



Office of the City Manager

June 4, 2024

To: Honorable Mayor and Members of the City Council

From: *DWR* Dee Williams-Ridley, City Manager

Re: 2024 Update to the Local Hazard Mitigation Plan; Public Comment Process

The First Draft of the City's 2024 Local Hazard Mitigation Plan (LHMP) update has been released on the City's website (www.BerkeleyCA.gov/Mitigation). The document's Executive Summary and Actions are attached to this letter.

Plan Content

The LHMP identifies natural hazards in Berkeley and outlines a five-year strategy to further protect Berkeley's people, buildings, infrastructure, and environment from those hazards. The City began updating the LHMP in early 2023. This update effort will allow Berkeley to apply for federal mitigation grant programs and State funding, and is anticipated to be complete at the end of 2024.

The content of the LHMP is dictated by State and federal requirements and focuses on City actions to reduce risks. In an effort to make the LHMP more relevant and accessible to community members, staff created a new section called "Berkeley Household Risk Reduction" designed to offer clear steps people can take to mitigate risks in their own households. Staff also wants to acknowledge all the work community members do to contribute to collective risk reduction in Berkeley by taking these actions.

Community Review

The First Draft Plan has been posted for review and comment on the City website (www.BerkeleyCA.gov/Mitigation). Staff recognize that it is difficult to engage with long documents, such as the LHMP. In an effort to support community review of the materials, the website also has detailed videos about each hazard included in the LHMP. The videos describe each hazard, its impacts, actions the City is taking to reduce risk, and recommend actions that community members can take to reduce risk in their own lives.

Members of the public are invited to provide written feedback on the document until July 31, 2024.

Written feedback can be submitted:

- a) Via email to mitigation@berkeleyca.gov
- b) Via postal mail to:
 - Fire Department – Office of Emergency Services
 - Attn: Mitigation Plan
 - 2100 Martin Luther King, Jr. Way, 2nd Floor
 - Berkeley, CA 94704
- c) In-person during business hours to the Fire Department – Office of Emergency Services at the address above.
- d) In-person at Public Review Workshops:
 - a. Monday, June 3, 5:30 pm to 7:30 pm at the Central Library, in The Commons
 - b. Saturday, July 20, 10 am to 12pm at the Tarea Hall Pittman South Branch Library

Members of the public are invited to provide written feedback on the document until July 31, 2024.

Commission Review

All Commissions have been requested to include the First Draft Plan as an Information Item in an upcoming meeting, and to provide written feedback before July 31, 2024. Staff will present the Plan's proposed mitigation strategy at the June 5 meeting of the Planning Commission and the June 26 meeting of the Disaster and Fire Safety Commission. Following the public comment period for the First Draft Plan, staff will review and incorporate appropriate feedback from Commissions and community members into the Final Draft Plan.

Final Draft Plan

The Final Draft Plan will undergo review first by the State of California Office of Emergency Services and then the Federal Emergency Management Agency (FEMA). Staff will make changes to the plan as required by these State and federal bodies.

Once approved by these bodies, staff will present the Final Draft Plan to the Planning Commission. This meeting will be the first Public Hearing for the Final Draft Plan. At this meeting, staff will request the Commission's recommendation to Council on the Final Draft Plan. Because the LHMP will be an amendment to the City's General Plan, the Planning Commission must make a recommendation to Council on the Final Draft Plan.

Staff will also present the Final Draft Plan to the Disaster and Fire Safety Commission. Because the Disaster and Fire Safety Commission closely monitors the City's preparedness and mitigation efforts, staff will request that the Commission make a recommendation to Council on the Final Draft Plan at this meeting.

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June 4, 2024

Re: 2024 Update to the Local Hazard Mitigation Plan; Public Comment Process

Staff anticipates bringing the Final Draft Plan to City Council for review and adoption in December 2024.

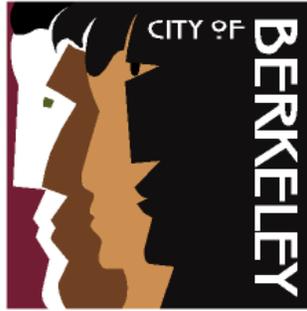
The First Draft Plan's Executive Summary and Actions are attached. Please let me know if you have any questions.

Attachments:

1. 2024 First Draft Local Hazard Mitigation Plan: Executive Summary and Actions

cc:

David Sprague, Fire Chief
LaTanya Bellow, Deputy City Manager
Anne Cardwell, Deputy City Manager
Jenny Wong, City Auditor
Farimah Brown, City Attorney
Mark Numainville, City Clerk
Matthai Chakko, Assistant to the City Manager



City of Berkeley

2024

Local Hazard Mitigation Plan

DRAFT

May 24, 2024

Executive Summary

Berkeley is a vibrant and unique community. But every aspect of the city – its economic prosperity, social and cultural diversity, and historic character – could be dramatically altered by a disaster. While we cannot prevent natural hazards, we can anticipate their many impacts and take steps to reduce those harms to our infrastructure, environment, and community. We can make sure that the Berkeley that emerges after a disaster continues to reflect our current values.

The federal Disaster Mitigation Act of 2000 (DMA 2000) calls for all communities to prepare mitigation plans every five years. City government and community members have been working together for years to address certain aspects of disaster risk – such as strengthening structures and managing vegetation to reduce fire risk. The 2004 Disaster Mitigation Plan formalized this process for the first time, ensuring that these activities continued to be explored and improved over time. The 2014 and 2019 Local Hazard Mitigation Plans continued this ongoing process to evaluate the risks that different hazards pose to Berkeley, and to engage the community in dialogue to identify the most important steps that the City, its partners, and residents should pursue to reduce these risks. Over many years, this constant focus on disasters has made the Berkeley community much safer.

The City adopted a plan that met the requirements of DMA 2000 on June 22, 2004, and an update in December 2014 and 2019. This is the first draft of the 2024 update to that plan, called the 2024 Local Hazard Mitigation Plan (2024 LHMP).

Plan Purpose

The 2024 LHMP serves four functions:

1. The 2024 LHMP documents our current understanding of the hazards present in Berkeley, along with our vulnerabilities to each hazard – the ways that the hazard could impact our buildings, infrastructure, community, and environment.
2. The document presents Berkeley City government’s Mitigation Strategy for the coming five years. The Mitigation Strategy reflects a wide variety of both funded and unfunded actions, each of which could reduce the Berkeley’s hazard vulnerabilities.
3. In addition to presenting a City-level mitigation strategy, the document outlines Actions that Berkeley community members can and do take at the household level to reduce their own vulnerabilities to hazards in Berkeley. While these household-level actions are not a requirement of the DMA 2000, including these details makes the plan’s risk assessment more immediately relevant to community members, also acknowledging the work they do to reduce our collective risk.
4. By fulfilling requirements of the DMA 2000, the 2024 LHMP ensures that Berkeley will remain eligible to apply for mitigation grant funding before disasters, and to receive federal mitigation funding and additional State recovery funding after disasters.

Plan Organization

The 2024 LHMP has been structured to specifically address DMA 2000 requirements as well as recent updates to these requirements from the Federal Emergency Management Agency. The 2024 LHMP is organized as follows:

Element A: Planning Process

This section of the 2024 LHMP describes the process used to develop the document, including how partners, stakeholders, and the community were engaged. It also addresses the City's approach to monitoring the 2024 LHMP over the five-year planning cycle.

Element B: Risk Assessment

This section of the 2024 LHMP outlines the different hazards present in Berkeley. Analysis of each hazard includes a description, the locations in Berkeley with exposure to the hazard, previous occurrences, probability of the hazard occurring in the future, Berkeley's vulnerabilities, and the potential impacts. This section also now includes actions that individual community members and households can take to reduce their risks.

Element C: Mitigation Strategy

The Mitigation Strategy section first documents the authorities, policies, programs, and resources that the City brings to bear in implementing mitigation actions. Second, this section outlines a comprehensive range of specific mitigation actions and projects designed to reduce Berkeley's hazard vulnerabilities. This section also describes how the 2024 LHMP is integrated with other City plans.

Element D: Plan Maintenance

This section describes how public participation in the plan maintenance process will continue as well as the methods and schedule for keeping the plan current. It also provides a detailed description of how the 2024 LHMP will be integrated into other planning mechanisms.

Element E: Plan Update

This section describes how changes in development and priorities have influenced updates to the 2024 LHMP. It also provides a detailed description of Berkeley's progress on the Mitigation Strategy adopted in the 2019 LHMP.

Element F: Plan Adoption

This section will be used to document formal adoption of the Final Draft 2024 LHMP by the Berkeley City Council.

Element G: Community Education

This section is new in the 2024 LHMP and is not a FEMA requirement. It includes information on what the City has done to make the risk assessment and mitigation strategy more applicable and accessible to community members. This section includes links to educational resources.

In the pages that follow, this Executive Summary describes highlights from Element B: *Risk Assessment* and Element C: *Mitigation Strategy*, as well as key updates that were made to the section since the 2019 version.

Element B: Risk Assessment

Berkeley is exposed to a number of hazards that vary in their intensity and potential impacts. This mitigation plan addresses the following hazards: earthquake, wildland-urban interface (WUI) fire, extreme heat, poor air quality, high wind, rainfall-triggered landslide, tsunami, flood, sea level rise, utility interruption, hazardous materials release, and infectious disease. Each of these hazards can occur independently or in combination, and can also trigger secondary hazards.

Climate change was included as a separate hazard of concern in the previous versions of this plan. However, in this update, climate change has been integrated throughout the plan and into every hazard of concern. Climate change will continue to increase the likelihood and the severity of the hazards outlined in this place.

Table 1. Summary of Hazard Analysis

Hazard	Likelihood	Severity of Impact
Earthquake	Likely	Catastrophic
Wildland-Urban Interface Fire	Likely	Catastrophic
Extreme Heat	Likely	Moderate to Catastrophic
Poor Air Quality	Likely	Minor
High Wind	Likely	Minor
Rainfall-Triggered Landslide	Likely	Minor to Catastrophic
Tsunami	Possible	Minor to Catastrophic
Floods	Likely	Minor
Sea Level Rise	Likely	Minor to Major
Utility Interruption	Likely	Minor to Major
Hazardous Materials Release	Likely	Minor to Catastrophic
Infectious Disease	Likely	Minor to Catastrophic

Earthquake

The United States Geological Survey states that there is a 72% probability of one or more M 6.7 or greater earthquakes from 2014 to 2043 in the San Francisco Bay Region. There is a 33% chance that a 6.7 or greater will occur on the Hayward fault system between 2014 and 2043.¹ This means that many Berkeley residents are likely to experience a severe earthquake in their lifetime.

A catastrophic earthquake on the Hayward Fault would cause severe and violent shaking and three types of ground failure in Berkeley. Surface fault rupture could occur in the Berkeley hills along the fault, damaging infrastructure and utilities that cross the fault. Landslides are expected in the Berkeley hills during the next major earthquake, particularly if the earthquake occurs during the rainy winter months. Landslide movement could range from a few inches to tens of feet. Ground surface displacements as small as a few inches are enough to break typical foundations. Liquefaction is very likely in the westernmost parts of the city and could occur in much of the Berkeley flats. Liquefaction can destroy pavement, dislodge foundations, and damage underground and aboveground infrastructure.

Shaking and ground failure are likely to create impacts that ignite post-earthquake fires. Firefighting efforts will be simultaneously challenged due to broken water mains and damage to electrical, transportation, and communication infrastructure.

In a 6.9 magnitude earthquake on the Hayward Fault, the City estimates that over 600 buildings in Berkeley will be completely destroyed and over 20,000 more will be damaged. One thousand to 4,000 families may need temporary shelter. Depending on the disaster scenario, one hundred people could be killed in Berkeley alone, and many more would be injured. Commercial buildings, utilities, and public roads will be disabled or destroyed. This plan estimates that building damage in Berkeley alone could exceed \$2 billion, out of a multi-billion-dollar regional loss, with losses to business activities and infrastructure adding to this figure.

Low-income housing units are expected to be damaged at a higher rate than other residences. Other types of housing, such as condominiums, may replace them when land owners rebuild. This could lead to profound demographic shifts in Berkeley.

Wildland-Urban Interface Fire

Fire has always been a natural part of the California and East Bay wildland ecosystem. Fire has historically been a way to maintain forest health, to control invasive species, and to provide a rich habitat for wildlife. In Berkeley, densely-built homes and vegetation have been introduced to hillside areas that otherwise required burning to maintain ecological balance. For many years people have tried to prevent fire in forests and developed areas, disrupting this balance. As a result, catastrophic fires are now occurring throughout the Bay Area and the world.

There are two primary types of wildfire: “wildland” fire and “wildland-urban interface” (WUI) fire. WUI fires, the primary concern in Berkeley, occur where the natural landscape and urban-built environment meet or intermix. It is especially difficult to control a fire in the wildland-urban interface, where homes and other infrastructure are close to and within wildland areas.

Increased structure density exacerbates wildland-urban interface fire risk. The rate of structure-to-structure ignitions increases when there are more structures per acre. More than two structures per acre is considered high density in the WUI; most areas of the Berkeley hills have at least 2 structures per acre.² Areas of the north Berkeley hills and around Panoramic Hill more than four structures per acre. The density of Berkeley's hills areas will be a critical factor in fire spread.

Minimal separation between structures also increase fire risk. Structures that are less than 25 feet apart are at extreme risk of directly spreading fire to one another, in a process called "structure-to-structure ignition." Fires in denser areas will have high rates of structure-to-structure ignition and high risk of losses. In Berkeley many structures are less than 25 feet apart, which places the community in the highest risk category.

Berkeley is vulnerable to a wind-driven fire starting along the city's eastern border. The fire risk facing the people and properties in the eastern hills is compounded by the area's mountainous topography, minimal access and egress routes, and location, overlaid upon the Hayward Fault. Berkeley's flatlands are also exposed to a fire that spreads west from the hills.

The extent and intensity of a WUI fire is closely tied to weather conditions and fuel moisture. Fires that ignite under periodic conditions of "Red Flag Warning" or "Extreme Fire Weather" may result in uncontrollable firestorms. During Extreme Fire Weather, when a fire builds to this magnitude and travels with such extreme speed and force, firefighters' primary focus often shifts from firefighting to supporting evacuations. This is because during this type of weather, some normally-available firefighting tools can be ineffective or even unusable – like planes and helicopters, which need to be grounded during high winds.

The Berkeley Hills have narrow, windy roads that make evacuation difficult, which is why the Berkeley Fire Department recommends that people leave the hills during Extreme Fire Weather. While the ignition risk is highest in the Berkeley Hills, a wind-driven fire under Extreme Fire Weather can blow through the Berkeley flats, all the way to the Bay.

Extreme Heat

In Berkeley, an extreme heat day is a day above 88.3 degrees Fahrenheit (F). Climate models from the Cal-Adapt tool³ from the California Energy Commission predict the average number of extreme heat days (above 88.3 degrees F) in Berkeley to continually increase by the end of the century. The specific number of extreme heat days expected in Berkeley depends on the level of greenhouse gases (GHGs) emitted from human activities into the atmosphere.

Extreme heat is a major public health concern with most impacts being on human health, especially on marginalized populations. Public health impacts associated with extreme heat events include premature death, cardiovascular stress and failure, and heat-related illnesses such as heat stroke, heat exhaustion, and kidney stones.⁴ Studies have also found links between rising temperatures and a range of mental health issues including mental fatigue, aggression, and even higher rates of suicide.⁵

Berkeley has regularly experienced extreme heat events since 2017, which have included impacts such as heat-related deaths, power outages, and poor air quality.

Poor Air Quality

Poor air quality is a growing concern in Berkeley and in California. According to the California Air Resources Board, 90% of Californians breathe unhealthy levels of outdoor air during some parts of the year. Poor air quality can irritate the eyes, nose, and throat, cause shortness of breath, aggravate asthma and other respiratory conditions, and affect the heart and cardiovascular system.

Poor air quality can last for a few hours or a few weeks, depending on its source. It can also be a chronic issue, for example in places near industry or highways. Southerland et al., published a study in 2021⁶ on the harmful impacts of pollution in the Bay Area. According to these estimates, more than 2,500 people die and 5,200 children develop asthma every year due to traffic-related air pollution exposure in the Bay Area.

Everyone in Berkeley can be impacted by poor air quality – some neighborhoods experience moderate or unhealthy air quality on a regular basis due to proximity to various sources of pollutants like highways and industry, and there have also been several extreme examples of poor air quality that impacted the entire City due to nearby wildfires. The air quality can also change quickly due to weather conditions, such as rain or wind.

High Wind

The National Weather Service (NWS) defines “high winds” as: sustained wind speeds of 40 miles per hour (mph) or greater lasting for one hour or longer, or wind gusts of 58 mph or greater for any duration.

In Berkeley, high wind events are typically associated with the seasons. In the winter, high winds come with weather systems and cold fronts, generally between November through March. In the summer, temperature and pressure differences between the Pacific Ocean and the interior valleys to Berkeley’s east create stronger afternoon and evening winds coming from the west.

Primarily in the fall, dry offshore foehn winds, known as the “Diablo Winds,” occur. Diablo Winds are associated with fire weather. Using data collected by observational instruments placed at the Lawrence Berkeley National Lab, we identified several days with sustained winds exceeding 25 miles per hour in Berkeley.

As temperatures increase worldwide due to climate change, changes in rising sea levels, humidity, and storminess are unavoidable as the physical processes are all interlinked. Given the prevalence of previous high-wind events, it is expected that each year will bring more.

High winds are dangerous to people, structures, and systems.

Rainfall-Triggered Landslide

Berkeley has a number of deep-seated landslides in the hills that continuously move, with the rate of movement affected by rainfall and groundwater conditions. Significant localized areas of the Berkeley hills face risk from landslide, and a major slide could endanger lives and impact scores of properties, utilities and infrastructure.

Tsunami

Tsunamis, though rare inside the San Francisco Bay, can occur from large offshore subduction style earthquakes around the Pacific Rim. Small, local tsunamis can also result from offshore strike-slip faults such as parts of the San Andreas Fault of the Peninsula and the Hayward Fault through San Pablo Bay. The March 2011 Japan earthquake generated a devastating tsunami, which reached the Bay Area and caused minor damage to docks and floats in the Berkeley Marina. A larger tsunami could impact much more of Berkeley's western shores. Berkeley's maritime community, which would be greatly impacted, includes low income individuals and households. Buildings, infrastructure, and roadways could be damaged, and debris and hazardous materials could cause post-tsunami fires. Deaths are possible if individuals choose not to evacuate hazardous areas, do not understand tsunami warnings, or are unable to evacuate.

Floods

In Berkeley, three types of flooding typically occur: coastal flooding, creek flooding, and storm drain overflow. Creek flooding in Berkeley has the potential to affect an estimated 675 structures, mainly in the western, industrial area of the city. It is unlikely that floodwaters will reach higher than three feet, but damages to homes, businesses, and their contents could total over \$201 million. Storm drain overflow creates localized flooding in many known intersections in Berkeley. With few properties covered by flood insurance, these costs would be borne primarily by Berkeley residents and businesses.

Sea Level Rise

Warmer temperatures associated with climate change are causing global sea levels to rise. Recent scientific studies have begun to evaluate the impact of the shallow groundwater rising in low-lying coastal areas (like Berkeley) combined with sea level rise. According to the San Francisco Estuary Institute and the Pathways Climate Institute⁷, as sea levels rise in San Francisco Bay, shallow groundwater underneath low-lying coastal communities will also rise. Sea level rise and rising groundwater can damage buildings, transportation infrastructure, sewer and water systems, natural resources and ecosystems. Sea level rise will have disproportionate impacts on disadvantaged communities in Berkeley. The areas most likely to experience flooding with increased sea level rise are in West Berkeley, which has a higher percentage of communities of color and low-income communities.

Utility Interruption

Utility interruption is any loss of a public service including electrical service, telecommunications, wastewater and potable water, and natural gas.

Berkeley residents, visitors, businesses, institutions, and other partners rely on utilities for day-to-day life. Loss of utilities for prolonged period is particularly devastating for people with disabilities, people with access and functional needs, and people with low incomes that may not be able to purchase supplies and or relocate.

Utility interruption can be planned and include a warning, such as with PG&E Public Safety Power Shutoffs that proactively turn off electricity to mitigate wildfire risk, or come a secondary impact of the other natural hazards included in this plan. Utility interruption can also occur without a preceding natural hazard, for example maintenance and repair or accidental damage. The extent and severity of utility interruption depends on many factors, including cause, location, duration, and time of year. The probability of utility interruption is high, given the number of systems, aging infrastructure, and the variety of possible natural hazards.

Hazardous Materials Release

The City has identified fifteen facilities in Berkeley with sufficiently large quantities of toxic chemicals to pose a high risk to the community. Hazardous materials also travel through Berkeley by truck and rail. Natural hazards identified in the plan could trigger the release of hazardous materials. Over the last 25 years, Berkeley has seen a more than 90 percent reduction in the number of facilities with extremely hazardous materials. The City carefully tracks hazardous materials within its borders, and works closely with companies using large amounts of potentially dangerous materials.

Infectious Disease

Infectious diseases are illnesses caused by germs, such as bacteria, viruses, and fungi. They enter the body, multiply and cause an infection. Some infectious diseases are contagious, meaning they can spread from one person to another. The State of California has a list of over 95 communicable diseases that must be reported by healthcare providers or laboratories to local public health officials. All people in Berkeley are susceptible to infectious diseases. The populations at the highest risk for infectious diseases are the very young, the elderly, or individuals who are immunocompromised. Additionally, higher-poverty neighborhoods of color are at greater risk due to the effects of health and social inequalities.

Infectious diseases vary in their impact and severity. Recent outbreaks since 2019 include the COVID-19 pandemic and clusters of monkeypox virus. In most infectious disease outbreaks, the impact is limited, with the majority of illnesses treatable and the likelihood of fatalities low. Large-scale outbreaks like COVID-19 kill millions of people, completely alter daily life and social activities, threaten businesses and the global economy, and strain existing health care facilities.

Access and Functional Needs

This plan recognizes that many individuals that are still disproportionately vulnerable during disasters. People with access and functional needs are defined as community members who may have additional needs before, during and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care. Individuals in need of additional response assistance may include those who have disabilities, live in institutionalized settings, are elderly, are children, are from diverse cultures, have limited English proficiency, or are non-English speaking, or are transportation disadvantaged. An individual with a disability is defined by the ADA as a person who had a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment. The ADA does not specifically name all of the impairments that are covered.

Underserved Communities and Marginalized Populations

Disasters also disproportionately impact underserved communities and marginalized populations. For example, people of color and people with low incomes have been historically denied access to housing and resources, increasing their vulnerability to these shocks. The Mitigation Strategy in the 2024 LHMP identifies if or how each Action benefits underserved communities and socially vulnerable populations. The strategy prioritizes those actions that provide benefits to underserved communities and marginalized populations. Further, the 2024 LHMP includes a list of mitigation actions for individuals and households that are designed to be approachable and accessible to people in varying circumstances and with varying resources to draw from.

Summary of Changes to the Risk Assessment

The 2024 LHMP contains numerous updates to facts, figures, and descriptions. The City has incorporated the newest-available hazard data and incorporated new hazards into the Plan. The City and its partners have provided additional descriptions, details, and definitions to explain the science of these hazards and their potential impacts.

Within the previous events section for each hazard, the City has added information about any instances of the hazard affecting Berkeley since 2019. Throughout the plan, the City has updated financial loss estimates for inflation.

In some hazard sections, Risk and Loss Estimates include analysis from the Government Finance Officers Association (GFOA). GFOA is a nonprofit association of more than 23,000 state and local government finance professionals and elected officials from across North America. The City of Berkeley has been assessing the potential impacts of extreme events, like natural disasters, on the City government's financial condition, particularly its reserve levels for the General Fund. The City engaged the GFOA to produce a recommendation to help it decide the appropriate reserve level for the general fund, given the risks from extreme events. A key part of GFOA's mission is to promote best practices in public finance, including reserve policies. The analysis by GFOA also shed light on the potential broader economic losses to the community from the risks posed by extreme events.

Hazards Described in the 2024 Plan

For the first time, the plan identifies poor air quality, high wind, sea level rise, utility interruption, and infectious disease as hazards of concern. Significant changes and updates to the analysis of each hazard are described below:

Earthquake (Section B.2)

- The Earthquake section has been pared down to improve readability.
- The descriptions of vulnerable building types have been updated and now include photos.
- The map of potentially vulnerable buildings in Berkeley has been updated.

Wildland-Urban Interface Fire (Section B.3)

- This section has been updated to include the following:
 - Information about the Berkeley Overnight Camps and their fire risk.
 - Information about the 2017 Grizzly Fire.
 - A detailed description of fire weather, outlining Red Flag and Extreme Fire Weather days.
 - New data and narrative about wildfire risk in Berkeley from the National Institutes of Standards and Technology and East Bay Regional Parks.
- This section has been updated to include the following new maps that better contextualize the wildfire risk in Berkeley:
 - Fire Hazard Severity Zones in State Responsibility Area from Cal Fire
 - City of Berkeley Fire Zones 1, 2, and 3
 - Wildfire Hazard Map for Fire Prevention Planning which classifies the hazard from lowest to highest
 - Density of Structures in Berkeley Fire Zones 2 and 3
 - Wildfire Risk to Structures Map which combines the hazard classification with structure density to show the areas of higher wildfire risk to structures
 - Distance Between Structures in Berkeley Fire Zones 2 and 3
 - An updated map of the 1923 fire boundary

Extreme Heat Events (Section B.4)

- This section has been updated to include the following:
 - Information and a map showing thermal belting, the phenomenon where the Berkeley hills has higher temperatures than the rest of the city.
 - Graphics about forecasting heat risk.
 - Extreme heat events since 2019 in Berkeley.
 - Data and a map of excess emergency rooms visits on extreme heat days by zip code have been included demonstrating higher rates for people in central, south, and west Berkeley.
 - A map of cooling center locations in Berkeley.
 - New data for potential impacts and losses from a study of the 2006 heat wave in California showing the excess statewide healthcare costs and premature deaths.

Poor Air Quality (Section B.5)

- Poor air quality events are a newly-introduced hazard of concern for the 2024 LHMP.
- The poor air quality section describes the factors that contribute to poor air quality, how it is measured, and how it can concentrate in the Berkeley hills due to marine layer inversion. It also describes the chronic poor air quality issues from industry and transportation infrastructure in west and south Berkeley.

High Wind (Section B.6)

- High wind events are a newly introduced hazards of concern for the 2024 LHMP.
- The high wind section describes what constitutes high wind and the seasonality of wind events in Berkeley. High wind events are very closely connected to fire weather. However, high wind in any season can damage trees, infrastructure, and utilities.

Rainfall-Triggered Landslide (Section B.7)

- This section has been updated to include the following:
 - Landslide occurrences in Berkeley since 2019.
 - New maps of Berkeley using data from the California Landslide Inventory and Landslide Susceptibility Classes from the California Department of Conservation.

Tsunami (Section B.8)

- This section has been updated to include the following:
 - A new map of the Tsunami Inundation Zone, which was updated to reflect new science and feedback from local jurisdictions.
 - Updated maps of the Berkeley Tsunami Evacuation Phases from the Tsunami Evacuation Playbooks. These Playbooks, developed by the California Geological Survey, California Governor’s Office of Emergency Services, and the National Ocean and Atmospheric Administration (NOAA), reflect more refined and detailed planning, in which forecasted tsunami amplitudes, storm surge, and tidal information can help guide which areas might be inundated in different scenarios, depending on the extent of the event. This analysis uses helps NOAA to better predict inundation areas during actual tsunami events. Local emergency managers can use this information to better target evacuation areas during actual tsunami events.
 - Information about the 2023 tsunami advisory for Berkeley as a result of the underwater volcano eruption near Tonga.
 - New data and maps that show the probability of a tsunami occurring in Berkeley, expressed in 100-year, 200-year, 475-year, and 975-year return periods.
 - New data about the people and structures that might be impacted by a tsunami in Berkeley.

Sea Level Rise (Section B.9)

- Sea level rise is a newly introduced hazard of concern for the 2024 LHMP. It was listed in the 2019 LHMP as a related impact of climate change in that section, but did not have its own section.
- The section provides analysis of amounts of sea level rise anticipated under different projected carbon emissions scenarios, as well as maps of expected levels of inundation

from 2-ft, 4-ft, and 5.5-ft sea level rise scenarios using the Adapting to Rising Tides Bay Shoreline Flood Explorer.

- New studies about shallow groundwater rising and related maps are included.

Floods (Section B.10)

- This section has been updated to include the following:
 - Newly-revised flood exposure map for Berkeley using data from the FEMA National Flood Insurance Program.
 - A map of Community Calls for Service to report storm drain back up during the January 2023 winter storms.
 - Information about the most recent flooding in December 2022 and January 2023, which resulted in a Federal Major Disaster Declaration for Alameda County.

Utility Interruption (Section B.11)

- Utility interruption is a newly introduced hazard of concern for the 2024 LHMP. It was listed as secondary impact of several of the other hazards of concern in the 2019 LHMP. However, utility interruption can occur without a preceding hazard and can cause severe impacts, resulting in it receiving its own section in the 2024 update.
- This section describes the utility systems, who manages them, and what the impacts of interruptions (planned or not) can have on people and infrastructure.

Hazardous Materials Release (Section B.12)

- The Hazardous Materials Release section contains updated figures on the number of sites with hazardous materials in Berkeley.

Infectious Disease (Section B.13)

- Infectious disease is a newly introduced hazard of concern for the 2024 LHMP.
- This section describes infectious diseases, recent occurrences of outbreaks like the COVID-19 pandemic, and the potential impacts on people, daily life, and healthcare infrastructure.

Element C: Mitigation Strategy

Through many years of diligent effort by City government and the community, Berkeley has developed many innovative initiatives to increase our disaster resilience. The authorities, policies, programs and resources that Berkeley will use to support execution of the 2024 LHMP Mitigation strategy include:

- The City has strengthened its ability to serve the community during and after disasters by seismically upgrading or replacing buildings that house critical City functions. In 2022, work was completed on the North Berkeley Senior Center. In 2021, work was completed on the Live Oak Community Center.
- The City has worked diligently to enhance public safety and reduce physical threats from earthquakes by requiring owners of soft story and unreinforced masonry buildings to retrofit their structures.
 - Berkeley was the first city in the nation to inventory the community’s soft-story buildings. As of July 2023, 277 buildings have completed their retrofit, 26 still need to be retrofitted, and 61 buildings were removed from the list.
- The City offers a comprehensive suite of programs to encourage the community to strengthen buildings to be more hazard-resistant.
 - In early 2017, the Building and Safety Division developed a new Retrofit Grants program with funding from a Hazard Mitigation Grant from the Federal Emergency Management Agency (FEMA) and the California Governor’s Office of Emergency Services (Cal OES). As of August 2023, 63 design grants and 75 construction grants have been disbursed.
 - Since July 2002, the City has distributed over \$12 million to homeowners through the Transfer Tax Rebate Program, which reduces the real estate transfer tax to building owners who perform seismic safety work.
 - The City participates in the Earthquake Brace + Bolt (EBB) program, a grant program administered by the California Earthquake Authority, providing grants of up to \$3,000 for seismic retrofits of owner-occupied residential buildings with 1-4 dwelling units.
- The City, working together with key partners, is using a comprehensive strategy to aggressively mitigate Berkeley’s wildland-urban interface (WUI) fire hazard. These approaches include:
 - Prevention through development regulations with strict building and fire code provisions, as well as more restrictive local amendments for new and renovated construction;
 - Enforcement programs including annual inspections with support from the YouthWorks internship program;
 - Providing home hardening and defensible space materials and instructions to low income residents in targeted high risk areas;
 - Natural resource protection through vegetation management programs;
 - Improvement of access and egress routes;
 - Coordinating regional wildfire mitigation strategies with key partners and stakeholders;

- Infrastructure maintenance and improvements to support first responders' efforts to reduce facilitate emergency evacuation and fire spread.
- The City is embarking on an update to the General Plan, including a new Environmental Justice and Safety Element. These processes and documents will build off the 2024 LHMP and Planning Process.
- The City's Office of Emergency Services encourages community readiness and participation in hazard mitigation strategies. Through the 2024 LHMP Planning Process, the City created new videos, guides, and outreach materials intended to support community members in understanding their risks and what actions they can take to reduce risks.

These programs, and many others, place Berkeley as a leader in disaster management. Long-term maintenance and improvements to these programs will support execution of the 2024 LHMP Mitigation strategy, and will help to protect the Berkeley community in our next disaster.

Disaster Mitigation Goals

Berkeley will focus on five goals to reduce and avoid long-term vulnerabilities to the hazards identified in *Element B: Risk Assessment*:

- A. Reduce the potential for loss of life, injury, and economic damage to Berkeley residents and businesses from earthquakes, wildfires, landslides, floods, tsunamis, climate change, extreme heat, poor air quality, infectious disease, sea level rise, wind, utility disruption and their secondary impacts.
- B. Increase City government's ability to serve the community during and after hazardous events by mitigating risk to key City functions.
- C. Protect and enhance quality of life in Berkeley.
- D. Connect with residents, community-based organizations, institutions, businesses, and essential lifeline systems in order to increase mitigation actions and disaster resilience in the community.
- E. Co-create mitigation plans, policies, and programs with Berkeley's underserved communities, elevating the voices of these community members and prioritizing their needs to prepare for and adapt to climate change and natural hazards.

Overview of Actions

This plan identifies and analyzes 33 mitigation actions to reduce the impacts from hazards described in *Element B: Risk Assessment*. This suite of actions addresses every natural hazard posing a threat to Berkeley, with an emphasis on new and existing buildings and infrastructure.

Tables 2, 3, and 4 below summarize all of the actions. The tables group actions by their priority level (see *Element C.5* for details on prioritization of actions), and identify the hazard(s) and each action addresses.

Table 2. High-Priority Actions in mitigation strategy

Action	Hazards
Continue appropriate seismic and fire safety analysis based on current and future use for all City-owned facilities and structures.	Multi-hazard
Strengthen or replace City buildings in the identified prioritized order as funding is available.	Multi-hazard
Reduce hazard vulnerabilities for non-City-owned buildings throughout Berkeley.	Multi-hazard
Implementation of the Retrofit Grants Program which helps Berkeley building owners increase safety and mitigate the risk of damage caused by earthquakes	Earthquake
Continued Implementation of the Soft Story Retrofit Program, which mandates seismic retrofit of soft story buildings with 5+ residential units.	Earthquake
Complete the ongoing program to retrofit all remaining non-complying Unreinforced Masonry (URM) buildings.	Earthquake
Monitor passage and implementation of mandatory seismic retrofit ordinances for concrete buildings in other jurisdictions to assess best practices.	Earthquake
Reduce fire risk in existing development through fire code updates and enforcement.	Wildland-Urban Interface Fire
Reduce fire risk in existing development through vegetation management.	Wildland-Urban Interface Fire
Manage and promote pedestrian evacuation routes in Fire Zones 2 and 3.	Earthquake Wildland-Urban Interface Fire
Improve responder access and community evacuation in Fire Zones 2 and 3 through roadway maintenance and appropriate parking restrictions.	Earthquake Wildland-Urban Interface Fire
Research, identify, and implement infrastructure improvements to facilitate emergency evacuation.	Wildland-Urban Interface Fire Tsunami
Reduce fire risk through utility undergrounding.	Earthquake Wildland-Urban Interface Fire High Winds

Action	Hazards
Work with EBMUD to ensure an adequate water supply during emergencies and disaster recovery.	Earthquake Wildland-Urban Interface Fire
Reduce Berkeley’s vulnerability to extreme heat events and associated hazards.	Extreme Heat Poor Air Quality
Mitigate hazards associated with natural gas usage, including disaster damage and energy service disruption, by minimizing need for energy use and moving toward use of electricity in lieu of natural gas.	Multi-hazard
Mitigate hazardous materials release in Berkeley through inspection and enforcement programs.	Multi-hazard
Maintain City participation in the National Flood Insurance Program.	Floods
Maintain City programs and projects to mitigate the impacts of infectious diseases in Berkeley.	Infectious Disease
Collect, analyze and share information with the Berkeley community about Berkeley hazards and associated risk reduction techniques.	Multi-hazard
Coordinate with and encourage mitigation actions of key City partners.	Multi-hazard
Coordinate regional wildfire mitigation strategies with key partners and stakeholders	Wildland-Urban Interface Fire
Advance equitable community resilience, with a focus on disadvantaged communities.	Multi-hazard

Table 3. Medium-Priority Actions in mitigation strategy

Action	Hazards
Mitigate wildfire risk to Berkeley’s overnight camps.	Wildland-Urban Interface Fire
Reduce Berkeley’s vulnerability to severe storms and associated hazards through proactive research and planning, zoning regulations, and improvements to stormwater drainage facilities.	Landslide Floods
Reduce Berkeley’s vulnerability to extreme heat events and associated hazards.	Extreme Heat Poor Air Quality
Implement energy assurance strategies at critical City facilities.	Multi-hazard
Implement existing City programs, plans, and projects designed to reduce emissions that contribute to poor air quality.	Poor Air Quality Extreme Heat
Mitigate the impacts of sea level rise in Berkeley.	Sea Level Rise Flood

Table 4. Low-Priority Actions in mitigation strategy

Action	Hazards
Mitigate climate change impacts by integrating climate change research and adaptation planning into City operations and services.	Multi-hazard
Collaborate with partners to increase the security of Berkeley’s water supply from climate change impacts.	Multi-hazard
Mitigate Berkeley’s tsunami hazard.	Tsunami
Give priority to project applications that would rebuild to current standards following disasters.	Multi-hazard

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- 1 Detweiler, Shane and Wein, A., 2018, The HayWired Earthquake Scenario – Earthquake Hazards: U.S. Geological Survey Scientific Investigations Report 2017-5013-A-H, p.4
 - 2 Maranghides, A., et al. (2022) WUI Structure/Parcel/Community Fire Hazard Mitigation Methodology. NIST Technical Note 2205. National Institute of Standards and Technology. Gaithersburg, MD. <https://doi.org/10.6028/NIST.TN.2205>
 - 3 <https://cal-adapt.org/about/>
 - 4 California Adaptation Planning Guide, July 2012.
 - 5 Seo, H. (2022, August 19). How heat waves take a toll on Mental Health. The New York Times. <https://www.nytimes.com/2022/08/19/well/mind/heat-mental-health.html>
 - 6 Southerland, et al., 2021. “Assessing the Distribution of Air Pollution Risks within Cities: A Neighborhood-Scale Analysis Leveraging High-Resolution Data Sets in the Bay Area, California.” Environmental Health Perspectives, Volume 129, Issue 3. doi: 10.1289/EHP7679
 - 7 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. <https://www.sfei.org/documents/shallow-groundwater-response-sea-level-rise-alameda-marin-san-francisco-and-san-mateo>

Action Description	Proposed Activities
Advance equitable community resilience, with a focus on disadvantaged communities.	Work with community partners to co-create solutions to improve community resilience, including through the Climate Equity Collaborative.
Advance equitable community resilience, with a focus on disadvantaged communities.	Develop General Plan Environmental Justice Element and update the existing Safety Element, with community-identified priorities related to climate adaptation.
Collaborate with partners to increase the security of Berkeley's water supply from climate change impacts.	Support EBMUD through the design and environmental review process to expand recycled water pipelines in Berkeley and increase the security of the water supply.
Collaborate with partners to increase the security of Berkeley's water supply from climate change impacts.	Continue to partner with agencies such as EBMUD and StopWaste to encourage private property owners and public agencies (including the City government) to use sustainable landscaping techniques that require less water and energy to maintain.
Collaborate with partners to increase the security of Berkeley's water supply from climate change impacts.	Encourage water efficiency and conservation in existing buildings.

<p>Collect and share information with the Berkeley community about hazards and associated risk reduction techniques.</p>	<p>Create new formats and user friendly guidance to educate the public, especially underserved populations, on Berkeley hazards.</p>
<p>Collect and share information with the Berkeley community about hazards and associated risk reduction techniques.</p>	<p>Provide key hazard information and best practices to Berkeley's business and arts community through established networks, for example by exploring opportunities for local business to share best practices and resources during utility interruptions.</p>
<p>Complete the ongoing program to retrofit all remaining non-complying Unreinforced Masonry (URM) buildings.</p>	<p>Continue to work with owners of remaining potentially hazardous URM buildings.</p>
<p>Continue appropriate seismic and fire safety analysis based on current and future use for all City-owned facilities and structures.</p>	<p>Continue analysis of structures supporting critical emergency response and recovery functions, and make recommendations for structural and nonstructural improvements.</p>
<p>Continue implementation of the Soft Story Retrofit Program, which mandates seismic retrofit of soft story buildings with 5+ residential units.</p>	<p>Continue to inform impacted property owners of the requirement to seismically retrofit their buildings, including newly added properties to the soft story inventory.</p>
<p>Continue to implement the Retrofit Grants Program, which helps Berkeley building owners increase safety and mitigate the risk of damage caused by earthquakes.</p>	<p>Assist participating property owners with the grant process, including dissemination of program rules and guidelines and approving design and disbursement construction grants.</p>

<p>Continue to monitor passage and implementation of mandatory seismic retrofit ordinances for concrete buildings in other jurisdictions to assess best practices.</p>	<p>Continue to monitor mandatory seismic retrofit ordinances for concrete buildings passed by other municipalities for effectiveness and best practices. Communicate and collaborate with other cities and Structural Engineers Association of California (SEAOC) regarding implementation challenges and successes.</p>
<p>Coordinate regional wildfire mitigation strategies with key partners and stakeholders</p>	<p>Coordinate local fire mitigation, prevention, and funding strategies with the East Bay Hills Wildfire Prevention Coordination Group</p>
<p>Coordinate regional wildfire mitigation strategies with key partners and stakeholders</p>	<p>Coordinate regional efforts to mitigate wildfire risk in the Oakland - Berkeley hills through the Hills Emergency Forum</p>
<p>Coordinate with and encourage mitigation actions of key City partners.</p>	<p>Coordinate with and encourage mitigation actions of institutions serving the Berkeley community.</p>
<p>Implement energy assurance strategies at critical facilities.</p>	<p>Identify potential actions to mitigate energy assurance vulnerabilities at critical City facilities during planning/conceptual design of both retrofits and new construction.</p>
<p>Implement energy assurance strategies at critical facilities.</p>	<p>Provide guidance to help the City consider opportunities to design, finance and implement clean energy assurance strategies (e.g., photovoltaic-supplemented generation, energy efficiency activities, and/or mobile charging stations).</p>

<p>Implement energy assurance strategies at critical facilities.</p>	<p>Work with partners to identify additional non-City critical facilities and develop strategies to provide clean backup power at these sites.</p>
<p>Implement existing City programs, plans, and projects designed to reduce emissions that contribute to poor air quality.</p>	<p>Continue to implement the traffic safety capital construction projects identified and prioritized in the Berkeley Pedestrian Plan (2021), Berkeley Bicycle Plan (2017), Berkeley Vision Zero Action Plan (2020), and Berkeley Transit-First Implementation Plan; these projects are intended to encourage non-driving modes</p>
<p>Implement existing City programs, plans, and projects designed to reduce emissions that contribute to poor air quality.</p>	<p>Continue to implement the City's Electric Mobility Road Map which includes electric shared mobility (bikes and scooters) as well as electric and hybrid car-sharing, and the installation of public charging stations.</p>
<p>Implement existing City programs, plans, and projects designed to reduce emissions that contribute to poor air quality.</p>	<p>Transportation program coordination with transit providers, Berkeley Unified School District (Safe Routes to Schools), Berkeley Police Department (Vision Zero), and others, to promote transit efficiency and traffic safety for non-driving modes.</p>
<p>Improve responder access and community evacuation in Fire Zones 2 and 3 through roadway maintenance and appropriate parking restrictions.</p>	<p>Continue to enforce Fire Code requirement for fire fuel clearance on public roadways.</p>
<p>Improve responder access and community evacuation in Fire Zones 2 and 3 through roadway maintenance and appropriate parking restrictions.</p>	<p>With multiple agency partners, clear hazardous vegetation along 45 roadways in Fire Zone 2 protecting evacuation routes.</p>

<p>Improve responder access and community evacuation in Fire Zones 2 and 3 through roadway maintenance and appropriate parking restrictions.</p>	<p>Develop process to increase parking enforcement in fire-vulnerable areas during fire weather.</p>
<p>Improve responder access and community evacuation in Fire Zones 2 and 3 through roadway maintenance and appropriate parking restrictions.</p>	<p>Maintain and improve roadways in Fire Zones 2 and 3.</p>
<p>Maintain City participation in the National Flood Insurance Program.</p>	<p>Continue to use the most current FEMA information defining flood areas.</p>
<p>Maintain City participation in the National Flood Insurance Program.</p>	<p>Continue to incorporate FEMA guidelines and suggested activities into City plans and procedures for managing flood hazards.</p>
<p>Maintain City programs and projects to mitigate the impacts of infectious diseases in Berkeley.</p>	<p>Continue surveillance and epidemiology, which is the ongoing collection, analysis, interpretation, and sharing of data in order to prevent and control disease.</p>
<p>Maintain City programs and projects to mitigate the impacts of infectious diseases in Berkeley.</p>	<p>Implement non-pharmaceutical interventions, like personal protective measures such as masks and communitywide measures such as quarantining, aimed at reducing exposure.</p>

Manage and promote pedestrian evacuation routes in Fire Zones 2 and 3.	Publicize up-to-date maps of all emergency access and evacuation routes.
Manage and promote pedestrian evacuation routes in Fire Zones 2 and 3.	Maintain signage for public pathways to identify safe and accessible pedestrian evacuation routes from the hill areas.
Manage and promote pedestrian evacuation routes in Fire Zones 2 and 3.	Public Works Staff will maintain paths on an as-needed basis, and will coordinate with the Berkeley Path Wanderers to maintain public pathways to provide safe pedestrian evacuation routes from the hill areas.
Manage and promote pedestrian evacuation routes in Fire Zones 2 and 3.	Install handrails on all public pathways, prioritizing areas with high usage and steep inclines to increase pedestrian safety and accessibility.
Mitigate Berkeley's tsunami hazard at the Berkeley Marina.	<p>Continue to repair and replace damaged finger docks at the Berkeley Marina.</p> <p>Complete the demolition and replacement of D&E docks.</p> <p>Consider reconstruction or repair to J docks as funding becomes available.</p>
Mitigate Berkeley's tsunami hazard at the Berkeley Marina.	Collaborate with the California Office of Emergency Services, the California Geological Survey, and the Federal Emergency Management Agency to document and explore additional tsunami hazard mitigation measures for Berkeley's maritime communities.

<p>Mitigate climate change impacts by integrating climate change research and adaptation planning into City operations and services.</p>	<p>Develop and implement a process to integrate adaptation planning into City operations, including ways to address climate impacts in municipal capital and land use planning.</p>
<p>Mitigate hazardous materials release in Berkeley through inspection and enforcement programs.</p>	<p>Implement the following programs: ~Hazardous Materials Release Response Plans and Inventories (HMRRP) Program ~Implement California Accidental Release Prevention (CalARP) Program ~Underground Storage Tank (UST) Program Aboveground Petroleum Storage Act Requirement for Spill Prevention ~Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs ~Implement Hazardous Materials Management Plans (HMMP) and Hazardous Materials Inventory Statements per California Fire Code</p>
<p>Mitigate hazardous materials release in Berkeley through inspection and enforcement programs.</p>	<p>Enforce California Fire Code for Hazardous Materials Compliance (See Fire Code Action)</p>
<p>Mitigate hazards associated with natural gas usage, including disaster damage and energy service disruption, by minimizing need for energy use and moving toward use of electricity in lieu of natural gas.</p>	<p>Promote energy efficiency and electrification of buildings, both existing buildings and new construction.</p>
<p>Mitigate impacts of sea level rise</p>	<p>Continue to ensure new and existing public and private developments and infrastructure are protected from floods due to sea-level rise through the permitting process for new development and conditions.</p>

Mitigate impacts of sea level rise	Identify funding and nature based solutions to adapt to sea level rise at Berkeley Waterfront areas at risk of future inundation at the shoreline at the north segment of Marina Blvd between the Virginia Street Extension and the entrance to Cesar Chavez Park.
Mitigate impacts of sea level rise	Identify funding and nature based solutions to adapt to sea level rise at Berkeley Waterfront areas at risk of future inundation at the shoreline to the south of University Avenue between West Frontage Road and Marina Blvd.
Mitigate impacts of sea level rise	Identify funding and nature based solutions to adapt to sea level rise at Berkeley Waterfront areas at risk of future inundation at the northeast corner of the inner harbor of the Marina.
Mitigate impacts of sea level rise	Conduct a groundwater study on impacts of groundwater rise combined with sea level rise on underground toxic materials
Mitigate wildfire risk to Berkeley's overnight camps.	Analyze fire risk at overnight camps and identify appropriate mitigation actions.
Reduce Berkeley's vulnerability to extreme heat events and associated hazards.	Continue to seek out funding to use cool paving materials on streets when feasible to reduce urban heat island impacts.

<p>Reduce Berkeley’s vulnerability to extreme heat events and associated hazards.</p>	<p>Continue to implement energy efficiency ordinances for existing residential and commercial buildings to improve building comfort, including in extreme weather conditions, and to reduce energy use.</p>
<p>Reduce Berkeley’s vulnerability to extreme heat events and associated hazards.</p>	<p>Encourage passive and energy-efficient strategies to cool buildings such as natural ventilation, shading, insulation, cool roofs, whole-house fans, and heat pump HVAC systems.</p>
<p>Reduce Berkeley’s vulnerability to extreme heat events and associated hazards.</p>	<p>Monitor and support regional and State-level efforts to forecast the impact of climate change on temperatures and incidence of extreme heat events in Berkeley and the region, and integrate extreme heat event readiness, focusing on the most vulnerable populations impacted and improving access to resources, into City operations and services.</p>
<p>Reduce Berkeley’s vulnerability to extreme heat events and associated hazards.</p>	<p>Continue Urban Forestry Unit's tree maintenance and planting programs to increase canopy coverage for extreme heat events to provide shade and mitigate impacts from poor air quality.</p>
<p>Reduce Berkeley’s vulnerability to severe storms and associated hazards through proactive research and planning, zoning regulations, and improvements to stormwater drainage facilities.</p>	<p>Use development standards to ensure that new development does not contribute to an increase in flood potential.</p>

<p>Reduce Berkeley’s vulnerability to severe storms and associated hazards through proactive research and planning, zoning regulations, and improvements to stormwater drainage facilities.</p>	<p>Design public improvements such as streets, parks and plazas, for retention and infiltration of stormwater by diverting urban runoff to bio-filtration systems.</p>
<p>Reduce Berkeley’s vulnerability to severe storms and associated hazards through proactive research and planning, zoning regulations, and improvements to stormwater drainage facilities.</p>	<p>Renovate all eight tide tubes that remove storm water from Berkeley Aquatic Park and Potter Street to the Bay.</p>
<p>Reduce Berkeley’s vulnerability to severe storms and associated hazards through proactive research and planning, zoning regulations, and improvements to stormwater drainage facilities.</p>	<p>Complete a Stormwater Master Plan for all City stormwater infrastructure, to identify system deficiencies, establish a capital stormwater improvement plan, and identify funding mechanisms.</p>
<p>Reduce fire risk in existing development through fire code updates and enforcement.</p>	<p>Continue to evaluate inspection procedures and adjust inspection cycle annually based on changing climatic conditions.</p>
<p>Reduce fire risk in existing development through fire code updates and enforcement.</p>	<p>Maintain Fire Department efforts to reduce fire risk through inspections through annual building inspections in all Fire Zones, including Multi-unit-residential building inspections.</p>
<p>Reduce fire risk in existing development through fire code updates and enforcement.</p>	<p>Maintain Fire Department efforts to reduce fire risk through Defensible Space Inspections in Fire Zones 2 and 3.</p>
<p>Reduce fire risk in existing development through fire code updates and enforcement.</p>	<p>Continue YouthWorks pilot program to staff expansion of Defensible Space inspections in Fire Zones 2 and 3.</p>
<p>Reduce fire risk in existing development through fire code updates and enforcement.</p>	<p>Continue to periodically update the Berkeley Fire Code and adopt the California Fire Code with local amendments to incorporate the latest knowledge and State regulations to protect people and property against known risks in both structural and non-structural building and site components.</p>

Reduce fire risk in existing development through vegetation management.	Explore additional options to provide collaborative, citywide vegetation management on private and public property.
Reduce fire risk in existing development through vegetation management.	Maintain Weekly Curbside Plant Debris Collection
Reduce fire risk in existing development through vegetation management.	Pursue external funding to perform vegetation management on public and private property and to increase education and awareness of vegetation management standards for fire fuel reduction, home hardening, and ignition controls.
Reduce fire risk in existing development through vegetation management.	Maintain Fire Fuel Debris Bin Program
Reduce fire risk in existing development through vegetation management.	Maintain Fire Fuel Abatement Program on Public Land with technical assistance from WUI Division
Reduce fire risk in existing development through vegetation management.	Continue to allocate UC Settlement Funding to do vegetation management projects on UC Berkeley properties.
Reduce fire risk in existing development through vegetation management.	Maintain redesigned and expanded citywide fire fuel chipper program to provide curbside pickup, chipping, and disposal of vegetation material from residential properties.
Reduce fire risk through residential assistance program.	Continue to implement Resident Assistant Program pilot to provide home hardening materials and defensible space materials and instructions to low income residents in targeted high fire risk areas.

<p>Reduce fire risk through utility undergrounding.</p>	<p>Urge PG&E to perform utility undergrounding in Berkeley's Very High Fire Hazard Severity Zone (VHFHSZ) to mitigate wildfire risk and limit evacuation and ingress obstruction. Coordinate efforts with the State of CA Public Utilities Commission, and elected officials.</p>
<p>Reduce hazard vulnerabilities for non-City-owned buildings throughout Berkeley.</p>	<p>Continue to periodically update and adopt the California Building Standards Code with local amendments to incorporate the latest knowledge and design standards to protect people and property against known seismic, fire, flood and landslide risks in both structural and non-structural building and site components.</p>
<p>Reduce hazard vulnerabilities for non-City-owned buildings throughout Berkeley.</p>	<p>Explain requirements and provide guidance to owners of potentially hazardous structures to facilitate retrofit, including owners participating in the Earthquake Brace and Bolt program, Earthquake Soft Story Program, and those applying for Transfer Tax rebates.</p>
<p>Reduce wildfire risk throughout Berkeley by implementing the Action Plan identified in the Community Wildfire Protection Plan (CWPP).</p>	<p>Implement the Action Plan in the CWPP.</p>
<p>Research, identify, and implement infrastructure improvements to facilitate emergency evacuation.</p>	<p>Complete implementation of the Evacuation and Response Time Study to identify necessary roadway safety improvements, along with prioritized roadways, to facilitate safe evacuation during emergency scenarios.</p>
<p>Research, identify, and implement infrastructure improvements to facilitate emergency evacuation.</p>	<p>Complete evacuation analysis required by new State evacuation laws under SB99, AB747, and AB1409. Incorporate findings into the updated Safety Element of the General Plan.</p>
<p>Streamline the zoning permitting process to rebuild residential and commercial structures following disasters.</p>	<p>Give priority to project applications that would rebuild to current standards following disasters.</p>

Priority Level	Related Natural Hazard(s)	How would this benefit underserved communities and socially vulnerable populations?	Lead Office, Division, or Department
High	Multihazard	The Climate Equity Collaborative represents underserved communities, and will directly benefit these communities through meaningful involvement to identify needs and priorities.	Planning Department: Office of Energy and Sustainable Development
High	Multihazard	Direct benefit through involvement to identify needs/solutions	Planning Department: Land Use Division Planning Department: Office of Energy and Sustainable Development
Low	Multihazard	Water security and efficiency will have financial benefits in addition to environmental benefits, especially for disadvantaged and/or low-income communities.	Public Works Department Planning Department: Office of Energy and Sustainable Development
Low	Multihazard	Underserved communities are most impacted by climate change.	Planning Department: Office of Energy and Sustainable Development
Low	Multihazard	Water efficiency and conservation will have financial benefits in addition to environmental benefits, especially for disadvantaged and/or low-income communities.	Planning Department: Office of Energy and Sustainable Development

High	Multihazard	Ensure that underserved communities have access to hazard information and materials.	Fire Department - Office of Emergency Services
High	Multihazard	Small businesses, arts organizations, and nonprofits often serve socially vulnerable populations. Small businesses and cultural institutions themselves run on small margins and are especially vulnerable to shocks and stresses.	City Manager's Office - Office of Economic Development
High	Earthquake	Multi-unit housing is more affordable and serves a large percentage of socially vulnerable and underserved communities. Inspections help to ensure the safety of this housing stock.	Planning Department: Building and Safety Division
High	Multihazard	City facilities and structures serve socially vulnerable populations day to day and during emergencies.	Public Works Department: Supervising Civil Engineer for Facilities
High	Earthquake	Multi-unit housing is more affordable and serves a large percentage of socially vulnerable and underserved communities. Inspections help to ensure the safety of this housing stock.	Planning Department: Building and Safety Division
High	Earthquake	Multi-unit housing is more affordable and serves a large percentage of socially vulnerable and underserved communities. Inspections help to ensure the safety of this housing stock.	Planning Department: Building and Safety Division

High	Earthquake	Multi-unit housing is more affordable and serves a large percentage of socially vulnerable and underserved communities. Inspections help to ensure the safety of this housing stock.	Planning: Building and Safety Program and Administration Manager
High	WUI Fire	Wildfires disproportionately impacts people with access and functional needs and collaborating with local partners helps reduce wildfire risks.	Fire Department - WUI Division
High	WUI Fire	Wildfires disproportionately impacts people with access and functional needs and collaborating with local partners helps reduce wildfire risks.	Fire Department - WUI Division
High	Multihazard	Benefits institutions serving the Berkeley community.	Fire Department: Office of Emergency Services
Medium	Multihazard Utility Interruption	City facilities and structures serve socially vulnerable populations day to day and during emergencies.	Public Works Department: Supervising Civil Engineer (Facilities)
Medium	Multihazard Utility Interruption	Clean energy assurance solutions could provide backup and critical power benefit underserved communities who wouldn't otherwise have access to power during an emergency.	Planning Department: Office of Energy and Sustainable Development

Medium	Multihazard Utility Interruption	By working with organizations serving disadvantaged communities to help advance their energy assurance, this would directly benefit both underserved organizations and community members served by these organizations.	Planning Department: Office of Energy and Sustainable Development
Medium	Extreme Heat Poor Air Quality	Poor air quality disproportionately impacts communities of color, and South and West Berkeley.	Public Works Department - Transportation Division
Medium	Extreme Heat Poor Air Quality	Poor air quality disproportionately impacts communities of color, and South and West Berkeley.	Public Works Department - Transportation Division
Medium	Extreme Heat Poor Air Quality	Poor air quality disproportionately impacts communities of color, and South and West Berkeley.	Public Works Department - Transportation Division
High	WUI Fire	Wildfires disproportionately impact people with access and functional needs and enforcing the Fire Code reduces risks.	Fire Department: WUI Division
High	WUI Fire	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Fire Department: WUI Division

High	WUI Fire	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Fire Department: Office of the Fire Chief Public Works Department: Transportation Division Police Department: Traffic Division
High	WUI Fire	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Public Works Department: Supervising Civil Engineer
High	Flood	Flooding disproportionately impacts in South and West Berkeley.	Public Works Department: Manager of Engineering
High	Flood	Flooding disproportionately impacts in South and West Berkeley.	Planning Department: Land Use Division
High	Infectious Disease	In Alameda County, communities of color face inequitable conditions that increase the risk of chronic diseases	Health, Housing & Community Services Department, Public Health Officer Unit, Public Health Division
High	Infectious Disease	In Alameda County, communities of color face inequitable conditions that increase the risk of chronic diseases	Health, Housing & Community Services Department, Public Health Officer Unit, Public Health Division

High	WUI Fire	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Department of Information Technology: GIS Division- GIS Coordinator Fire: OES- Emergency Services Coordinator
High	WUI Fire	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Public Works Department: City Traffic Engineer
High	WUI Fire	Ensure that people with access and functional needs can use the pedestrian paths.	Public Works Department: Assistant Public Works Engineer
High	WUI Fire	Ensure that people with access and functional needs can use the pedestrian paths.	Public Works Department - Traffic Engineering
Low	Tsunami	10% of Marina boaters have a permit to live aboard their vessels. Many of these boaters are low-income.	Parks, Recreation, and Waterfront Department: Waterfront Division
Low	Tsunami	10% of Marina boaters have a permit to live aboard their vessels. Many of these boaters are low-income.	Fire Department: Office of Emergency Services Parks, Recreation, and Waterfront Department: Waterfront Division

Low	Multihazard	Underserved communities are most impacted by climate change.	Planning Department: Office of Energy and Sustainable Development
High	Multihazard Hazardous Materials Release	Hazardous materials are located in south and west Berkeley.	Planning Department: Toxics Division
High	Multihazard Hazardous Materials Release	Hazardous materials are located in south and west Berkeley.	Fire Department: Fire Prevention Division
High	Multihazard	City funds are targeted at underserved populations.	Planning Department: Office of Energy and Sustainable Development
Medium	Sea Level Rise	Waterfront provides many free and low-cost recreational amenities for the community and is adjacent to lower-income communities in South and West Berkeley, which historically had fewer parks and less green space.	Planning Department: Land Use Division

Medium	Sea Level Rise	Waterfront provides many free and low-cost recreational amenities for the community and is adjacent to lower-income communities in South and West Berkeley, which historically had fewer parks and less green space.	Parks, Recreation, and Waterfront Department
Medium	Sea Level Rise	Waterfront provides many free and low-cost recreational amenities for the community and is adjacent to lower-income communities in South and West Berkeley, which tend to have fewer parks and green space.	Parks, Recreation, and Waterfront Department
Medium	Sea Level Rise	Waterfront provides many free and low-cost recreational amenities for the community and is adjacent to lower-income communities in South and West Berkeley, which tend to have fewer parks and green space.	Parks, Recreation, and Waterfront Department
Medium	Sea Level Rise	There is a risk of underground toxic materials shifting as groundwater and sea level rise, impacting those nearby. This study will shed light on potential impacts, on places such as West Berkeley which has a history of industrial use and environmental pollution, and is also where many low-income and disadvantaged communities live.	Planning Department: Office of Energy and Sustainable Development
Medium	WUI Fire	The Berkeley overnight camps offer opportunities for recreations for people with access and functional needs and people with low incomes.	Fire Department - WUI Division Parks, Recreation, and Waterfront Department
Medium	Extreme heat	Urban heat island effects are more prominent in the Berkeley flats, which are more paved and less vegetated, and which is where more underserved communities live.	Planning Department: Office of Energy and Sustainable Development

Medium	Extreme heat	Extreme heat in places with bad ventilation or uncomfortable conditions impact the health and wellbeing of elderly and disabled populations.	Planning Department: Office of Energy and Sustainable Development
Medium	Extreme heat	Extreme heat in places with bad ventilation or uncomfortable conditions impact the health and wellbeing of elderly and disabled populations.	Planning Department: Office of Energy and Sustainable Development
Medium	Extreme Heat	Low income populations have less access to resources and readiness. Extreme heat impacts the flats due to urban heat island effect, and there is a large low-income population living in the flats.	Fiire Department: Office of Emergency Services Planning Department: Office of Energy and Sustainable Development
Medium	Extreme Heat Poor Air Quality	Reduces heat island effect, mitigates through carbon sequestration	Parks, Recreation, and Waterfront Department - Parks Division - Urban Forestry Unit
Medium	Flood	Flooding disproptrtonally impacts in South and West Berkeley.	Planning Department: Land Use Division

Medium	Flood	Flooding disproportionately impacts in South and West Berkeley.	Public Works: Engineering
Medium	Flood	Flooding disproportionately impacts in South and West Berkeley.	Parks, Recreation, and Waterfront Department
Medium	Flood	Flooding disproportionately impacts in South and West Berkeley.	Public Works: Engineering
High	WUI Fire	Wildfires disproportionately impact people with access and functional needs and ensuring inspections are up to date reduces risk.	Fire Department - WUI Division
High	WUI Fire	Multi-unit housing is more affordable and serves a large percentage of socially vulnerable and underserved communities. Inspections help to ensure the safety of this housing stock.	Fire Department: Fire Prevention Division
High	WUI Fire	Provides career and workforce development in public safety for local youth.	Fire Department: WUI Division
High	WUI Fire	Provides career and workforce development in public safety for local youth.	Fire Department - WUI Division
High	WUI Fire	The Fire Code incorporates the latest knowledge in protecting the diverse buildings that house the Berkeley community.	Fire Department: Fire Prevention Division

High	WUI Fire	Expand access to vegetation management.	Fire Department - WUI Division
High	WUI Fire	Expand access to vegetation management.	Public Works Department: Zero Waste Division
High	WUI Fire	Expand access to vegetation management.	Fire Department - WUI Division
High	WUI Fire	Expand access to vegetation management.	Public Works Department: Zero Waste Division
High	WUI Fire	Expand access to vegetation management.	PRW: Senior Landscape Supervisor WUI Division
High	WUI Fire	Expand access to vegetation management.	Fire Department - WUI Division
High	WUI Fire	Expanded program provides access to vegetation management support to all City residents and is no longer limited.	Fire Department - WUI Division
High	WUI Fire	Provides subsidized materials to residents at greatest risk of WUI fire.	Fire Department - WUI Division

High	WUI Fire Earthquake High Wind	Berkeley's Very High Fire Severity Zone has residents with access and functional needs that may have trouble evacuating in a wildfire.	Berkeley City Council
High	Multihazard	Underserved communities live in old housing stock and multi-family buildings.	Planning Department: Building and Safety Division
High	Multihazard	Underserved communities live in old housing stock and multi-family buildings.	Planning Department: Building and Safety Division Finance Department (for Transfer Tax applications and disbursement)
High	WUI Fire	The CWPP has identified actions that support low income residents in conducting home hardening and vegetation management.	Fire Department: WUI Division
High	Multihazard	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Fire Department
High	Multihazard	Evacuation is more difficult for people with disabilities and people with access and functional needs.	Fire Department: Office of Emergency Services
Low	Multihazard	This makes it easier to rebuild post disaster, hopefully allowing for diverse populations to stay in Berkeley.	Planning Department: Land Use Division

Funding Sources	Timeline
Seed funding secured through the Climate Equity Fund Pilot (\$100,000 for the Climate Equity Collaborative)	Ongoing
Funding obtained through a \$497,042 Adaptation Planning Grant Program from the CA Governor's Office of Planning and Research. City General Fund and Enterprise Fund.	Short term (1-5 years)
Federal funding from Water Resources Development Act and EBMUD	Long term (5-10 years)
City General Fund City Permit Service Center Fund City Enterprise Fund	Ongoing
City General Fund	Ongoing

City General Fund	Ongoing
City General Fund	Ongoing
Hazard Mitigation Grant Program (HMGP)	Ongoing
City General Fund T1 Bond	Ongoing
Hazard Mitigation Grant Program (HMGP)	Ongoing
Hazard Mitigation Grant Program (HMGP)	Ongoing

City General Fund	Ongoing
City General Fund Measure FF	Ongoing
City General Fund Measure FF	Ongoing
City General Fund Measure GG	Ongoing
City General Fund T1 Bond Measure GG Ratepayer funds from PG&E East Bay Community Energy Grants from Energy Foundation Urban Sustainability Directors Network California Energy Commission California Air Resources Board	Ongoing
City General Fund	Ongoing

City General Fund	Ongoing
City General Fund County Transportation Sales Tax	Ongoing
City General Fund County Transportation Sales Tax	Ongoing
City General Fund County Transportation Sales Tax	Ongoing
Measure FF	Ongoing
Measure FF Cal Fire Grant	Ongoing

Measure FF	Ongoing
City General Fund	Ongoing
City General Fund Permit Service Center Enterprise Fund Measure M Bond Funds Building Resilient Infrastructure and Communities (BRIC) Grant Program Hazard Mitigation Grant Program (HMGP)	Ongoing
City General Fund Permit Service Center Enterprise Fund Measure M Bond Funds Building Resilient Infrastructure and Communities (BRIC) Grant Program Hazard Mitigation Grant Program (HMGP)	Ongoing
Public Health Emergency Preparedness Grants Future of Public Health Grant City General Fund	Ongoing
Public Health Emergency Preparedness Grants	Ongoing

City General Fund	Ongoing
City General Fund	Ongoing
City General Fund	Ongoing
City General Fund	Short term (1-5 years)
T1 State Coastal Conservancy City General Fund Marina Fund Building Resilient Infrastructure and Communities (BRIC) Grant Program Hazard Mitigation Grant Program (HMGP) City General Fund City-Issued Bonds	Ongoing
Building Resilient Infrastructure and Communities (BRIC) Grant Program Hazard Mitigation Grant Program (HMGP) City General Fund City-Issued Bonds	Ongoing

	Ongoing
City General Fund	
City General Fund	Ongoing
City General Fund	Ongoing
City General Fund	Ongoing
City General Fund	Ongoing

State Coastal Conservancy Grant	Short term (1-5 years)
FHWA PROTECT Discretionary Grant Program	Short term (1-5 years) (if FHWA grant received)
Adapting to Rising Tides, San Francisco Bay Conservation & Development Commission, National Oceanic & Atmospheric Administration, Urban Sustainability Director's Network, or Resource Legacy Fund	Long term (5-10 years)
This work is included in the funding obtained through a \$497,042 Adaptation Planning Grant Program from the CA Governor's Office of Planning and Research	Short term (1-5 years)
Measure FF	Short term (1-5 years)
State grants from Office of Planning and Research	Ongoing

City General Fund	Ongoing
City General Fund	Ongoing
City General Fund	Ongoing
Parks Tax State of CA Environmental Enhancement and Mitigation Project Grant State of CA Urban Greening Grant Urban and Community Forestry Grants through the Inflation Reduction Act	Short term (grant-funded efforts will be completed by end of FY27) and ongoing
City General Fund	Ongoing

City General Fund Permit Service Center Enterprise Fund Measure M Bond Funds Building Resilient Infrastructure and Communities (BRIC) Grant Program Hazard Mitigation Grant Program (HMGP)	Ongoing
Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) Grant Parks Tax	Medium Term (3-5 years)
City Stormwater Fund (\$1.5M) City General Fund (\$400k)	Short term (1-5 years)
Measure FF	Ongoing
City General Fund UC Settlement Fund	Ongoing
Measure FF YouthWorks Program funds	Ongoing
Measure FF Youth Works Program funds	Ongoing
City General Fund UC Settlement Fund Permit Service Center Enterprise Fund	Ongoing

Measure FF	Short term (1-5 years)
City General Fund Refuse Fee	Ongoing
Measure FF City General Fund	Ongoing
City General Fund Refuse Fee	Ongoing
City General Fund Refuse Fee Measure FF	Ongoing
UC Settlement Fund	Ongoing
Measure FF	Ongoing
Measure FF	Short term (1-5 years)

City General Fund	Short term (1-5 years)
City General Fund	Ongoing
City General Fund	Ongoing
Measure FF Cal Fire Grants	Ongoing
Measure FF	Short term (1-5 years)
Measure FF	Short term (1-5 years)
City General Fund	Short term (1-5 years)

Action Description	Proposed Activities	Priority Level	Related Natural Hazard(s)
Reduce fire risk in existing development through vegetation management.	Explore options for developing a City-run hand crew to implement vegetation management projects on public and private property.	High	WUI Fire
Reduce fire risk through community-focused education, training, and fire code updates.	Conduct multi-unit-residential building inspections in all Fire Zones.	High	WUI Fire
Reduce fire risk through community-focused education, training, and fire code updates.	Using community volunteers, through WUI Ambassador Program, to educate people city-wide on vegetation management, home hardening, and defensible space.	High	WUI Fire
Reduce fire risk through community-focused education, training, and fire code updates.	Conduct annual building inspections in all Fire Zones.	High	WUI Fire
Advance opportunities for water reuse.	Research and support opportunities to advance purple pipe implementation.	Medium	Multi
Reduce Berkeley's vulnerability to extreme heat events and associated hazards.	Tree planting/urban forestry program	High	Poor Air Quality, Extreme Heat
Reduce flood risk	Nature based solutions at shoreline	Medium	Flooding
Implement existing City programs, plans, and projects designed to reduce emissions that contribute to poor air quality.	Continue to manage on-street parking and maintain City parking garages to reduce emissions by making it easier to find a parking space more quickly (reducing the time spent circling around looking for parking).	Air Quality	Extreme Heat, Poor Air Quality

Strengthen or replace City buildings in the identified prioritized order as funding is available.	South Berkeley Senior Center	High	Multihazard
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How would this benefit underserved communities and socially vulnerable populations?	Lead Office, Division, or Department	Funding Sources	Timeline
Expand access to vegetation management. Potential workforce development opportunity people who were formerly incarcerated.	Fire Department - WUI Division	Measure FF	Long Term
Lower income people live in multi-residential-unit housing.	Fire Department - Fire Prevention	General Fund	Ongoing
Expand access to educational programs and reach people who would not otherwise receive information.	Fire Department - WUI Division	Measure FF	Short term (1-5 years)
	Fire Department - Fire Prevention	General Fund	Ongoing
Increases the security of Berkeley's water supplies from climate change impacts for all residents	Planning and Public Works	EBMUD is expected to fund	2024-2030 (estimated)
Reduces heat island effect, mitigates through carbon sequestration	Parks and Rec	In progress; needs PRW vetting and input	In progress; needs PRW vetting and input
Underserved communities are most likely to live in/near areas that would be impacted	Public Works and Parks	Needs PRW/PW vetting and input	Needs PRW/PW vetting and input
Poor air quality disproportionately impacts communities of color, and South and West Berkeley.	Public Works Department - Transportation Division	City funds, County Transportation Sales Tax, and Grant Funding	Ongoing

The South Berkeley Senior Center serves South Berkeley, the area of Berkeley with higher numbers of people of color and low income residents.	Parks, Recreation, and Waterfront Department	CRC grant	Short term (1-5 years)
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Notes

Action considered but for longer time than in the next five years.

Goal, but need more capacity

Pilot program in 2023-24, need to evaluate what next steps might be

Goal, but need more capacity

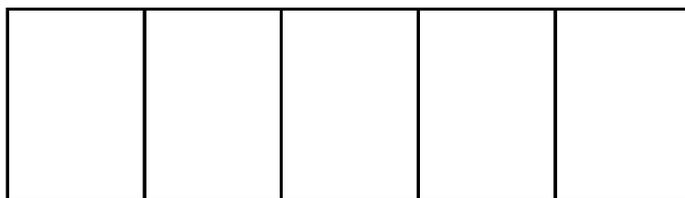
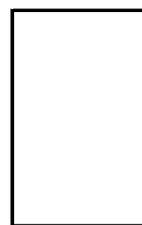
Goal, but not the top of the priority list

Some new actions included around urban forestry, but room to build out more capacity in the future

Some new actions included around nature based solutions on the shoreline, but room to build out more capacity in the future

This is something that the City does and has infrastructure for, but not entirely sure the research is there that it helps reduce emissions. Further work to expand air quality mitigation measures for next round

The City applied for a CRC grant to fund this effort, but was not awarded. New funding must be identified.



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