diseases considered under control have reemerged in recent years.

Previous Occurrences

Worldwide pandemics of influenza occur when a novel virus emerges to which the population has little immunity. The swine flu outbreak in 2009 and the measles outbreak in 2015 were also of concern. More recently, many states have experienced an increase in the hepatitis A virus, as well as mosquito-borne viruses such as Zika and West Nile.

On December 31st, 2019, the World Health Organization (WHO) was notified of a cluster of pneumonia cases in the city of Wuhan, China. By January 7th, the virus responsible for the outbreak had been identified, and by January 10th, cases were already present in South Korea, Thailand, and Japan. The cause of the severe acute respiratory syndrome was SARS-CoV-2, or COVID-19, named for the year in which the first cases were identified. By January 20th, WHO declared the virus a Public Health Emergency of International Concern, and on March 11th the WHO declared the situation a pandemic. At which point local transmission was present on all continents save Antarctica and deaths were soaring in Europe.

In the Bay Area, March 16th, 2020 saw a regional lockdown imposed, which went statewide three days later; these were the first lockdowns in the country. Schools had been shut two weeks prior, employees were ordered to work entirely from home, and nonessentially trips were discouraged, as was all social interaction. With a lack of clear understanding of the spread of the novel disease, much attention was placed upon cleaning and sanitizing surfaces, though it was soon discovered and widely accepted that the primary was that the virus was transmitting to others was through droplets in the air. While mandatory masking policies gradually came into effect, the wide reach of the pandemic in how it disrupted the lives of Albany residents, and those around the world, was plainly evident. Transit services were cut or reduced, capacity limits and long lines were present at grocery stores, school and recreation services were cut, and all the meanwhile, the virus continued to spread and evolve.

By December 2020, days after the United States recorded its 300,000th death from the pandemic, the first vaccine to prevent the virus and/or blunt its impact should someone contract it was approved, and a mass vaccination campaign worldwide began, with the US outpacing all peer countries in vaccination rate and speed through the Spring of 2021. Unfortunately, soon after the majority of the country became fully vaccinated, Covid-19 began evolving such that most vaccines were rendered less effective than against the original strain of the virus. By the time

2022 began, the worst outbreak of the virus in its history in the Bay Area appeared, overwhelming hospitals around the country for the third time over the pandemic's course, affecting huge numbers of the vaccinated in a variant dubbed "Omicron."

At the time of writing, the US has experienced more than a million deaths linked directly to COVID-19, and the economy has dramatically changed in its wake. Shortages of common and necessary products due to supply chain issues around the world abound, essential public services such as transportation and healthcare continue to remain under resourced and understaffed.

Future Probability

According to the World Health Organization (WHO), changes in infectious disease transmission patterns are likely to increase as a consequence of climate change. Some existing health threats will intensify, and new health threats will emerge. Warmer average temperatures can mean longer warm seasons, earlier spring seasons, shorter and milder winters, and hotter summers. These conditions can be more hospitable for many carriers of vector-borne diseases. Additionally, an unstable climate, more extreme heat days, and air pollution all increase health risks. WHO estimates an additional 250,000 deaths per year will be caused by climate change between 2030 and 2050.

Misinformation about vaccines, the absence of a clear plan for coordination among federal agencies such as the U.S. Agency for International Development and the Defense Department, and a need to improve public awareness about the threat posed by a biologic outbreak are among the factors that make the possibility of large and deadly pandemics increasingly likely. In addition, the risk of pandemic continues to be pushed forward as the anti-vaccine movement encourages parents to refuse vaccination of their children, resulting in higher risks of infection and dispersal of diseases.

Impacts & Vulnerability

The World Health Organization (WHO) emphasizes that certain risk factors make individuals or groups of individuals more susceptible to public health emergencies. These risk factors include, but are not limited to, low-income status and poverty, gender, age, migration, health and nutritional status, and displacement. Unhoused individuals are also more susceptible to the effects of public health emergencies, and have limited access to resources.

According to the WHO, there have been over 1,200 outbreaks of epidemic-prone diseases throughout the world since 2011. Public health epidemics tend to disproportionately affect vulnerable populations, and can result in societal, economic, and political disruption.

Mitigation & Response

Protecting people from the human and economic costs associated with disease is a core public health function. The California Department of Public Health (CDPH) is the lead planning agency

in the state, which coordinates the public health response to an epidemic or pandemic with local health departments, the healthcare community, the federal government, and other key partners. General communicable disease prevention strategies focus on increasing immunization against vaccine-preventable diseases, promoting hand washing and that individuals stay home when sick, consistent cleaning and sanitization practices, improving indoor ventilation, and improving laboratory capacity.

After years of activity related to response and recovery for COVID-19, the City is more prepared to respond to further outbreaks and waves of COVID-19, along with future public health emergencies, as a result of its experience navigating the COVID-19 pandemic. The City has had an Emergency Operations Center representative participate in the Alameda County Office of Emergency Services conference calls where agencies across the County receive briefings public health officials and coordinate responses. In addition, the City's Public Information Officer (PIO) engages in regular calls with other PIOs in Alameda County, in tandem with the Alameda County Department of Public Health, to assess changes in pandemic behavior and local mitigation measures as necessary. The City has a webpage on its site dedicated to COVID-19 response and mitigation, and encourages vaccination of all City employees, staff, and residents.

The City of Albany has also ensured a reliable supply of personal protective equipment (PPE), and the Fire Department, Police Department, and City Hall remain stocked with sufficient PPE for City staff to be able to stay safe while at work. The City also contracts with a private testing organization to ensure that City staff, particularly those who interact regularly with the public and emergency response personnel, have reliable access to COVID-19 testing. To engage the public, the PIO, along with the Albany Department of Recreation and Community Services, created signs to distribute throughout the community and to businesses detailing proper procedures to ensure safety in crowds, instructing local business patrons how and where to wear a mask, how far to keep distanced from others, and how best to remain safe in other public settings. Community information distribution surrounding public health is now more consistent and updated, and the use of electronic notification has greatly increased the number of residents receiving timely communications about the regional public health situation.

Additionally, in order to minimize disruptions to community services, there have been a number of changes that the City has undertaken to ensure resiliency. In narly all City office functions, employees can be scheduled to work in separate physical locations and to rotate job sites more often, so that there is less risk that all employees will need to take time off due to COVID-19 at the same time. To support community wellbeing, phone trees were created and expanded to provide emotional support and socialization to seniors and those with limited mobility in the community, and meal delivery was provided to those who could not leave home or were at significant risk to do so. Many of these efforts were based off lists of those who are served by PG&E and are known to be medical baseline customers. These lists were created, expanded, and

given great weight in light of the Public Safety Power Shutoff (PSPS) program, knowing that there are those who must have access to power to operate lifesaving medical equipment.

The structures and mitigation techniques employed by the City after the onset of the COVID-19 pandemic can be translated to other public health emergencies as they arise.

Critical Infrastructure and Utilities Failure

Hazard Analysis

Critical infrastructure generally refers to infrastructure that is necessary to provide vital government services and individual functions. Key infrastructure assets are owned, operated, and maintained by different public agencies and utility companies. There are eight potential failures of critical infrastructure that could significantly affect the City of Albany and its community:

- Electrical Grid Failure
- Energy Shortage
- Public Safety Power Shutoff
- Natural Gas Pipeline Explosion
- Freeway Damage
- Water System Failure and Water Shortage
- Information Technology Failure
- Public Safety Power Shutoff
- Cybersecurity Attack

Many of these critical infrastructure types rely on electricity to function. Electricity most commonly comes from the electrical grid, which is an interconnected network for delivering electricity from producers to consumers. PG&E currently manages the transmission of electrical power in Albany. In 2018, East Bay Community Energy (EBCE) enrolled all electrical accounts in Albany in their Community Choice Aggregation program, and has been responsible for procuring Albany's electricity since. EBCE's focus is on local, renewable power generation. In 2021, the Albany City Council voted to enroll all commercial, residential (excluding CARE, FERA, and Medical Baseline customers), and municipal electricity accounts in the 100% renewable product: Renewable 100. PG&E continues to manage energy transmission, distribution, and repair and provides electricity for customers that "opt out" of East Bay Community Energy.

Location & Extent

Failure of critical infrastructure has the potential to affect the entire City.

Electrical Grid Failure

When any component of the electrical grid fails, all or a portion of Albany can be without power for hours, days, or sometimes even weeks. A loss of electrical power can interfere with communication, sanitation, lighting, cooking, refrigeration, and transportation systems. Loss of electrical power, even for a short period of time, can be extremely detrimental to community members who rely on electricity to power medical equipment. An electrical grid failure for a longer period can cause fuel shortages and compromise other necessary supplies such as food and medication.

The City of Albany is home to an electrical grid substation on Solano Avenue, managed by PG&E.

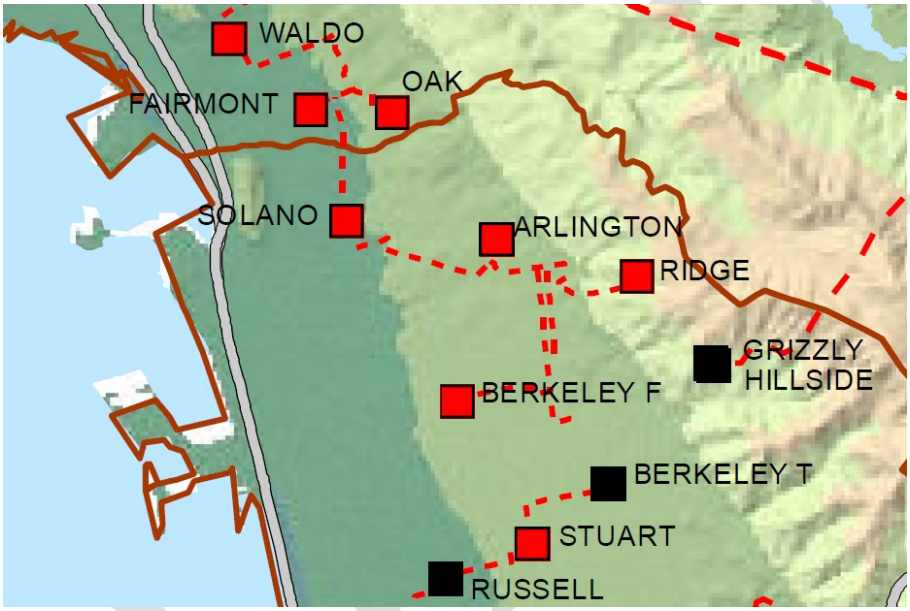


Image Courtesy of the California Energy Commission

Energy Shortage & Public Safety Power Shutoff

Although California has one of the lowest rates of per capita energy consumption in the country (mainly because of mild climates and energy efficiency initiatives), it still has the second highest total energy demand in the country due to its large population. As such, California imports more electricity than any other state, importing one third of its power from out of state in 2021.

According to the California Energy Commission, approximately 50% of electricity consumption in California is fueled by natural gas, approximately one third is generated by renewable sources, roughly 10% comes from hydroelectric power, and the remainder of electricity generation comes from sources such as coal, nuclear, and other non-renewable sources. A glitch in any one of these

systems (such as failure of a high-pressure transmission line of natural gas or a drought that decreases the amount of electricity available from a hydroelectric plant), could result in an energy shortage.

An energy shortage may also be caused by increased demand for electricity, such as during extreme temperatures. Extreme heat days typically increase demand for electricity, as residences and businesses run fans and/or air conditioning units. It is possible that if demand for energy exceeds supply, rolling blackouts will occur.

Due to increasing temperatures, dry vegetation, and extreme weather conditions, including extreme wind events and low humidity levels, California's wildfire risk continues to increase. During extreme weather events, high winds may cause trees or other objects to encounter energy lines and ignite wildfires. In response, in 2018 PG&E launched its Public Safety Power Shutoff (PSPS) program. The PSPS program allows PG&E to turn off power in designated areas during severe weather events to prevent wildfires. Before issuing a notice of a potential PSPS, PG&E examines whether a combination of factors could result in a wildfire. These factors include humidity levels of 30% or below, forecasted winds above 19 miles per hour and gusts above 30-40 miles per hour, observed conditions of dry material and vegetation on the ground near power lines, and Red Flag Warnings issued by the National Weather Service.

Natural Gas Pipeline

A high-pressure 24-inch natural gas transmission line runs along a north-south alignment through University Village and along the east side of Albany Hill. This line was most recently pressure tested by PG&E in 2019. Rupture of this pipeline has the ability to produce ground shaking and fire in the City.

Aviation Fuel Pipeline

There is an aviation fuel pipeline that runs along the Union Pacific Railroad tracks from Richmond to the Oakland Airport. These pipes are made of high-pressure welded steel that were installed primarily in the 1960s (although a few segments were installed in the 1950s). Each pipeline has automatic, remote control, and other manual valves along its length. The flow can be shut down within minutes if necessary.

Smaller high-pressure natural gas lines are subject to damage and disruption in areas with soil failure (i.e. landslides or liquefaction). If ignited, broken lines can create fires until the fuel supply is exhausted. The repair of damaged underground lines will take time. It took about 30 days to repair damaged lines in the San Francisco Marina following the Loma Prieta earthquake.

The following image, taken from the Department of Transportation's National Pipeline Mapping System, shows the PG&E high-pressure natural gas transmission pipeline (blue), and the Kinder Morgan aviation fuel pipeline (red).

Freeway Damage

Two major freeways, I-80 and I-580, come together along the western edge of Albany. Both freeways experience high volumes of traffic and are vulnerable to damage or collapse. In the case of freeway damage, I-80 traffic would be rerouted to San Pablo Avenue (State Routes 123), which would have significant impacts on the City.

Water System Failure & Water Shortage (Drought)

Albany's water supply system is a system of water collection, treatment, storage, and distribution systems operated by the East Bay Municipal Utility District (EBMUD). EBMUD has the responsibility of providing potable water treatment and delivery to individual properties. EBMUD also maintains the City's network of fire hydrants. EBMUD draws its water from the Sierra Nevada mountains, using a series of reservoirs and pipelines. If there is an interruption to this imported water source, EBMUD would rely on local storage until repairs were made to restore the transmission supply. Typically, a failure in one part of the system can be isolated

without disrupting the entire network. If there is a large system failure, Albany residents and businesses could be without direct access to water for an amount of time.

EBMUD has studied the impacts of earthquake shaking, liquefaction, landslides, and fault rupture on most of its infrastructure and is upgrading its infrastructure region-wide. A large earthquake, however, could severely impact the quality or volume of water service to the City.

Due to climate change, California is experiencing severe drought, with significant impacts to water supply systems. To prevent water shortages in the region, in 2021 and 2022 EBMUD and the State took action to address the low water supply. In April of 2021, EBMUD's Board of Directors declared a Stage 1 drought. In 2022, California saw record-low rainfall in January, February, and March leaving reservoirs and the Sierra Nevada snowpack depleted. In March of 2022, Governor Newsom issued Executive Order N-7-22, calling on Californians and utilities to conserve water. In April 2022, the EBMUD Board of Directors declared a Stage 2 drought, and in May the Board approved an eight percent drought surcharge on water use charges. Revenue from the surcharge will cover drought EBMUD drought response.

Information Technology Failure

Information technology (IT) is defined as the technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data. IT provides the communication path and services between users, processes, applications, services, and the internet.

The most common cause of IT failures are natural disasters that physically damage devices and/or components that make up the network infrastructure. Heavy winds, floodwaters, wildfires, and seismic activity can all create physical disturbances that have the power to do significant damage to communications equipment.

When IT networks fail, the impact has the ability to wipe out access to standard mobile or landline telecommunications in addition to internet and satellite-based emergency messaging devices. Communication during and immediately after a hazard situation is a critical component of response and recovery because it connects affected people with first responders, support systems, and friends and family members. Reliable and accessible communication and information systems are also key to a community's resilience.

Cybersecurity Attack

City computers and information storage systems are a target to cyber criminals. Though there are many ways cyber crime can occur, the most common threats to local governments are malware, ransomware, spam and phishing.

Malware is malicious software that can compromise security of computers and systems. Malware includes spyware, a common attack that allows a cyber criminal to spy on an individual's system use and gain access to sensitive information such as passwords, confidential information, and financial information.

Ransomware is a type of malware that allows cyber criminals to lock system access or steals important information, and then demand payment before allowing the agency access to the system or returning stolen files.

Spam and phishing is another common cyber attack that local governments can train employees and public officials to look out for. Spam is typically unwanted or fraudulent email content. Phishing is a more severe cyber threat, as phishing content (email, comments on social media) typically requests that individuals share sensitive information such as financial information or passwords, or may embed malicious links that can lead to other cybersecurity threat, such as malware and ransomware.

Previous Occurrences

The City and its surrounding communities has previously experienced infrastructure failure of varying types and magnitudes.

Though no areas in Albany have yet been affected by PSPS events since the initiation of PG&E's program, its neighboring communities in El Cerrito, Kensington, and Berkeley have all had community members affected across broad geographies. California has periodically experienced energy shortages that resulted in a disruption of services and/or rolling blackouts. In the fall of 2022, the California Independent System Operator (CAISO), which manages the flow of electricity in California, called on residents to decrease energy demand to avoid rolling blackouts due to energy shortage. During an extreme heat event, people draw additional power from the grid to run fans and air conditioning units, increasing the demand for electricity close to or beyond the available energy supply. To encourage energy conservation, the City sent out an eNotification to community members, and shared information from CAISO and the California Public Utilities Commission-funded nonprofit Energy Upgrade California via social media. It is anticipated that CAISO-issued notices to reduce energy use during extreme heat events will increase as global climate results in more frequent and intense extreme heat events.

A 30-inch diameter steel natural gas pipeline owned by Pacific Gas & Electric exploded on September 9, 2010 in a residential neighborhood in San Bruno, California, a city 25 miles southwest of Albany. The explosion and resulting fire leveled 35 houses and damaged many more. The resulting death toll was eight people. The United States Geological Survey registered the explosion and resulting shock wave as a magnitude 1.1 earthquake. First responders initially believed that it was an earthquake or a large aircraft accident, and it took crews nearly an hour to determine it was a gas pipeline explosion. It took 60 to 90 minutes to shut off the gas after the

explosion. The explosion compromised a water main and required firefighters to truck in water from outside sources.

In 1982, a gasoline tanker was involved in an accident in the Caldecott Tunnel between Oakland and Orinda that killed seven people and required the tunnel to be closed for many months. A 2007 gasoline tanker collision caused the collapse of a portion of the MacArthur Maze, a large freeway interchange which splits Bay Bridge traffic onto I-80, I-580, and I-880.

Though the City of Albany has never experienced documented IT failure, this hazard has occurred in nearby Napa, Sonoma, Lake, and Mendocino Counties. In October 2017, the North Bay was devastated by wildfires that caused severe damage to cellphone towers. Across the four counties, 77 cellular service sites were destroyed or damaged due to poles falling or fiber cables melting from the heat of the blazes.[5] As a result, tens of thousands of people went without cellphone or internet service. Residents reported problems receiving alerts about the fires, contacting emergency services for assistance, and getting in touch with friends and family members. The North Bay's primary cellular service providers, AT&T and Comcast, responded to the hazard by deploying network disaster recovery teams. These teams worked closely with first responders to assist those in need, created free Wi-Fi hotspots in evacuation centers, and moved temporary cell towers into Santa Rosa and surrounding cities.

Though the City of Albany has never experienced a ransomware attack, City employees and public officials receive spam and phishing emails frequently. In February of 2023, the City of Oakland was victim to a ransomware attack that resulted in the City declaring a local state of emergency. The City of Oakland did not release many details about the extent of the attack or the ransom amount being demanded, but residents and public officials noted significant impact to City functions and community services.

Future Probability

The City cannot accurately predict the probability of electrical grid failure, natural gas pipeline explosion, freeway damage, water system failure, cyber attacks, and information technology failure. It can be safely assumed that energy shortages and PSPS events will increase due to increasing temperatures, drier conditions, and increased wildfire risk as a result of climate change.

Impacts & Vulnerability

Failure of any of these systems would lead to severe consequences as individuals, institutions, schools, businesses, and governments become increasingly reliant on energy, electric technology, major transportation routes, and information technology systems.

[5] Smith, Dakota and Resmovits, Joy. (October 2017). Damaged cell towers create communication problems in Northern California fire zone. *Los Angeles Times*. Retrieved from http://www.latimes.com/local/california/la-northern-california-fires-live-damaged-cell-towers-create-1507667633-htmlstory.html

Loss of electrical power, even for a short period of time, can be extremely detrimental to community members who rely on electricity to power medical equipment. An electrical grid failure for a longer period can cause fuel shortages and compromise other necessary supplies such as food and medication. Loss of power or disruptions to information technology systems may also affect local businesses and institutions, resulting in decreased productivity and financial losses. Loss of electricity and phone connection would leave certain populations isolated because residents would be unable to call for assistance.

Cybersecurity attacks have the potential to not only impact internal City systems, but also impact the services that the City can offer the community during the attack.

Mitigation & Response

The potential for a loss of power means that emergency and critical uses should have dedicated emergency power sources. The electrical system is vulnerable to many different hazards. In storm events, downed trees can damage overhead lines. In earthquakes, electrical substation components can be destroyed by strong shaking and often require more extensive and time intensive repairs to return to service.

PG&E provides electricity and natural gas to 15 million people in northern and central California. Therefore, they have a staff of 20,000+ prepared to respond to restore electrical services after disasters and storms. They also have a well-established priority system for restoring power to emergency services before other community needs. PG&E has assessed the seismic vulnerability of its system and has taken steps to improve its functionality after an earthquake, such as replacing bushings on high voltage lines, anchoring substation equipment, and replacing old gas lines with more flexible alternatives.

In 2022, the City Council passed a resolution authorizing the City Manager to pursue deployment of solar and battery energy systems at critical municipal facilities in partnership with East Bay Community Energy (EBCE). On behalf of its member agencies, EBCE is performing site assessments of critical, City-owned facilities. A third-party engineer will conduct a site assessment and feasibility assessment for each facility, and if deemed feasible and cost-effective, the City may choose to work with EBCE to install solar systems with battery backup technology that could allow critical municipal facilities to operate without power for at least three days. EBCE's program is only available to local jurisdictions and facilities owned by local jurisdictions at this time and does not allow for inclusion of school district buildings in the study. When the program opens to school district-owned facilities, EBCE and the City will notify AUSD.

The City remains susceptible to energy supply disruptions that can occur as rolling blackouts and public safety power shutoff events. While the threat of energy disruptions due to rolling

blackouts has decreased since the state of California implemented emergency technology and energy conservation programs and adopted measures to mitigate energy market manipulation and reduce distribution bottlenecks, due to increasing temperatures, drier conditions, and increased wildfire risk as a result of climate change, PSPS events are likely to increase. Through its partnership with East Bay Community Energy (EBCE), the City of Albany is working to encourage the generation of local, renewable energy sources. Even so, as the City relies on energy as critical infrastructure for its activities, and is actively encouraging Albany residents and businesses to electrify in order to reduce greenhouse gas emissions, any unplanned or rolling blackout and PSPS events will have a significant impact on the City's operations and its level of productivity.

As a consequence of the San Bruno pipeline rupture, the National Transportation Safety Board (NTSB) has issued a number of recommendations to state and federal administrations and institutions to improve the safety of pipeline networks and to upgrade the integrity management program and emergency response system. As a result, PG&E has begun improving its network by automating shutoff valves, updating its emergency response plan to reflect industry best practices, and implementing data management systems intended to ensure that its pipeline records are traceable, verifiable, and complete.

Additionally, PG&E has created a First Responders Safety website that provides secure access to maps and information about their high-pressure natural gas transmission lines, natural gas storage facilities, valve and regulator locations, and the current size and pressure within the pipes. PG&E also provides access to an electronic version of their Gas Emergency Response Plan.

To reduce the risk of small-scale gas pipeline ruptures, such as those that may occur at natural gas hookup sites on individual buildings, the City of Albany is encouraging electrification of buildings through education and policy updates. With increased adoption of electrification, it is possible that the City can decommission natural gas pipelines in the future, further reducing risk to Albany in the event of a pipeline rupture/failure.

The risk of a transportation-related accident is mitigated by the many federal and state safety precautions and regulations and by the fact that accidents are likely to be detected and reported quickly. The California Department of Transportation (Caltrans) regulates the transportation on State highways, with enforcement by the California Highway Patrol. In the event of an accident on Interstate 80/580, the Albany Fire Department would be the first responders and Caltrans would assume responsibility for the subsequent repair. To alleviate congestion caused by the MacArthur Maze closure in 2007, the State expedited repairs, Caltrans set up detours, and Bay Area Rapid Transit (BART) increased capacity, and public transit was free the day after the crash.

EBMUD conveys the City's sanitary sewage outflow from a large "Intersector" pipe running to their treatment plant at the base of the Bay Bridge. The City of Albany maintains lower sewer laterals from individual properties and sewer mains that ultimately connect to the EBMUD line. Unlike many cities, Albany's sewer system is entirely gravity flow and does not require pump stations.

To address water shortage, the City can continue to promote drought-tolerant landscaping. The City, in partnership with EBMUD, can encourage additional water conservation efforts from Albany's residential and commercial sectors.

IT networks in the City of Albany are maintained by their respective proprietors. Albany's IT Department is responsible for the City's private server, while major telecommunications companies AT&T,Comcast, and Sonic, in partnership with PG&E, maintain utility lines and cellular towers that provide communication paths to City residents and businesses.

In the event that telephone or internet services fail during a hazard, the City's emergency personnel are equipped with a secondary radio system that act as an alternative form of communication. AT&T, Comcast, Sonic, and PG&E have all adopted hazard preparedness policies and practice disaster readiness drills and simulations regularly. The City has also shifted to a cloud-based phone system, to reduce risk of communication disruption should the phone lines not function.

With the arrival of a third Internet Service Provider (Sonic), redundancy is being built into Albany's IT infrastructure as the company is installing new fiber-optic cables to run its service, as opposed to utilizing existing cables. Greater redundancy built into the fabric of the subsurface-infrastructure will ensure that residents, in event of a failure of a particular service/cable, will not be uniformly and wholly disconnected from the internet, and service is likelier to be restored in a timely manner to most City residents.

As part of the Capital Improvement Plan, City staff is working to establish a disaster recovery location that will serve as a secondary site for the City's network data if the connection to the primary site at City Hall becomes inaccessible. Additionally, the City's private servers are backed up nightly to ensure data will be available for re-store if data is corrupted or lost to the storage server during a hazard. The City's IT Department is also in the process of developing a security system to prevent and combat cyberattacks and other threats.

To prevent cybersecurity attacks, the City installs antivirus software on all computers and software to block users from visiting suspicious websites and clicking suspicious links, and conducts periodic trainings for employees to reduce vulnerability to attack.

Wildland and Urban Fire

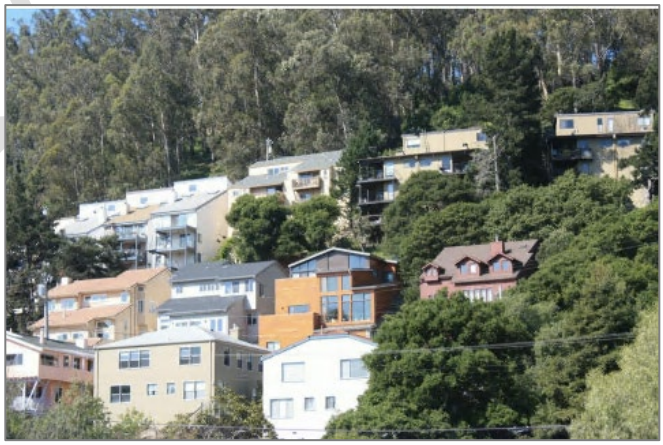
Hazard Analysis

For the purposes of this Plan, fires are characterized into three categories:

- **Wildland Fires** occur on wilderness land
- **Wildland-Urban Interface Fires** occur where the built environment and natural areas are intermixed
- **Urban Conflagrations** occur within a developed area and pose a direct risk to development

Wildland Fire

A wildfire is an uncontrolled fire spreading through vegetative fuels, posing danger and destruction to property and lives. While some wildfires start by natural causes such as lightning, most are preventable. Albany is subject to hot and dry fall seasons, high winds, dense development and small areas of flammable vegetation. The time of the year of high wildfire danger is from May to November, when temperatures are higher and humidity is lower. The closer to the end of this "fire season," the more critical the danger is, as vegetation becomes increasingly dry.



Mixed Density Housing on the East Side of Albany Hill
Photo courtesy of City of Albany General Plan

The highly urbanized portions of the City have relatively low wildfire risk exposure. There is, however, the potential for fire hazard throughout the Albany waterfront and on Albany Hill, much of which is covered by a non-native eucalyptus forest that is at risk for wildfires, particularly those trees that have been damaged by drought and pest infestation. Albany Hill is also home to many private residential developments that may be affected in the event of a wildfire, including single-family and multi-family homes on the east side of the hill and high-rise residential towers on the northwest side of the hill. The Albany Bulb and Plateau, along the waterfront, and areas along the I-80 and I-580 freeways are also prone to brush fires during the dry season.

It is also possible that a fire could start within Albany as a result of ember cast. During strong wind events, such as the Diablo and Santa Ana winds periodically experienced in the Bay Area,

embers from a local wildfire occurring on Albany Hill or in a neighboring community could be carried to locations within Albany, causing a fire within the City. Therefore, a fire occurring outside of the City, such as in the Berkeley or El Cerrito Hills, or even in Contra Costa County, could still pose a threat to the City of Albany if there are strong winds and an ember is carried to an area of dry vegetation.

Wildland-Urban Interface Fires

The Wildland-Urban Interface (WUI) is defined as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. It describes an area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire. Wildfires can occur in undeveloped areas and spread to urban areas where structures and other human development are more concentrated. The wildland-urban interface is an especially hazardous area because it combines a resident population with large areas of combustible material (including structures), and is often characterized by sub-standard water supplies. Near Albany, Kensington and areas of the Berkeley Hills have been designated by the California Department of Forestry and Fire (CALFIRE) as "Very High Fire Hazard Severity" zones.

CALFIRE is in the process of updating mapping of areas of significant fire hazard. Based on designated level of hazard, compliance with California Building Code and state statutes for property maintenance may be required. CalFire is expected to release updated mapping of "Local Responsibility Areas" prior to the finalization of this plan. Additional information will be added prior to Plan adoption. The 2007 version of the mapping designated a portion of Albany Hill as a moderate hazard area. The Albany Fire Department is a full-service department providing the community with many diverse services including fire protection, emergency and disaster response, paramedic services, charity outreach, community education, earthquake preparedness and special events. The Department operates a Type-6 fire apparatus especially designed for wildland fire situations.

Urban Conflagration

Urban conflagration, or a large disastrous fire in an urban area, is a major hazard that can occur due to a number of causes – wildfires, earthquakes, gas leaks, chemical explosions, large structure fires, or arson. The urban fire conflagration that followed the 1906 San Francisco earthquake did more damage than the earthquake itself. Although the threat of an urban conflagration has been reduced through improvements in building design, construction materials, and fire protection systems, they still remain a threat, especially in a densely urban area such as Albany. Fire hazards in industrial buildings also pose a threat.

Location

Though any area of the City could be exposed to fire, particularly an urban conflagration, areas on and near Albany Hill are more susceptible to wildland fires and wildland-urban interface fires.

Extent

There are no recorded incidents of loss of life from wildfires in the City of Albany, and structure fire fatalities are rare. Albany experiences few fires, typically small home or brush fires that are extinguished quickly, however wildfire threats in Albany and the surrounding region are likely to grow due to extended and severe periods of drought leading to dry vegetation, and increased temperatures and wind events creating conditions that promote wildfire spread. City firefighters have been deployed to dozens of large wildland fires over the past decade.

Previous Events

The Albany Fire Department responded to two fires on Albany Hill in June of 2022, during which residents on and near Albany Hill were ordered to evacuate their homes. One fire started off of Cleveland Avenue, and the second fire began along Pierce Street near Peggy Thompsen Pierce Street Park. Albany firefighters were able to contain and extinguish both fires in under two hours.

2008 Albany Hill Fire

Photo courtesy of Doug Donaldson

On November 15, 2008, strong, dry northeast winds whipped up a fire in a forested area on the west side of Albany Hill above a large apartment complex (555 Pierce Street). Recent heavy rains and a prompt response by the Albany and Berkeley fire departments limited the blaze to 2 acres (8,100 m^2), with no structures burned.

The fire seasons of 2018, 2020, and 2021 were extremely devastating to the State of California. The year 2020 saw the first fire over 1,000,000 acres, the August Complex, in northern California. 2021 saw the first two fires on record that burned across the Sierra Nevada mountain range, from one side to the other; these were the Caldor Fire and the larger Dixie Fire, which on its own burned nearly a million acres. Previously unthinkable that fire weather could be so uncontained and extreme at high elevations such that it could cross the mountains, this behavior is to be expected in California moving forward, as the effects of climate change continue to intensify.

Future Probability

While wildfires may occur at any time of year and in any climate, the risk of wildfire increases greatly with increased drought and heat. Fire season is being extended as rainfall patterns change and drought conditions continue. California's future climate of frequent drought and higher heat increases Albany's wildfire risk, and increase Albany's exposure to hazardous air quality resulting from wildfires occurring throughout the State of California. Global climate change, and the extreme weather (extreme heat and damaging winds) and dry vegetation conditions it creates, will continue to increase wildfire threat and likelihood in the State of California.

Impacts & Vulnerability

In addition to hazardous air quality, fires can increase an area's risk of landslide and flooding. When all supporting vegetation is burned away, hillsides become destabilized and prone to erosion. The charred surface of the earth is hard and absorbs less water. When winter rains come, this leads to increased runoff, erosion and landslides in hilly areas. Erosion and land slippage subsequent to fires can lead to temporary or permanent displacement and property damage or loss, making it a secondary hazard that must be mitigated immediately after a fire. A more in-depth Risk Assessment specific to landslides and slope failure is included in the Landslides and Slope Failure section.

Smoke and air pollution from nearby wildfires can be a health hazard, especially for sensitive populations such as children, the elderly, unhoused individuals, and those with respiratory and cardiovascular diseases. At high levels of particulate matter, all members of the Albany community are exposed to the hazardous health impacts. While wealthier members of the community may be able to purchase air purifiers and masks, some in the community may not be able to afford such items, further exposing them to the hazardous air quality. Hazardous air quality resulting from wildfires is analyzed in greater detail in the Hazardous Air Quality section of this Plan.

High-rise buildings, multi-family dwellings, and high-density residential neighborhoods are more vulnerable to the risks of wildfire, as evacuation from these building types may be more complicated. Homes on Albany Hill are at higher risk for wildfire. Other vulnerable structures include schools and large commercial buildings, buildings constructed before current fire and building codes, and institutions that house people of limited mobility such as Belmont Village and the Orientation Center for the Blind.

The impacts of a fire are felt long after the fire is extinguished. Wildland and Wildland-Urban Interface fires can damage natural environments, such as recreational areas, and can cause lasting impacts to slopes and soils. When all supporting vegetation is burned away, hillsides become

destabilized and prone to erosion. The burnt surface soils are harder and absorb less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Further, any significant fire event on Albany Hill will affect available housing within the City, and may displace residents currently living on the Hill. As the City increases mixed-use housing along San Pablo Avenue and Solano Avenue, a significant fire affecting these corridors could displace many from their homes and also displace local businesses.

Mitigation & Response

While fires are not entirely preventable, it is possible to create conditions that reduce the chances of fire and that facilitate efficient response in case fire breaks out. When a fire does ignite, quick response from firefighters and an adequate supply of water are essential in minimizing damage. Building codes have been strengthened over time to include additional safety features, such as flexible utility connections, leak detection systems, more advanced sprinkler systems, more stringent ventilation requirements and spill notification systems.

The Fire Department conducts fire inspections annually on all commercial and multi-family properties, manages pre-fire planning activities, and supervises routine brush clearing on Albany Hill and the waterfront.

Preparedness Training by the Albany Fire Department
Photo courtesy of City of Albany General Plan

The City, in partnership with Alameda County Department of Public Health, also provides information on hazardous air quality, and makes available opportunities to escape the hazardous air at facilities like the Library, Community Center, and other locations in Alameda County.

In 1991, the City adopted a management plan for vegetation management and fuel reduction on the Hill. This plan was updated in 2012 to reflect current conditions and address issues relating to fire hazards, declining tree health, public access, and flooding. Specific fire reduction strategies have been developed for each vegetation type.

The plan calls for gradual thinning of the eucalyptus forest and its slow conversion to less fire-prone, more ecologically diverse habitat. A variety of vegetation management prescriptions are being applied to reduce fire hazards, including removing hazardous trees and understory debris, and thinning out so-called "ladder fuels" which enable fires to spread from the understory to tree crowns. Education, enforcement, and limitations on public access are also part of the fire prevention strategy.

In 2022, the City Council received multiple updates about the Eucalyptus trees on Albany Hill. A pathogen study conducted by a third-party arborist revealed that two pathogens are currently causing dieback of Eucalyptus trees in Albany. The dieback is exacerbated by environmental conditions, many of which are intensifying due to climate change, including drought, increasing temperatures, and decreasing fog. The results of the study will inform a plan for ways the City can protect native plants and insects, including the monarch butterflies, as well as stabilize the soil, prevent erosion, and decrease fire hazard in the area. City staff are in the process of developing a scope of work and selecting a team of consultants to support plan development. Until a plan for addressing the Eucalyptus on the Hill is determined, Fire Department and Public Works staff will regularly inspect the Hill and engage an arborist to perform periodic hazard assessments. If certain trees look like they may pose an immediate hazard or are identified as hazardous by the arborist, steps will be taken to trim or remove them. The vegetation maintenance contractor, Urban Tilth, will continue fire-reduction work on the hill, including pruning limbs away from fire roads, removing downed bark and branches, and mowing grasses.

To further reduce risk of fire in the City, the City's Municipal Code includes requirements for vegetation management and weed abatement on private property. These requirements aim to maintain "defensible space" free of combustible materials within a 30-foot zone around each home. Homeowners are also encouraged to clear branches overhanging their roofs, remove leaf debris from roof gutters, screen chimney vents to reduce stray embers, and attach spark arresters to small combustion engines.

Like all cities, Albany is also prone to structure fires. Peakload water supply requirements for such fires vary depending on the type of land use, the degree of hazard, and building occupancy. Water pressure in Albany is generally adequate to respond to wildfire and urban structure fires, but the National Fire Protection Agency has identified several areas as having reduced flows. East Bay Municipal Utility District (EBMUD) determines available flow and pressure when development is proposed. Improvements may be required prior to providing water connections for new development.

The Fire Department works closely with the Community Development Department in the review of proposed development projects and specifies appropriate measures for new development to

ensure that sufficient fire protection can be provided. The City has also adopted parking limits and curb restrictions to ensure adequate access for emergency vehicles.

To improve and expand on current local capabilities, the Fire Department will advocate to ensure that peak load water supply and water pressure is sufficient to respond to local fire emergencies. The Community Development Department will develop an ordinance to enforce vegetation management on private property on Albany Hill to minimize the risk of structure fires and threats to nearby properties. The Fire Department will also continue to provide outreach and training regarding fire prevention and safety through the CERT program.

Flooding

Albany is susceptible to flooding hazards that result from sea level rise, storm surge, high tides, tsunami, seiche, and dam failure.

Hazard Profile

The primary water courses in the City of Albany have the potential to flood at irregular intervals, generally in response to a succession of intense winter rainstorms, including atmospheric rivers. 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 City. Major regional roadways and highways could be blocked, preventing critical access for many residents and critical functions. Additionally, it is possible that blockage caused by floating debris along the stream course could push water out of the projected floodplain and into to neighboring streets and roads.

Flooding on Albany roadway
Photo courtesy of City of Albany General Plan

Currently, relatively small areas of Albany along local creeks and San Francisco Bay are subject to periodic flooding. Due to the sequential pattern of meteorological conditions needed to

cause serious flooding, it is unusual for a flood to occur without warning. Warning times for floods can be between 24 and 48 hours.

Location & Extent

Portions of Albany, including areas along local creeks and the San Francisco Bay, are subject to flooding. Specific areas of the City have been designated by the Federal Emergency Management Agency (FEMA) as 100-year flood hazard areas or 500-year flood hazard areas. The 100-year flood hazard areas are those that have a one percent chance of flooding in any given year. The 500-year flood hazard areas are those that have a 0.2 percent chance of flooding in any given year. According to the FEMA flood maps, the areas surrounding Codornices Creek are susceptible to flooding in both 100-year and 500-year flooding scenarios. A large portion of the City south of Buchannan Street, including portions of Interstate 80 and Interstate 580 are subject to flooding under a 500-year flood scenario. The FEMA flood hazard maps also identify the Albany Bulb and Albany Beach as being susceptible to flooding under both 100-year and 500-year flooding scenarios.

Flooding may be caused by periodic high tide events, such as King Tides, which occur several times of year. King Tides are exceptionally high tide events, occurring when the earth is orbiting closest to the moon, and can cause tides to surge up to one foot above normal levels for high tide events. King Tides and other high tide events cause temporary flooding of low-lying areas.
A storm surge is an abnormal rise in water levels caused by a storm, which are above the level of surge in water levels caused by normal tides. While storm surges are only temporary increases in water levels, storm surges that are in addition to sea level rise have the potential to cause significant flooding damage to low-lying areas.

Global temperatures have warmed by almost two degrees Fahrenheit in the last 100 years and are projected to continue rising in the future due to global climate change. The combined effects of thermal expansion (water expanding in volume as it gets warmer) and glacial/ice sheet melting resulting from warmer temperatures have contributed to sea level rise across the planet. The rate of sea level rise is expected to increase in the future, increasing flood hazard levels along the shoreline and in nearby low-lying neighborhoods. Although the rate of increase cannot be predicted with certainty, most projections vary from 20 to 80 inches by the year 2100. According to the Bay Conservation and Development Commission, a 55-inch rise in sea level would expose 333 square miles and 270,000 people in the Bay Area to flooding. It would also disrupt the region's airports, highways, water and wastewater plants, ports, and affect many commercial and industrial uses. Planning for a more resilient shoreline and adapting to the realities of a rising Bay are imperative to avoid catastrophic economic damage and potential health and safety hazards in the future.

In a new report prepared by the Pathways Climate institute and San Francisco Estuary Institute, researchers studied how an increase in sea level rise could cause shallow groundwater to rise as well, exacerbating inland flooding in low-lying Bay Area communities.[6] Groundwater flooding

[6] May, C. L.; Mohan, A.; Plane, E.; Ramirez-Lopez, D.; Mak, M.; Luchinsky, L.; Hale, T.; Hill, K. 2022. Shallow Groundwater Response to Sea-Level Rise: Alameda, Marin, San Francisco, and San Mateo Counties. Pathways Climate Institute and San Francisco Estuary Institute

is caused by the groundwater table emerging above the surface. Groundwater flooding can occur further inland than sea level rise flooding. Sea level rise causes salty groundwater from the Bay to migrate inland, pushing up fresh groundwater and causing flooding further inland. Rising groundwater has the potential to impact underground utilities, spread soil contaminants, and amplify liquefaction hazards. The effects of groundwater flooding can be mitigated by ensuring that underground utilities, infrastructure and foundations are designed to withstand the impacts of groundwater exposure, including corrosion, infiltration, and buoyancy.
In addition to sea level rise and groundwater rise resulting from global climate change, a number of flood hazards are specifically associated with earthquakes. These include tsunamis, seiches, and dam or tank failure.

Tsunamis could be created by underwater seismic events in the Pacific Ocean. A tsunami entering the Bay through the Golden Gate would dissipate fairly quickly as the Bay becomes wider and shallower. Nonetheless, low-lying areas along the shoreline, including tidal flats, marshlands, and landfilled areas, would be vulnerable. The California Geological Survey has designated the entire area west of Interstate 80 as being at risk of inundation. In 2022, an earthquake occurring in Tonga generated a small but significant tsunami along the Berkeley coastline. It is possible that such an event could occur in Albany.

Seiches are standing waves in enclosed or partially enclosed bodies of water, such as lakes and bays. They may be caused by earthquakes, high winds, or tides. Due to the geometry and dimensions of San Francisco Bay, they are considered to be a negligible hazard to Albany.

The CalOES Dam Breach Inundation Maps indicate limited areas of possible inundation in the City of Albany following dam failure. There are two dams with proximity to the City, Lake Temescal and C.L. Tilden Park Dam, however, according to the CalOES Dam Breach Inundation Maps, neither dam poses risk of flooding to Albany if dam failure occurs. According to ABAG, the East Bay Municipal Utility District's (EBMUD) Berryman Reservoir Tank, located near Codornices Park in Berkeley at the Codornices Road/Euclid Avenue intersection, has the potential to cause flooding in Albany. Tank failure would cause water to flow west in the area between Cedar and Virginia Streets through Berkeley, and then north along the Eastshore Highway through the western part of Albany to the Codornices Creek channel. The risk has been reduced by the replacement of the former reservoir with a steel tank as part of EBMUD's seismic improvement program. The flood waters are expected to disperse north and south along I-80, affecting a small portion of the City of Albany between I-80 and the Eastshore Highway until reaching Buchanan Street. EBMUD has a Dam Safety Program that requires periodic safety reviews and inspections of dams to prevent failure. Further, EBMUD is in the process of improving its dams and reservoir tanks to make them more resilient to seismic activity.

The City has adopted flood damage prevention regulations to reduce potential risks. The Municipal Code identifies areas of flood hazard and requires that a Flood Zone Permit be obtained before any construction or other development occurs in these areas. Approval of a Flood Zone Permit depends on the susceptibility of the site to flooding, the danger of material being swept downstream, the value of the structure to the community, and similar factors. Documentation of the base flood elevation is required. The Code identifies methods of flood proofing and minimizing the potential for flood damage when a permit is issued. The City also

works collaboratively with other local jurisdictions and agencies to understand the risk that flooding has to the community, and ways the City may adapt.

Climate change is expected to exacerbate flooding through storms and more intense periods of rainfall. Sea level rise also has the potential to increase coastal flooding. Predictions are that global climate change will increase the elevation of San Francisco Bay, and that the frequency and extent of short term, temporary coastal floods will increase. Eventually, permanent daily tidal inundation will be reached. With Albany's older stormwater drainage system, processing the water from the predicted higher tides and larger storms could lead to significant increases in both coastal and urban flooding and flood damage, as higher water levels in tidal creeks and flood control channels will reduce capacity to discharge rainfall runoff. While some creeks already flood when rainstorms coincide with high tides, rising sea levels will cause flooding during smaller, more frequent rainfall events.

In a new report prepared by the Pathways Climate institute and San Francisco Estuary Institute, researchers studied how an increase in sea level rise could cause shallow groundwater to rise as well, exacerbating inland flooding in low-lying Bay Area communities. Groundwater flooding is caused by the groundwater table emerging above the surface. Groundwater flooding can occur further inland than sea level rise flooding. Sea level rise causes salty groundwater from the Bay to migrate inland, pushing up fresh groundwater and causing flooding further inland. Rising groundwater has the potential to impact underground utilities, spread soil contaminants, and amplify liquefaction hazards. The effects of groundwater flooding can be mitigated by ensuring that underground utilities, infrastructure and foundations are designed to withstand the impacts of groundwater exposure, including corrosion, infiltration, and buoyancy.

A number of flood hazards are specifically associated with earthquakes, including tsunamis, seiches, and dam or tank failure. These seismically-induced flood hazards are discussed in greater detail under the earthquake hazard section of this Plan.

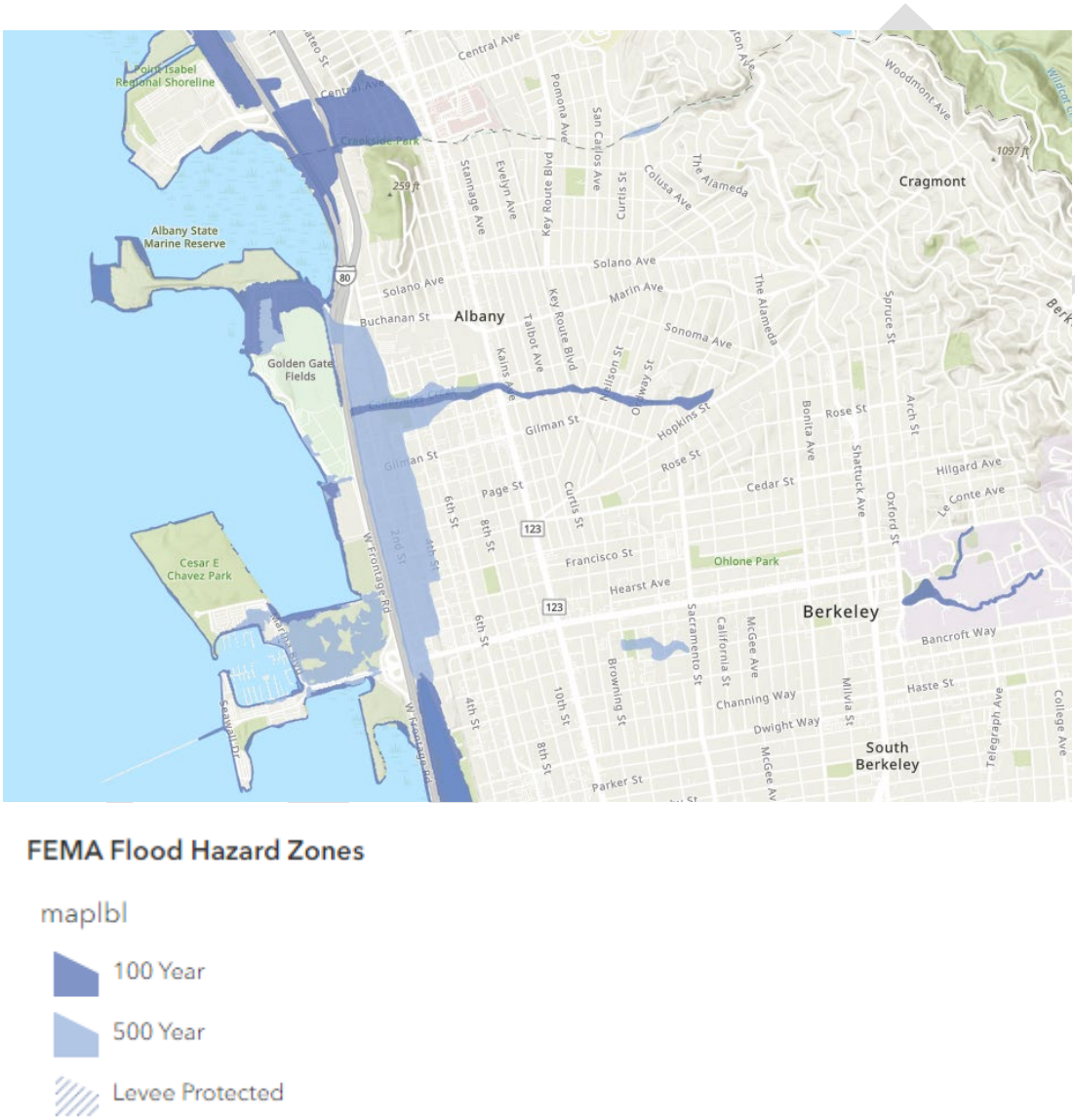
Previous Occurrences

In recent history, there have been isolated areas that have suffered property damage due to flooding:

- The 1000th block of Curtis and Neilson Streets reported to the City that drainage problems had become chronic during wet weather months. The City mitigated this situation in 2007-2008 with the construction of improved storm drains.
- In extreme rain conditions, chronic flooding out of Codornices Creek has been reported along Eastshore Highway and the Union Pacific railroad tracks. The Union Pacific Railroad mitigated the situation with the construction of larger culverts underneath their tracks.

Future Probability

Specific areas of the City have been designated by the Federal Emergency Management Agency (FEMA) as 100-year flood hazard areas or 500-year flood hazard areas. The 100-year flood hazard areas are those that have a one percent chance of flooding in any given year. The 500-year flood hazard areas are those that have a 0.2 percent chance of flooding in any given year. See the graphic below for specific locations subject to 100-year and 500-year flooding. The following image, taken from the MTC/ABAG Hazard Viewer, displays the 100- and 500-year flood zones as designated by FEMA.



FEMA Flood Hazard Zones

maplbl

- 100 Year
- 500 Year
- Levee Protected

In addition to flooding identified in FEMA 100-year and 500-year flood hazard zones, the City can expect precipitation patterns in the region to change as a result of climate change. Though the State of California will likely still experience prolonged periods of drought, extreme precipitation events, such as the atmospheric river events that occurred in December of 2022 and

January of 2023, are likely to become more common than consistent, manageable rainfall. Extreme precipitation events can result in overwhelmed storm drains and sewage systems, saturated soils that lead to downed trees and landslides, and flood-related damage to infrastructure.

Impacts & Vulnerability

A significant flood will principally affect transportation networks, potentially limiting access to Golden Gate Fields and the local highway and railways. This would compromise the ability for residents to get around or leave the City and for resources to be shipped into the area by rail or truck.

Due to climate change, extreme weather events such as atmospheric rivers, sea level rise, and high tide events and groundwater flooding are likely to make the City's low-lying areas are increasingly vulnerable to flooding. Community members living along the projected floodplain as well as businesses along the projected floodplain are of extra concern for this hazard.

Albany's emergency assets are not affected by foreseeable sea level rise or extreme tides throughout the 21st century, but other important City assets are affected. Thirty-six inches of sea level rise is likely by the end of the century and at this level, water will flood the perimeter of Albany Bulb and the Golden Gate Fields parking facilities and road access. See the table below for a list of assets exposed to sea level rise. Even in the worst-case scenario of water levels reaching 72 inches in the event of likely sea level rise combined with a 50-year storm, water levels only inundate Buchanan Street along the water and the parking for Golden Gate Fields and Tom Bates Regional Sports Complex, although some small areas of the eastbound I-580 freeway north of Buchanan Street may experience flooding.

Given the unlikely direct impact to Albany's emergency assets from sea level rise, the greater threat may be regional risks from sea level rise. With 48 inches of inundation, which is likely by the end of the century when combined with average yearly storm surge, water begins to threaten westbound access to the Bay Bridge. In the worst-case scenario, with predicted end-of-century sea level rise compounded by glacial melting and/or King Tides and storm surge, there is the possibility that parts of the Bay Area may experience sea level rise related flooding of up to 72 inches or more. At this level, numerous important regional assets are in the projected impact area, including the East Bay Municipal Utility District (EBMUD) wastewater treatment plant and access to the Bay Bridge and the Union Pacific railroad. This would threaten water quality, sewer service, transportation, and cargo shipment throughout the area. Flooded areas will also include the I-880 freeway at intervals from Oakland to Milpitas, with the most significant inundation occurring in Oakland and San Leandro. This includes projected flooding of the I-880/I-580 interchange. These conditions may likely result by the end of the century from a

combination of sea level rise and storm surge, such as 36 inches of sea level rise combined with a 50-year storm surge or 48 inches of sea level rise combined with a 5-year storm surge.

FEMA National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes federally-backed flood insurance available to homeowners, renters, and business owners in participating communities, including the City of Albany. For most participating communities, FEMA has prepared a detailed Flood Insurance Study (FIS). The study estimates water surface elevations for floods of various magnitudes, including the 1-percent annual chance flood (the 100-year flood) and the 0.2-percent annual chance flood (the 500-year flood). Base flood elevations and the boundaries of the 100- and 500-year floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the principal tools for identifying the extent and location of the flood hazard. A repetitive loss property is an insurable property for which two or more claims of more than $1,000 were paid by NFIP within any rolling ten-year period. A severe repetitive loss property includes four or more claims of more than $5,000 paid by the NFIP. The City does not have any repetitive loss or severe repetitive loss properties.

Mitigation & Response

The City has adopted flood damage prevention regulations to reduce potential risks. The Municipal Code identifies areas of flood hazard and requires that a Flood Zone Permit be obtained before any construction or other development occurs in these areas. Before issuing a permit to build in the FEMA mapped 1% areas, the City requires new buildings and those undergoing substantial improvements to be elevated to protect against damage by the 100-year flood. In addition, new construction must demonstrate that it does not aggravate existing flood problems or increase damage to other properties. The Code identifies methods of flood proofing and minimizing the potential for flood damage when a permit is issued.

Current local capabilities include floodplain maps provided by FEMA and flood damage prevention regulations detailed in the Municipal Code. In addition, the Public Works Department ensures that storm drain inlets and culverts are maintained and cleaned regularly.

The Community Development Department will continue to implement FEMA regulations that restrict development in floodplains. The Community Development Department will also collaborate with the Public Works Department to encourage the installation of green infrastructure for natural management of stormwater and storm-induced flooding. Further, the City can deploy volunteers to support storm drain maintenance during heavy rainfall. Most recently, the City received crucial support from Albany CERT Inc. members who played a vital role in reducing street closures due to flooding by mobilizing members to clear storm drain

coverings so that rainwater could drain during the atmospheric river events in December 2022 and January 2023.

Due to the climate action impacts and projections regarding flooding, wave action, and increased sea levels, the City of Albany has developed several strategies and policies to address issues along the City waterfront. Future waterfront trails and other shoreline improvements are being designed to anticipate the possible effects of rising sea levels. At the same time, engineered revetments (armored stone) and other measures are being considered to make the shoreline more resilient. These improvements provide the added benefit of stabilizing landfill and protecting water quality.

The City has adopted flood damage prevention regulations to reduce potential risks. The Municipal Code identifies areas of flood hazard and requires that a Flood Zone Permit be obtained before any construction or other development occurs in these areas. Approval of a Flood Zone Permit depends on the susceptibility of the site to flooding, the danger of material being swept downstream, the value of the structure to the community, and similar factors. Documentation of the base flood elevation is required. The Code identifies methods of flood proofing and minimizing the potential for flood damage when a permit is issued. The City also works collaboratively with other local jurisdictions and agencies to understand the risk that flooding has to the community, and ways the City may adapt.

The Human Services Division provides sandbags free of charge to the Albany community prior to rainfall, which can be used to block water from entering buildings under doorways.

The CERT network has provided essential support to City staff prior to and during emergency situations, and can continue to be engaged in reducing flood-related risks. Most recently, the CERT Inc. members played a vital role in reducing street closures due to flooding by mobilizing members to clear storm drain coverings so that rainwater could drain during the atmospheric river events in December 2022 and January 2023.

Severe Weather

Two types of severe weather events typically impact the City of Albany: damaging winds and extreme temperatures. Flooding issues associated with severe weather, such as those resulting from heavy rainfall and atmospheric river events, are discussed in greater detail under the Flooding Section of this document.

Hazard Analysis

Meteorologists generally define severe weather as any dangerous meteorological phenomena that poses risks to life, property, or requires the intervention of authorities. Types of severe weather phenomena vary, depending on the latitude, altitude, topography, and atmospheric conditions. In Albany, extreme weather tends to be damaging winds and extreme temperatures.

Location

The entire City is vulnerable to the effects of severe weather. While damaging winds may be more concentrated near the waterfront, damaging winds that travel further inland have the potential to cause downed powerlines and cause damage to private structures. Given the City's geographic size, it is reasonable to assume that all areas of the City are equally susceptible to extreme heat and extreme cold, though due to the urban heat island effect, whereby dense urban areas absorb heat and pollution, certain areas of the City may be more likely to experience hotter conditions on extreme heat days.

Extent

Damaging Winds

According to the National Oceanic and Atmospheric Association (NOAA), damaging winds are classified as those exceeding 50-60 miles per hour (mph), though the City may experience wind-related damage from wind gusts of a lesser magnitude. High winds are also a risk factor for downed power lines, leading to an increase in PSPS event likelihood.

Tornadoes a are not common in the Bay Area, though if a major tornado were to strike within the City, damage could be widespread. Businesses could be forced to close for an extended period or permanently, fatalities could be high, many people could be homeless for an extended period, and routine services such as power or telecommunications could be disrupted. In addition, buildings may be damaged or destroyed.

Extreme Temperatures

Extreme temperature includes both extreme heat and extreme cold events, which can have a significant impact on human health and primary and secondary effects on infrastructure (e.g., burst pipes and power failure). What constitutes "extreme cold" or "extreme heat" can vary across different areas of the country, based on what the population is accustomed to. Fatalities

can result from extreme temperatures, as they can push the human body beyond its limits (hyperthermia and hypothermia). Extreme temperatures are becoming increasingly common due to climate change.

Extreme Heat

There is no universal definition of extreme heat because the term is relative to the usual weather in a particular area. According to FEMA, a heat wave is an extended period of extreme heat of three or more consecutive days with temperatures that hover 10 degrees or more above the average high temperature for the region. According to NOAA, extreme heat is the number one weather-related cause of death in the United States. On average, more than 1,500 people die each year from excessive heat. Extreme heat is exacerbated in urbanized areas because of the urban heat island effect.

Extreme heat events can create or provoke secondary hazards including, but not limited to, dust storms, droughts, wildfires, water shortages and power outages. This could result in a broad and far-reaching set of impacts throughout a local area or entire region. Impacts could include significant loss of life and illness; economic costs in transportation, agriculture, production, energy and infrastructure; and losses of ecosystems, wildlife habitats and water resources. Extreme heat can help create the conditions for drought and can exacerbate the impacts of drought by putting additional stress on available water supplies. It can also contribute to the spread of wildfires.

Extreme Cold

Extreme cold events are when temperatures drop well below normal in an area. In Albany, which is relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold."

Previous Occurrence

Albany has experienced extreme weather of varying intensity. During a cold wave in December 2013, there were seven weather-related deaths reported in the Bay Area, all were unhoused individuals. A heat wave in September of 2017 claimed six lives in the region.

Damaging Winds

The City experienced damaging winds that led to downed trees in the City during the winter 2022-2023 atmospheric river event. Downed trees were the result of a combination of soil saturated with rainwater and wind gusts of up to 40 miles per hour.

Extreme Temperatures

The City continues to experience extreme heat during the summer and fall due to increasing global temperature. Most recently, in September of 2022 the region experienced a record-breaking heat wave that led to tripe digit temperatures in parts of the region.

Future Probability

It is expected that severe weather events, including extreme temperatures and damaging winds resulting from more intense storms, will intensify as global temperatures rise due to climate change.

According to Cal-Adapt, temperatures in California as a whole as well as the Bay Area are trending toward warmer average temperatures – which translate to more extreme temperatures during extreme heat days. Compared to a 30-year modeled historical average (1961-1990) temperature of 65.1 degrees Fahrenheit, temperatures in Albany are expected to increase between four degrees (in a medium emissions scenario) and just shy of seven degrees Fahrenheit (in a high emission scenario) by the end of the century. Under a medium emissions scenario, by 2050, annual average maximum temperatures in Albany will be between 65.3 degrees Fahrenheit and 69.7 degrees Fahrenheit. Under a high emissions scenario, this range is 66.6 degrees Fahrenheit to 71.3 degrees Fahrenheit.

Historically (1961-1990), Albany averaged less than 4 days per year exceeding 87.1° F. This number could climb significantly by mid-century. The Cal-Adapt tool estimates that, under a medium emissions scenario, Albany will experience an average of 8 days a year with temperatures above 87.1 degrees Fahrenheit by mid-century (2035-2064). The average number of days above 87.1 degrees Fahrenheit increases to 10 days per year by end-century (2070-2099). In addition to extreme heat days, warm nights are becoming increasingly concerning, as nights often offer reprieve from extreme heat and a chance to cool homes and businesses. By mid-century, Albany can expect to experience 26 nights per year where the temperature does not drop below 59.7 degrees Fahrenheit. By end-century, the number of warm nights climbs to 48.

Impacts & Vulnerability

Extreme Temperatures

It can be assumed that the entire City is exposed to severe weather events to some extent. Certain areas are more exposed due to geographic location and local weather patterns. Populations living at higher elevations with large stands of trees or power lines may be more susceptible to wind damage, and populations living in areas of the City with sparse tree canopy coverage are more vulnerable to the effects of extreme heat. Power outages can be life threatening to those dependent on electricity for life support.

The elderly and the very young are more susceptible to the dangerous health effects associated with extreme temperatures. Extreme cold can cause emergencies in susceptible populations, such as those without shelter or those who live in a home that is poorly insulated or without heat. Extreme heat similarly affects the elderly, very young, and unhoused populations

disproportionately. According to the United States National Weather Service, the average total number of heat-related fatalities each year is higher than the combined total fatalities for floods, tornadoes, lightning strikes, and hurricanes.

According to the Centers for Disease Control and Prevention, populations most at risk to extreme cold and heat events include those age 65 or older (who are less able to withstand temperatures extremes due to their age, potential health conditions, and limited mobility to access shelters), infants and children up to four years of age, pregnant women, the homeless and low-income persons who do not have access to shelters with proper heating and cooling, people who are overweight, and people with mental illnesses, disabilities and chronic diseases. The general public is also at risk, especially those who may overexert during work or exercise during extreme heat events or experience hypothermia during extreme cold events.

Damaging Winds

The most common problems associated with damaging winds are damage to utilities and blocked roadways. Roads may become impassable due to downed trees, power lines may be downed due to high winds, and services such as water or phone may not be able to operate without power.

Mitigation & Response

All future development will be affected by severe weather. The ability to withstand impacts lies in consistent enforcement of codes and regulations for new construction, as well as support to vulnerable populations including the elderly and unhoused. The City's Human Services Division provides resources for populations vulnerable to extreme weather, and City facilities are often available as cooling centers during extreme heat events.

To reduce the risk of downed power lines and risks to homes, vehicles, and residents, the City has a comprehensive and proactive tree pruning and management system in place. Trees are routinely surveyed and managed to ensure that there the tree canopy and infrastructure has limited vulnerability from high wind events. The City plans to complete a street tree inventory by Spring 2023, which will include information on general tree health status of each individual street tree. Results of the inventory can be used to identify hazardous trees for proactive care. Furthermore, the forthcoming Street Tree Master Plan is expected to encourage continued implementation of best practices in tree management, ensuring that high wind vulnerability continues to stay mitigated.

The City of Albany has prioritized climate mitigation efforts due in part to the potential increase in extreme weather events. The City's Climate Action and Adaptation Plan (CAAP), adopted in 2019, aims to reduce greenhouse gas emissions by 70% by 2035, and sets the goal of carbon neutrality by 2045. It should be noted that adaptation is a critical strategy to ensuring that the

City and its community is protected from the effects of climate change, including extreme weather.

Further, City efforts to encourage greater resiliency during extreme weather conditions include the recently-launched (June 2022) all-electric heat pump rebate program. Not only does this rebate program incentivize a switch to clean electricity rather than gas, meeting City carbon-reduction goals, but it also increases access to air conditioning. Heat pumps transfer energy (through heat) in both directions, from the outdoor-in and the indoor-out. Given the aging housing stock in the City, most all homes were not originally built with the capability for air-conditioning. Even after the technology became available, it was not typically needed for adapting to climate conditions in the region. With the increasing prevalence of high heat in Albany, heat pumps provide for clean cooling and clean heating, and the City intends to continue to fund the pilot program, provided community uptake of the rebates is strong as forecasted. Efforts to address equity and access are deeply embedded in the City's climate mitigation planning efforts, with additional rebates up to three times the standard amount available for income qualifying households in Albany.

To address the urban heat island effect, by which dense urban environments retain heat, the City plans to increase its street tree canopy coverage through implementation of a new Street Tree Management Plan. Planning efforts for the Street Tree Management Plan began in 2021, and the City anticipates Plan adoption by 2024.

The Human Services Division currently assists vulnerable members of the community, including seniors, people with disabilities, and people without housing by providing access to the Community Center, the Senior Center, and the Library, which often act as shelters and warming and cooling centers during severe weather events. Though not officially designated as cooling or heating centers by the County, these facilities remain open for residents during the day, and the City has the capacity to expand staffing in the event of prolonged extreme weather to open the centers for extended hours and/or to serve as shelters.

Severe weather advisories are publicized by the County and other agencies. The City utilizes electronic media and its emergency notification system to alert residents of upcoming extreme weather events. The Public Information Officer will work with the Human Services Division and the Alameda County Department of Public Health to expand targeted outreach.

Hazardous Air Quality

Due to the increasing severity and frequency of wildfires in the State of California, hazardous air quality is becoming an increasingly more prominent hazard to the Albany community. Recent events in other parts of the country have also demonstrated the importance of preparing for hazardous air quality more generally.

Hazard Analysis

Location

Hazardous air quality, whether related to wildfire smoke, pollution, or hazardous materials release (discussed in greater detail in its own risk analysis chapter), can occur anywhere in the City. In particular, wildfire smoke, which has been the leading case of hazardous air quality in the City in the last 5 years, can travel hundreds of miles, meaning that a wildfire that poses no threat to the City of Albany physically can still impact the City's air quality.

Extent

According to the California Air Resources Board (CARB), over ninety percent of California residents are exposed to unhealthy air at some point during the year.[7]

Hazardous air quality resulting from wildfire smoke is becoming increasingly more common in California. Wildfire smoke is comprised of a mixture of gases, water vapor, and particulate matter. Particulate matter is the component of wildfire smoke that poses the greatest threat to human health. CARB established the California Ambient Air Quality Standard for annual average of PM2.5 as 12 micrograms per cubic meter of air. This is the same annual average set by the US EPA's National Ambient Air Quality Standard. Hazardous air quality days in which PM2.5 levels are higher than the state and federal standards have become increasingly common in Albany.

Not only are these hazardous air quality events becoming worse in their severity, but they also are occurring almost annually, and the time it takes for the prolonged periods of hazardous air to retreat is in many cases increasing as regional weather patterns change.

Air quality is assigned a local rating of 0 (Good) to 500 (Hazardous) on an Air Quality Index. Wildfires in recent years have pushed Bay Area air quality into the Hazardous air quality range.

[7] https://ww2.arb.ca.gov/resources/common-air-pollutants

Previous Occurrences

Previous hazardous air quality events, due to wildfires occurring throughout California and Oregon occurred in 2020, 2021, and 2022.

Future Probability

Global climate change, and the extreme weather (extreme heat and damaging winds) and dry vegetation conditions it creates, will continue to increase wildfire threat and likelihood in the State of California, which will in turn increase the likelihood that the City of Albany will experience hazardous air quality.

Impacts & Vulnerability

Individuals with cardiovascular or respiratory disease, the elderly and young children, pregnant women, those who work outdoors or live or work in poorly ventilated buildings are most vulnerable to the negative health effects associated with inhaling particulate matter. Particulate matter that is less than 10 micrometers in diameter are the most concerning, as these particulates can enter the lungs and even the blood stream once inhaled through the nose or throat. Hazardous air exposure can lead to asthma, illness, long-term lung and brain damage, and shortened life expectancy from exposure-related illnesses and diseases.

Mitigation & Response

It is important that Albany continues to reduce its greenhouse gas emissions, not just to continue to mitigate the risk to the population from emission of particulate matter, but to contribute to the

reduction in planet-warming greenhouse gases that fuel ever-more-deadly fire seasons in our region.

The Bay Area Air Quality Management District (BAAQMD), AirNow, and the U.S. Forest Service Wildland Fire Air Quality Response Program all provide air quality forecasting and/or real-time air quality data that can be used to assess current or oncoming hazardous air quality. The City can partner with local health agencies, such as the City of Berkeley and Alameda County, as well as BAAQMD, to promote use of filtration masks, air purifiers, and encourage limited outdoor activity and exposure to hazardous air.

Terrorism and Mass Violence

Hazard Analysis

Terrorism is the use of fear for intimidation, typically for political goals. Similar to terrorism, mass violence occurs when an individual or group of individuals aims to harm large groups of people.

Location & Extent

Terrorism or mass violence can occur anywhere in the City or surrounding region, though it typically takes place in crowded areas or at events that draw large crowds.

Terrorism is a crime where the threat of violence is often as effective as the commission of the violent act itself. Terrorism affects individuals through fear, physical injuries, economic losses, psychological trauma, and erosion of faith in governments. It can manifest itself through threats, bombings, hijackings, kidnappings, arson, assassinations, and/or disruption of "lifeline systems" and other critical infrastructure. Terrorism can include the use of chemical, biological, radiological, nuclear, and explosive weapons, making mitigation, response, and recovery issues particularly challenging.

Mass violence could occur anywhere in the City, though violent criminals often target crowded areas.

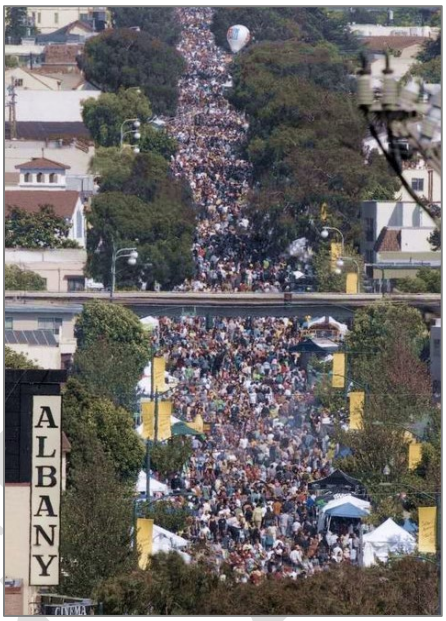
Previous Occurrences & Future Probability

There are no recorded incidents of mass violence or terrorism in Albany, and the City cannot predict future probability. In the Unites States, mass shootings occur every day, on average.[8]

[8] https://www.nytimes.com/2015/12/03/us/how-often-do-mass-shootings-occur-on-average-every-day-records-show.html

Impacts & Vulnerability

Although most likely not a high-profile target, the City of Albany, given its geographic proximity to Oakland and San Francisco, could be affected by a terrorist attack or mass violence.



Solano Stroll in Albany

For terrorist acts specifically, vulnerable sites include those that are essential to the functioning of the City, that contain critical assets, or which would cause significant impacts if attacked. Federal institutions located in Albany such as the USDA Western Research Center and events that draw large crowds such as the Solano Stroll are potential targets for terrorist attacks. The City is also at risk of Cyberterrorism, the use of computer network tools to disrupt or destroy critical government telecommunications capabilities, which can create fear by causing confusion and uncertainty (more on cyber attacks in the Critical Infrastructure and Utilities Failure section).

It is important to note that acts of terrorism or mass violence may be the result of a hate crime. The State of California Department of Justice defines a hate crime as a crime against a person, group, or property motivated by the victim's real or perceived protected social group, which may include but is not limited to disability, gender, nationality, race or ethnicity, religion, sexual orientation, and association with a person or group.

Mitigation & Response

The federal government plays a significant role in terrorism response on a national level, but local governments, along with counties and the state, have primary responsibility for first response and protecting the health and safety of its citizens. The nature of terrorism and the many forms it can take makes mitigation, response, and recovery issues difficult. 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 in the event of a terrorist attack.

The City currently works to incorporate mitigation measures into the planning and implementation of events that draw large crowds, such as the Solano Stroll and Dinner with Albany. Temporary barrier systems such as K-rails, or sturdier barriers built to withstand vehicle strikes, are placed strategically to mitigate the potential for injury caused by vehicular intrusion into event spaces. Critical public safety response routes are determined to reduce the impact and consequences of a hazardous incident. Emergency medical stations equipped with first aid and

life support equipment are also set up and maintained throughout the event. In some cases, the City proactively prepares for Emergency Operations Center activation, to ensure that there is adequate staffing and resources available for response in the case of any disaster occurring during a large event.

Local law enforcement, emergency medical services, and fire agencies will be the first units to respond to a terrorist incident.

The Albany Police Department conducts periodic training for the response to violent mass shooting events. Several officers are trained as instructors specific to these types of incidents and develop up to date trainings for patrol staff. Recently, the majority of the APD patrol staff attended a multi-agency training in the response to mass shooting events which also incorporated cross-training with emergency medical responders to be better prepared to expedite the medical attention to injured victims. The department also incorporates discussion and briefings regarding mass shooting events at department firearms training which are held approximately four times per year. As the police response to these mass shooting events continue to evolve, department instructors continue to update our training.

Slope Failure & Landslides

Hazard Profile

A landslide or mudslide is a natural hazard, most commonly caused by earthquakes and heavy rainfall, that can be exacerbated by human activity that causes slope failure, such as extensive irrigation, poor vegetation management, development activities that cause slopes to be steepened and overloading sloped areas with artificial fill. Slopes steeper than fifteen percent typically require special construction measures, such as special grading, foundation design, and other site modifications.

Landslides may also be trigged by heavy rain or man-made factors such as earth movement and trenching. Hazard levels in Albany are generally associated with the north and west slopes of Albany Hill, which are protected as open space. For private properties on Albany Hill, site-specific geotechnical analysis and mitigation measures may be required if construction is proposed in the future.

Landslides are caused by one or a combination of the following factors:

- Change in slope of terrain
- Increased load on the land
- Shocks and vibrations
- Change in water content

- Groundwater movement
- Frost action
- Weathering of rocks
- Removing or changing the type of vegetation covering slopes

Most sloping land has some landslide potential. The risks tend to be greatest where the land has characteristics that contribute to the risk of the downhill movement of material.
The risk of landslide hazards is increased when a number of contributing factors are present, including:

- A slope greater than 33 percent
- A history of landslide activity or movement during the last 10,000 years
- Active earthquake faults
- Stream or wave activity, which has caused erosion, undercut a bank, or cut into a bank to cause the surrounding land to be unstable
- Water saturation
- The presence of an alluvial fan, indicating vulnerability to the flow of debris or sediments
- Weak, unconsolidated or shallow soils
- The presence of impermeable soils, such as silt or clay, which are mixed with granular soils such as sand and gravel
- Extensive grading and vegetation removal from fires or development activity

Location & Extent

There are six locations on Albany Hill that have been identified by the United States Geological Survey as being susceptible to landslide. The image below, taken from a U.S. Landslide Inventory and Interactive Map made available by USGS, highlights landslide locations and geographical extent of each landslide. The USGS categorizes all six landslide locations in Albany as likely sites for landslide.

US_Landslide_poly_v2

Confidence

- High confidence in extent or nature of landslide (8)
- Confident consequential landslide at this location (5)
- Likely landslide at or near this location (3)
- Probable landslide in the area (2)
- Possible landslide in the area (1)

Assessing the geology, vegetation, and amount of predicted precipitation for an area can help predict landslides. However, there is no practical warning system for individual landslides. The current standard operating procedure is to monitor situations on a case-by-case basis. Generally accepted warning signs for landslide activity include:

- Springs, seeps, or saturated ground in areas that have not typically been wet before
- New cracks or unusual bulges in the ground, street pavements, or sidewalks
- Soil moving away from foundations
- Ancillary structures such as decks and patios tilting and/or moving relative to the house
- Tilting or cracking of concrete floors and foundations
- Broken water lines and other underground utilities
- Leaning telephone poles, trees, retaining walls, or fences
- Offset fence lines
- Sunken or down-dropped road beds
- Rapid increase in creek water levels, possibly accompanied by increased turbidity (soil content)

- Sudden decrease in creek water levels though rain is still falling or just recently stopped
- Sticking doors and windows, and visible open spaces indicating jambs and frames out of plumb

Previous Occurrences
No significant landslides have been recorded in Albany, but extensive landslides have occurred 24 times in the Bay Area since 1950, approximately once every three years.

Future Probability
It is likely that, due to climate change, more frequently occurring periods of intense drought followed by heavy rainfall may increase risk of landslide in vulnerable areas. Assessing the geology, vegetation, and amount of predicted precipitation for an area can help predict landslides on a case-by-case basis.

Impacts & Vulnerability
Localized areas of Albany Hill face risk from landslide, and a major slide could endanger lives of individuals and families living in these areas. Landslides also have the potential to destabilize the foundation of structures, which may result in monetary loss for residents.Landslides can block access to roads, which can isolate residents and businesses and delay commercial, public, and private transportation. This could result in economic losses for businesses.

There are no critical facilities located within the landslide zone. Other potential problems resulting from landslides include power and communication failures. Vegetation or poles on Albany Hill can be knocked over, resulting in possible losses to power and communication lines. Environmental problems because of mass movements can be numerous. Landslides that fall into streams may significantly impact fish and wildlife habitat and affecting water quality. Hillsides that provide wildlife habitat can be lost for prolonged periods of time due to landslides.

Mitigation & Response
For private properties on Albany Hill, site-specific geotechnical analysis and mitigation measures will continue to be required when construction is proposed. To mitigate landslide in identified vulnerable areas in Albany, the City employs site-specific geotechnical analysis and mitigation measures. In addition, the City proactively manages the vegetation on Albany Hill to mitigate soil erosion and slope instability.

Current local capabilities include the California Department of Conservation map highlighting the location and extent of land vulnerable to potential landslides along with mitigation guidelines established in the Municipal Code. Specifically, the City's Residential Hillside Development District policy establishes standards and requirements for appropriate hillside development on Albany Hill that reduces the likelihood of earth movement on unstable terrain in order to protect

the health and safety of the community. In addition, construction requirements include the submittal of General Conditions Report on any known soil and geological conditions regarding soil deposits, rock formations, faults, groundwater, and landslides in the vicinity of the project.

To improve local capabilities, site-specific geotechnical analysis and mitigation measures may be required if construction is proposed for private properties on Albany Hill. In addition, the Fire Department will provide training regarding landslide safety through the CERT program.

Furthermore, vegetation continues to be proactively managed on Albany Hill, ensuring that the tree and root systems are stable and that the risk of soil erosion is minimized. A healthy ecosystem will continue to remain an important priority for the City on Albany Hill, and a co-benefit is the reduction of landslide risk.

Hazardous Material Release

Hazard Profile

A hazardous material is any element or compound that, because of handling, storing, processing, or packaging, may have detrimental effects on the public (especially emergency personnel) and/or the environment. Hazardous materials range from familiar substances such as waste oil and cleaning solvents, to highly toxic industrial compounds, and include toxic metals, gases, flammable and explosive liquids and solids, corrosive materials, radioactive materials and infectious biological waste.

Location & Extent

Although hazardous materials are usually associated with industry, they are also found at gas stations, dry cleaners, medical offices, public buildings, and many retail and office uses. Hazardous materials are also used by most households, in the form of cleaning solvents, paint, motor oil, pesticides, and common household chemicals. Hazardous materials are shipped daily on highways, railroads, waterways, and pipelines in or near Albany. Releases of hazardous materials can occur during transport and from fixed facilities.

A release of hazardous materials in the City of Albany could occur by:

- An accident on a City street or on Interstate 80/580
- Train derailment
- An aircraft accident
- A ruptured high-pressure natural gas or petroleum pipeline
- A fire in a nearby industrial facility
- A spill from a vessel in San Francisco Bay

- Illegal dumping into the sewer or storm-drain system or into the creeks
- Contaminated groundwater plumes or soils
- Demolition or remodeling of older buildings containing asbestos, lead-based paint, or other hazardous building materials

History has shown that when accidents and emergencies involve hazardous materials, they are extremely complex to mitigate. Transportation-related releases are especially troublesome because they can occur anywhere, including close to human populations, critical facilities, or sensitive environmental areas.

Previous Occurrences

Hazardous materials incidents from spills from commercial/recreational vessels in the Bay have impacted the San Francisco Bay Area in the past. On November 7, 2007, the container ship Cosco Busan struck the Delta Tower of the San Francisco Bay Bridge during a thick fog. Over 53,569 gallons of heavy fuel oil spilled into the San Francisco Bay and affected birds, marine mammals, fish, and humans. Oil from this spill washed up on the Albany shoreline. In 2011, an uncontrolled release of 1,600 gallons of diesel on the UC Berkeley campus resulted in diesel entering the stormwater system, and discharging into Strawberry Creek. Illegal dumping occurring within Albany occasionally includes household hazardous waste. The City of Albany Public Works Department delivers these materials to the County's household hazardous waste drop-off facilities.

Future Probability

The City cannot predict the future probability of hazardous materials release incidents, though such incidents can be caused by or exacerbated by other hazards, such as earthquakes, floods, windstorms, and winter storms.

Impacts & Vulnerability

The severity of a hazardous materials incident depends on the nature and amount of the hazardous material and the time and location of the incident. Explosions and accidents can cause physical damage, while releases in the air can affect human health and safety. A hazardous materials release could expose the community to toxic vapors and cause irritation, burns, and/or suffocation.

While hazardous materials could be released anywhere in the City, the most vulnerable areas are located on the western edge of the City by the train tracks and freeways. Those who live near these locations are thus more vulnerable to the effects and aftermath.

Hazardous materials can threaten the viability of wildlife in Albany's open spaces, creeks, and the bay. This includes potential damage to plants, animals, wildlife habitat, air and water quality, and loss of biodiversity.

Mitigation & Response

The risk of a transportation related accident is mitigated by the many federal and state safety precautions and regulations and by the fact that accidents on freeways or railroads are likely to be detected and reported quickly. The California Department of Transportation (Caltrans) regulates the transport of hazardous materials on State highways, with enforcement by the California Highway Patrol. Local agencies have the authority to restrict the use of local roads for hazardous materials transport, as well as the time of transit, if not unduly restrictive to commerce. Generally, selection of transportation routes should minimize the time and distance that hazardous materials are in transit, avoid residential neighborhoods and environmentally sensitive areas, avoid periods and areas of traffic congestion, minimize use of local roads and provide for adequate emergency response services. In the event of a spill or another accidental release on Interstate 80/580, the Albany Fire Department would be the first responders and Caltrans would assume responsibility for the subsequent cleanup.

Many households routinely store hazardous materials at home. In California, it is illegal to dispose of these materials in the trash, down the drain, or by abandonment. Pouring paint, motor oil, and similar substances down the drain or into storm sewers, and placing electronic waste, batteries, and similar items in the trash, could contaminate soil, groundwater, or surface water. Albany residents may dispose of such waste at one of the County's household hazardous waste collection facilities located in Oakland, Hayward, Fremont, or Livermore. To reduce the risk of hazardous material contamination of local waterways, soil, and groundwater, resulting from improper disposal by residents, the City partners with Alameda County Department of Environmental Health's Household Hazardous Waste (HHW) Division, and StopWaste to host annual HHW drop-off events. Most recently in July of 2022, there was a total of 542 drop-offs, with 66 sharp object drop-offs, and 236 medical waste (medicine) drop-offs. The City also contracts with Waste Management of Alameda County (WMAC) to collect a limited number of household hazardous waste items (such as batteries and CFL light bulbs) through curbside pickup programs. Throughout the year, City staff aim to educate residents about proper disposal of HHW through mailers, social media, and information on the City's website.

Part IV: Equity

The City has a responsibility to ensure equitable outcomes in Plan implementation and to ensure that action is taken to reduce vulnerabilities to disasters experienced disproportionately by marginalized populations. Vulnerable populations in our community including, but not limited to, the elderly, underserved and low-income communities, unhoused individuals, renters, and individuals with limited English proficiency may face additional barriers in both preparation before and recovery after disasters occur. Therefore, these vulnerable populations are often disproportionately affected by disasters, so every effort should be taken to ensure that these populations receive additional support and resources before and after a disaster.

Actions to mitigate disasters must not place disproportionate financial burden on members of the population with limited income. The City will explore opportunities to provide low-income households with subsidies related to any voluntary or mandatory actions that require monetary contribution by individuals in the community. The City already employs this technique by providing additional discounts for residents who choose to install all-electric heat pumps that double as air conditioning. Similar programs will be prioritized in the future.

Further, with implementation of certain mitigation actions, the City will seek opportunities to address social and environmental injustice, and enhance access to resources for historically underserved or vulnerable populations. To address the urban heat island effect for example, the City will seek opportunities to prioritize street tree planting in historically redlined neighborhoods that feature less tree canopy coverage to ensure equitable distribution of environmental co-benefits and protection against extreme heat events.

When conducting community engagement related to implementation of or update to this Plan, the City will ensure that the whole community has an opportunity to participate in the process and discussion. FEMA defines the “whole community” as “individuals and families, including those with access and functional needs, businesses, faith-based and community organizations, nonprofit groups, schools and academia, media outlets, and all levels of government, including state, local, tribal, territorial, and federal partners that have a shared responsibility in emergency preparedness and mitigation.”

Part V: Mitigation Strategy & Action Plan

Mitigation Strategy

The mitigation strategies outlined in the table below aim to achieve the following goals:

1. Educate the public on the risk from natural hazards and increase awareness, preparation mitigation, response, and recovery activities
2. Prevent (or discourage) new development in hazardous areas or ensure that if building occurs in high-risk areas it is done in such a way as to minimize risk
3. Ensure all structures meet minimum standards for life safety
4. Provide/improve flood protection with flood control structures and drainage maintenance plans
5. Strengthen codes and their enforcement so that new construction can withstand the impacts of natural hazards and lessen the impact of that development on the environment's ability to absorb the impact of natural hazards
6. Consider the impacts of natural hazards in all planning mechanisms that address current and future land uses within the City
7. Retrofit, acquire, or relocate identified high-risk structures, including those known to experience repetitive losses
8. Establish a partnership among all levels of government and the business community to improve and implement methods to protect property
9. Address existing inequities in the community related to disaster preparedness and the hazards identified in the Risk Assessment, and increase access to disaster preparedness

The following table identifies mitigation actions for each hazard or for multiple hazards and establishes the responsible agency and/or department, implementation timeline, and potential funding source for each measure. Note that actions that only require staff time list funding as "City of Albany General Fund." Also note that many of these actions are ongoing, as the City prioritizes local hazard mitigation and emergency response preparedness and has already begun implementation of many hazard reducing actions that were included in the 2018 LHMP.

Hazard	Mitigation Action	Responsible Agency/ Department	Timeline	Potential Funding Source
All Hazards	Update City ordinances, standards, and design guidelines to integrate best practices and regulations that reduce hazard vulnerability and improve resilience throughout the City.	City of Albany Community Development Department	Ongoing	City of Albany General Fund
	Ensure that emergency response staffing and resources are sufficient to meet the needs of a growing community.	City of Albany Administration Department	Ongoing	City of Albany General Fund
	Ensure that City staff are trained in emergency management best practices and emergency management software.	City of Albany Fire Department	Ongoing	City of Albany General Fund
	Maintain an active and effective City of Albany emergency response and recovery program that provides direction and identifies responsibilities following a disaster.	City of Albany Fire Department	Ongoing	City of Albany General Fund

	Continue run the CERT training program and support the Albany CERT Inc. organization, as well as other local efforts to organize and train area residents, businesses, and City employees so they can assist themselves and others during the first 72 hours following a major disaster, and focus on assisting vulnerable populations.	City of Albany Fire Department	Ongoing	City of Albany Fire Department
	Update the Emergency Operations Plan to save lives and minimize damage to the community.	City of Albany Fire Department	2023/2024	City of Albany Fire Department
	Identify emergency gathering spaces and emergency equipment storage locations. Exact locations to be determined by the Fire Chief as part of the Emergency Operations Plan update.	City of Albany Fire Department	2023/2024	City of Albany Fire Department
	Implement actions from the 2019 Climate Action and Adaptation Plan to address climate change mitigation and adaptation, with extra attention to enhancing social equity, addressing climate injustices, and protecting vulnerable populations.	City of Albany Community Development Department	Ongoing	City of Albany General Fund

	Encourage residents and businesses to purchase and maintain emergency supplies and have emergency contingency plans.	City of Albany Public Information Officer, Fire Department	Ongoing	City of Albany General Fund
	Ensure that preparedness and response information is available in the primary non-English languages spoken in the community	City of Albany Human Services Division and Public Information Officer	2023/2024	City of Albany Human Services Division
	Continue to provide services to people that are experiencing homeless in Albany	City of Albany Human Services Division	Ongoing	City of Albany Human Services Division
	Ensure that future development is sited, designed, and constructed to minimize risks associated with all hazards.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department

	As part of the City's emergency preparedness planning, assess the structural integrity of critical public facilities and identify what additional measures might be needed to meet current seismic safety standards, as well as measures to reduce flooding of critical facilities. Ensure that critical public facilities are designed and maintained in a manner that ensures their resilience and ability to function during and after a natural disaster. Encourage other agencies, such as both public and private schools in Albany, are designed and maintained to ensure resilience.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Advocate to keep Alta Bates Summit Medical Center open in Berkeley as an acute care hospital including emergency care.	City of Albany City Council	Ongoing	City of Albany General Fund
	Continue to test and utilize emergency notification systems, including AC Alert and Zonehaven. Increase usership of these systems throughout the community.	City of Albany Fire Department and Public Information Officer, Alameda County	Ongoing	City of Albany Fire Department

	Perform periodic emergency preparedness exercises consisting of both City staff and the public, as well as neighboring jurisdictions, to improve readiness for disasters	City of Albany Fire Department, Public Information Officer	Ongoing	City of Albany Fire Department
	Require review of all development and construction proposals by the City of Albany to ensure conformance to current and applicable building code standards.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Prepare and adopt a recovery ordinance that directs post-disaster reconstruction and recovery. Such an ordinance is adopted before a disaster occurs, to ensure that certain public services related to recovery can begin as soon as possible following a disaster.	City of Albany Community Development Department	2024	City of Albany Community Development Department
Earthquakes	Ensure that critical public facilities such as City Hall, the Police and Fire stations, the Public Works facility and Community Center are designed and maintained in a manner that enhances their resilience to earthquakes.	City of Albany Public Works Department	Ongoing	City of Albany Public Works Department

	Strongly encourage the retrofitting of existing structures to reduce the risk of collapse and/or major damage and injury in an earthquake. Continue to provide fee waivers for earthquake retrofit projects on single-family homes.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Require soft-story structures to retrofit after ordinance adoption.	City of Albany Community Development Department	2023	City of Albany Community Development Department
	Increase earthquake awareness and preparedness in the community. Promote signups for earthquake-detection technologies, such as MyShake.	City of Albany Fire Department and Public Information Officer	Ongoing	City of Albany Fire Department
Public Health Epidemic	Follow Alameda County Public Health guidelines and County mandates and update City procedures as necessary.	City of Albany Fire Department, Public Information Officer, Alameda County Department of Public Health	Ongoing	City of Albany General Fund
	Provide personal protective equipment (PPE), hand sanitizer, and COVID-19 testing to City of Albany Staff	City of Albany Human Resources	Ongoing	City of Albany General Fund
	Use City communication channels to promote individual actions to reduce spread of communicable illness.	City of Albany Public Information Officer	Ongoing	City of Albany General Fund

Critical Infrastructure and Utilities Failure	Where feasible, include solar panels, and battery energy storage at critical municipal facilities.	City of Albany Community Development Department, Public Works Department, East Bay Community Energy	2023	City of Albany General Fund, East Bay Community Energy
	Advocate for local gas, electric, cable, water, sewer, and other utility providers to maintain and retrofit their facilities and ensure their ability to function or be quickly restored following a disaster.	City of Albany Community Development Department	Ongoing	City of Albany General Fund
	Encourage energy resilience via the installation/use of alternative power sources including, but not limited to, backup generators, microgrids, and backup batteries on residences and businesses	City of Albany Community Development Department and Public Works Department, PG&E, East Bay Community Energy	2024	City of Albany General Fund
	Ensure testing of aviation fuel pipeline and high-pressure natural gas pipelines (both large and small) which run through the City.	City of Albany Community Development Department and Public Works Department, PG&E, Kinder Morgan	Ongoing	City of Albany General Fund
	Develop preparedness strategies to reduce the impact of an IT failure	City of Albany Information Systems Division	Ongoing	City of Albany Information Systems Division

	Develop an IT system malfunction alert and notification procedure	City of Albany Information Systems Division	Ongoing	City of Albany Information Systems Division
	Develop data backup and data redundancy processes and policies for data systems, including testing to ensure backups are functional	City of Albany Information Systems Division	Ongoing	City of Albany Information Systems Division
	Seek opportunities for utility undergrounding and advocate for utility undergrounding by utilities	City of Albany Public Works, City of Albany Community Development Department	2024/ Ongoing	City of Albany Public Works Department
	Seek opportunities for decommissioning natural gas pipelines	City of Albany Community Development Department	Ongoing	City of Albany General Fund
	Transition City of Albany telephone system to a cloud-based telephone system	City of Albany Information Systems Division	2023	City of Albany Information Systems Division
	Conduct periodic trainings for employees to reduce vulnerability to cybersecurity attacks. Update software to reduce exposure to cybersecurity threats.	City of Albany Information Systems Division	Ongoing	City of Albany Information Systems Division

Flooding	Consider the effects of sea level rise, groundwater rise, storm surges and tsunamis on the long-term safety and viability of structures, utilities, and other improvements built in low-lying areas, or underground utilities and foundations. Sea level rise should be considered in any plans for the waterfront areas of the City. The City should examine potential "worst case scenario" impacts as well as impacts consistent with current predictions and models.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Continue working toward planning and implementation of shoreline improvements to the Albany Neck & Bulb	City of Albany Community Development Department and East Bay Regional Park District	Ongoing	City of Albany Community Development Department
	Continue to conduct long-term adaptation planning to protect the Albany shoreline from sea level rise	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Collaborate with East Bay cities and organizations such as the Bay Area Regional Collaborative (BARC) Adapting to Rising Tides (ART) working group to develop goals and strategies to address sea level rise	City of Albany Community Development Department, East Bay Cities, Bay Area Regional Collaborative (BARC)	Ongoing	City of Albany Community Development Department

	In the 100-year flood zone, use construction measures which reduce safety risks and minimize the potential for structure damage pursuant to FEMA requirements.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Ensure that future projects comply with FEMA floodproofing requirements and California Building Code flood resistant construction requirements.	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Implement FEMA regulations that restrict development in floodplains	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department
	Work with the City of Berkeley and Federal Emergency Management Agency to periodically update maps of the 100- and 500- year Flood Insurance Rate Maps. The updates should consider the existing and projected benefits of regional stormwater management efforts.	City of Albany Community Development Department	2025	City of Albany Community Development Department
	Ensure storm drain inlets and culverts are maintained and cleaned regularly	City of Albany Public Works Department	Ongoing	City of Albany Public Works Department
	Engage the CERT volunteers to support cleaning of drain inlets and culverts during potential flooding events	City of Albany Fire Department, Public Works Department	As Needed	City of Albany General Fund

	Encourage green infrastructure for natural management of stormwater and storm-induced flooding and preserve/restore natural features of the watershed for both new and existing development	City of Albany Public Works and Community Development Departments	Ongoing	City of Albany Public Works and Community Development Departments
	Maintain City participation in the National Flood Insurance Program.	City of Albany Community Development Department	Ongoing	City of Albany General Fund
	Continue to perform outreach regarding water conservation	City of Albany Community Development Department, EBMUD	Ongoing	City of Albany General Fund

Wildland and Urban Fire	Implement vegetation management and fuel reduction programs in the highest hazard areas on the Albany Bulb and Albany Hill, including areas adjacent to homes and areas of heavy recreational use. Support programs and plans consistent with state law that requires fuel management/modification, balance fuel management needs to protect structures with the preservation of native vegetation and sensitive habitat. Ensure that private property owners in areas such as Albany Hill control weeds and other flammable vegetation around their homes in a manner that minimizes the risk of structure fires and threats to nearby properties.	City of Albany Fire and Public Works Departments	Ongoing	City of Albany Fire and Public Works Departments
	Develop ordinance and staffing to enforce vegetation management on private property on Albany Hill to minimize the risk of structure fires and threats to nearby properties	City of Albany Community Development Department	Ongoing	City of Albany Community Development Department

	Manage the eucalyptus forest on Albany Hill to reduce the threat of wildfire, while also preserving native plants and monarch butterfly habitat. Develop a Capital Project Plan and scope of work that will ultimately result in a plan for large-scale removal of Eucalyptus that also preserves native plants and wildlife, including the monarch butterflies. Prior to plan adoption, conduct regular inspections of the hill, and immediately address any trees that may pose immediate danger to the community.	City of Albany Public Works Department	Ongoing	City of Albany Public Works Department
	Advocate to ensure that peak load water supply and water pressure is sufficient to respond to local fire emergencies	City of Albany Fire Department, EBMUD	Ongoing	City of Albany Fire Department

	Implement vegetation management and fuel reduction programs in the highest hazard areas on the Albany Bulb and Albany Hill, including areas adjacent to homes and areas of heavy recreational use. Support programs and plans consistent with state law that requires fuel management/modification, balance fuel management needs to protect structures with the preservation of native vegetation and sensitive habitat. Ensure that private property owners in areas such as Albany Hill control weeds and other flammable vegetation around their homes in a manner that minimizes the risk of structure fires and threats to nearby properties.	City of Albany Fire and Public Works Departments	Ongoing	City of Albany Fire and Public Works Departments
Severe Weather (Extreme Temperatures)	Work with the County to expand capacity and publicize warming and cooling centers	City of Albany Recreation & Community Services Department, Human Services Division, and Alameda County	Ongoing	City of Albany Recreation & Community Services Department and Human Services Division

Severe Weather (Damaging Winds)	Encourage planting of appropriate shade trees; include climate change impacts in Street Tree Management Plan	City of Albany Community Development Department, Public Works Department	Ongoing	City of Albany Community Development Department, Public Works Department
	Consider implications of severe weather in developing urban forestry policies in the Street Tree Management Plan	City of Albany Community Development Department, Public Works Department	2023/2024	City of Albany Community Development Department, Public Works Department
	Use tree removal contractors to address downed trees and limbs blocking roadways or posing danger to the community.	City of Albany Public Works Department	As Needed	City of Albany Public Works Department
Terrorism and Mass Violence	Adopt best practices for public areas and events	City of Albany Police, Recreation & Community Services, Fire, and Community Development Departments	Ongoing	City of Albany Police, Recreation & Community Services, Fire, and Community Development Departments
	Conduct periodic training for the response to mass violence events	City of Albany Police Department and Fire Department	Ongoing	City of Albany Police Department and Fire Department

Hazardous Air Quality	Promote education and outreach materials available through the Bay Area Air Quality Management District (BAAQMD) and the California Air Resources Board (CARB) regarding hazardous air quality prior to any predicted hazardous air quality event, and during unhealthy to hazardous air quality events.	City of Albany Public Information Officer	Ongoing	City of Albany General Funf
Hazardous Materials Release	Continue to work with the Alameda County Waste Management Authority (StopWaste), the Alameda County Environmental Health Department, and state and federal agencies to ensure the safe storage, handling, and disposal of hazardous materials	City of Albany Public Works Department and Sustainability Division, Stopwaste.org, Alameda County Waste Management Authority, Alameda County Environmental Health Department	Ongoing	City of Albany General Fund
Slope Failure/Landslide	Monitor Albany Hill for evidence of vulnerability to landslides	City of Albany Public Works and Community Development Departments	Ongoing	City of Albany Public Works and Community Development Departments

Action Plan

FEMA requires that each jurisdiction describe how the actions identified in the Mitigation Strategy will be prioritized, implemented, and administered by the jurisdiction. Although a full

benefit-cost analysis is not necessary, the Plan must demonstrate that proposed mitigation actions will be prioritized by weighing the cost of the action versus the benefits the action will produce, in addition to other prioritization factors.

The City will continue to implement ongoing actions, particularly those that increase resilience to all hazards and have the greatest benefit to the whole community. The City will also prioritize implementation of actions that help more vulnerable populations in Albany be more resilient to disasters. For those actions that do not yet have a funding source identified, the City will seek funding through state and federal grants and/or other funding sources not yet identified.

Plan Implementation & Maintenance

Plan Implementation

The City commits to either implement, advocate for, and/or seek funding for each of the hazard mitigation strategies listed in the table above within the next five years.

When the Planning Team met with stakeholders from each City department in 2022 to discuss the progress of the 2018 LHMP and the implementation status of actions listed in the Action Plan, the most common piece of feedback was that most of the actions listed in the 2018 LHMP were ongoing actions rather than one-time actions that could be deemed completed. For example, implementation of best practices for terrorism hazard reduction and cybersecurity safety is periodically being reevaluated and adjusted as new information is shared with the City or as new technology develops. It is therefore important to recognize that the 2023 LHMP update includes many actions listed as "ongoing."

The City of Albany Community Development Department will take lead responsibility for monitoring the Plan's progress and tracking the Plan's implementation over time. Plan implementation and evaluation will be a shared responsibility among all City departments and other agencies identified as lead agencies in the mitigation action plan.

Incorporation into Other Planning Mechanisms

The effectiveness of the hazard mitigation plan depends on its implementation and incorporation of its action items into existing plans, policies, and programs.

This Local Hazard Mitigation Plan will be incorporated into the next amendment to the City's General Plan. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

Planning Mechanism	Information from LHMP
General Plan & Safety Element	The plan will be incorporated into future updates to the City's General Plan, including the Safety Element in 2023
Municipal Code	Some mitigation measures will require amendments to the City's Municipal Code, including the preparation of a soft-story ordinance and other earthquake and flood-related development requirements
Emergency Operations Plan	The plan sets the foundation for the Emergency Operations Plan, which describes how the City will respond to and recover from all hazards. An update to the EOP is anticipated in 2023
Capital Improvement Plan	Retrofits to City facilities will be included in the Capital Improvement Plan
Budget Process	Mitigation strategies that require budgeting beyond regular programmatic funding will be incorporated into the City's two-year budget cycle
Climate Action and Adaptation Plan	Climate change impacts of extreme weather, wildfires, landslides, and public health epidemics will be considered as the City implements actions from the City's 2019 Climate Mitigation & Adaptation Plan
City Council Strategic Plan	Mitigation strategies will be used to determine strategic priorities annually

New or updated information that may enhance this plan will be incorporated in the update process as it becomes available through major planning efforts and other planning mechanisms.

Plan Maintenance

It is important that the City of Albany Local Hazard Mitigation Plan remains an active and relevant document and that the City maintains its eligibility for applicable funding sources. The City's Community Development Department will take lead responsibility for monitoring, evaluating, and updating the plan.

The City of Albany's LHMP will be reviewed and updated as circumstances evolve and as required by federal and state agencies. The Community Development Department will update

this Plan every five years, or sooner if new hazards are identified, if community priorities change, or if other major planning efforts affect the relevance of the information contained within this Plan. The Plan will be reviewed annually by City staff responsible for implementing mitigation strategies and actions from each department, and implementation progress will be provided to the public at public advisory body meetings annually.

This review will include the following:

- Summary of any hazard events that occurred and the impact these events have had on the City
- Review of mitigation action plan progress
- Analysis of implementation challenges
- Reevaluation of the action plan priorities and timelines
- Necessary amendments or additions to list of mitigation strategies
- Review of relevant plans and programs
- Ongoing community engagement

Community members will continue to be involved in the Plan maintenance process. City staff will make the plan available on the City website, provide annual status updates to a City advisory body with opportunity for public comment, and will engage the public in any Plan update process. Community members will be able to provide feedback at public meetings or by contacting the Community Development Department via phone or email. Community members can also participate in hazard preparedness training through the City of Albany CERT program, and join the nonprofit Albany CERT Inc. group for continued engagement in community-level disaster preparedness.