Zero Waste Commission

City of Berkeley
ZERO WASTE COMMISSION
Regular Meeting

Thursday, June 20, 2024 at 5:30 p.m.
City of Berkeley Corporation Yard (Ratcliff Building, Willow Room)
1326 Allston Way, Berkeley, CA, 94702

MEETING AGENDA

PRELIMINARY MATTERS:

5:30 pm 1. Call to Order by Chair and Roll Call by Secretary

- **Steven Sherman (Chair),** appointed by CM Rashi Kesarwani, District 1
- **Christienne de Tournay (Vice Chair),** appointed by CM Sophie Hahn, District 5
- **Corey Busay,** appointed by Mayor Jesse Arreguin
- **VACANT**, appointed by CM Terry Taplin, District 2
- **Dennis Uyat**, appointed by CM Ben Bartlett, District 3
- **VACANT,** appointed by CM Kate Harrison, District 4
- **Sandra Curtis,** appointed by CM Susan Wengraf, District 6
- **Swasti Johri**, appointed by CM Rigel Robinson, District 7
- **VACANT**, appointed by CM Mark Humbert, District 8

5:35 pm 2. Approve Meeting Agenda and Order of Agenda Items

5:40 pm 3. Approve Draft Action Minutes:

- May 16, 2024 Regular Meeting*

5:45 pm 4. Public Comment on Items Not on the Agenda
Speakers are allotted up to two minutes. Speakers may be allotted less time at the discretion of the Chair.

5:55 pm 5. Commissioner Announcements
Commissioners may make general announcements; no action will be taken.

6:00 pm 6. Staff Updates:

- Progress on SB-1383 Implementation

DISCUSSION AND ACTION ITEMS:
Members of the public may provide comments at the end of each discussion item and prior to the vote of the Commission on any action items. Speakers are allotted up to 2 minutes.

6:15 pm 1. Presentation of Zero Waste Legislative Updates from Californians Against Waste Representative

6:45 pm 2. Report out from the Special Events Subcommittee and Green Building Subcommittee

7:00 pm 3. Discuss the City's First Draft Local Hazard Mitigation Plan (LHMP)

7:10 pm 4. Discuss Legislative Updates

7:20 pm 5. Discuss Future Agenda Items

7:30 pm 6. Adjournment

INFORMATION ITEMS:
Information items may be moved to discussion but no action will be taken.

1. *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)
2. *May 2024 Californians Against Waste Legislative Updates

COMMUNICATIONS:
Communications from the public are included as links or attachments in the agenda packet.

***Indicates material included in the agenda packet**
**** Indicates material to be available at the meeting**

ADA Disclaimer: This meeting is being held in a wheelchair-accessible location. To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services Specialist at 981-6418 (V) or 981-6347 (TDD) at least three business days before the meeting date. Please refrain from wearing scented products to this meeting.

SB 343 Disclaimer:
Any writings or documents provided to a majority of the Commission regarding any item on this agenda will be made available for public inspection at the Public Works Department located at the address below.

Communications Disclaimer:
Communications to Berkeley boards, commissions or committees are public record and will become part of the City's electronic records, which are accessible through the City's website. Please note: e-mail addresses, names, addresses, and other contact information are not required, but if included in any communication to a City board, commission or committee, will become part of the public record. If you do not want your e-mail address or any other contact information to be made public, you may deliver communications via U.S. Postal Service or in person to the secretary of the relevant board, commission or committee. If you do not want your contact information included in the public record, please do not include that information in your communication. Please contact the secretary to the relevant board, commission or committee for further information.

Commission Secretary:
Julia A. Heath, Recycling Program Manager,
Zero Waste Division, 1201 Second St. Berkeley, CA 94710
510-981-6357
jheath@berkeleyca.gov

To: CAW Local Government Collaborative
From: Californians Against Waste
Date: May 1, 2024
RE: May 2024 Legislative Update

Last Friday, the legislature completed its final policy committee hearings for bills in their House of Origin. Bills will be heard next in their respective Appropriations Committee, with the majority of the bills getting referred to the "Suspense File". The Assembly and Senate Appropriations Committees will hold simultaneous hearings ahead of the **May 17** deadline to read off which bills will be released from their respective Suspense Files. Bills will then head to the floor where they will be voted on by the Senate or Assembly by **May 24** to continue on in the legislative process.

With the new leadership in the Legislature, there are new chairs for both the Assembly and Senate Appropriations Committees: Assemblymember Buffy Wicks and Senator Anna Caballero.

If you are interested in adding your support to any of our priority bills, please email nicklapis@cawrecycles.org and krystal@cawrecycles.org with your name, e-signature and affiliation.

Californians Against Waste Priority Bills

Bill	Author	Description	Status
SB 1053	**Blakespear & Allen**	**Closing the Plastic Bag Loophole** - Would eliminate the use of "thicker" plastic film bags by establishing requirements for reusable bags sold by stores to customers at the point of sale. It would also revise the definition of "recycled paper bag" to require it to be made exclusively from post consumer recycled content. An identical version of this bill was introduced by Assemblymember Bauer-Kahan - AB 2236. *Author-sponsored, strongly supported by Californians Against Waste*	Passed Senate Environmental Quality Committee Will be heard 5/6 by the Assembly Appropriations Committee & is expected to be placed on the "Suspense File"
AB 2236	**Bauer-Kahan**	**Closing the Plastic Bag Loophole** - Would eliminate the use of "thicker" plastic film bags	Passed Assembly Natural Resources Committee

		by establishing requirements for reusable bags sold by stores to customers at the point of sale. It would also revise the definition of “recycled paper bag” to require it to be made exclusively from post consumer recycled content. An identical version of this bill was introduced by Senators Blakespear & Allen - SB 1053. *Author-sponsored, strongly supported by Californians Against Waste*	Awaiting Assembly Appropriations Committee Suspense Hearing
AB 660	**Irwin**	**Simplifying Expiration Dates** - Requires food manufacturers to use uniform terminology when labeling their products with "safety" or "quality" dates and bans the use of consumer-facing "sell-by" dates. *Co-sponsored by Californians Against Waste and Natural Resources Defense Council. This bill was introduced in 2023.*	Awaiting a hearing in Senate Agriculture Committee
AB 2577	**Irwin**	**Regulating Expiration Dates** - Would require CalRecycle to include product labeling requirements that reduce food waste in existing edible food recovery efforts. *Sponsored by Californians Against Waste*	Passed Assembly Natural Resources Committee Awaiting Assembly Appropriations Committee Suspense Hearing
AB 2761	**Hart & Lowenthal**	**Reducing Toxics in Packaging Act** - Would prohibit use of vinyl plastic (PVC/PVDC) in packaging, as well as prohibiting fluorination of plastic packaging (PFAS). *Co-sponsored by Breast Cancer Prevention Partners, Californians Against Waste, Clean Water Action, and Natural Resources Defense Council*	Passed Assembly Environmental Safety & Toxic Materials Committee and Assembly Judiciary Committee Was heard on 5/1 by the Assembly Appropriations Committee & was placed on the “Suspense File”

CAW-Tracked Assembly Bills

Bill	Author	Description	Status

AB 2	**Ward**	Would expand existing e-waste programs to include consumer photovoltaic solar panels and establish a producer-run program for commercial and leased panels. *Note: This bill is sponsored by the California Product Stewardship Council.*	Awaiting Senate Appropriations Committee Suspense Hearing
AB 347	**Ting**	Would allow CalRecycle to impose fines on manufacturers for violating existing prohibitions on PFAS in food-related packaging and cookware.	Awaiting a vote on Senate Floor
AB 408	**Wilson**	Would place the Climate-resilient Farms, Sustainable Healthy Food Access, and Farmworker Protection Bond on to the November ballot, including $200 million for organics infrastructure.	Awaiting Assembly Appropriations Committee Suspense Hearing *Note: As a bond that would go on the ballot, this bill is a ⅔ vote and doesn't need to follow the same timelines.*
AB 863	**Aguiar-Curry**	Would increase potential penalties on CARE from $10,000 to $50,000 per day, as well as stipulate that repeated violations render a stewardship organization ineligible to continue operating. *Note: This bill is sponsored by the National Stewardship Action Council and the author and sponsor are in active conversations with stakeholders about broad amendments.*	Awaiting a vote on Senate Floor
AB 1238	**Ward**	Would require the Department of Toxic Substances Control to develop alternative management standards for photovoltaic modules. *Note: While this bill is designed to support the recycling of PV Panels, we remain concerned that the bill could also unintentionally pave the way for more pyrometallurgical (smelting) facilities in the state.*	Awaiting a hearing in Senate Environmental Quality Committee
AB 1567	**Garcia**	Would place the Safe Drinking Water, Wildfire Prevention, Drought Preparation, Flood Protection, Extreme Heat Mitigation, Clean Energy, and Workforce Development Bond on	Awaiting a hearing in Senate Natural Resources & Water Committee and Senate Governance & Finance

		the November ballot, including $50 million for organics infrastructure.	Committee *Note: Senate Governance & Finance Committee is not active this year, this bill has been sent back to review by Senate Rules Committee and is likely to be single referred to Senate Natural Resources and Water.*
AB 2214	**Bauer-Kahan & McKinnor**	Creates a workgroup to implement Statewide Microplastics Strategy.	Passed Assembly Water, Parks & Wildlife Committee and Assembly Environmental Safety & Toxic Materials Committee Will be heard 5/1 by the Assembly Appropriations Committee & is expected to be placed on the "Suspense File"
AB 2244	**Ting**	Bans bisphenols (the chemical family that includes BPA) in paper receipts.	Passed Assembly Environmental Safety & Toxic Materials Committee and Assembly Judiciary Committee Will be heard 5/1 by the Assembly Appropriations Committee & is expected to be placed on the "Suspense File"
AB 2311	**Bennett**	Would expand existing CalRecycle grants to include eligibility for transportation for edible food recovery projects.	Passed Assembly Natural Resources Committee Awaiting Assembly Appropriations Committee Suspense Hearing
AB 2313	**Bennett**	Establishes the Regional Farmer Equipment and Cooperative Resources Assistance Pilot Program as part of the Farmer Equity Act.	Passed Assembly Agriculture Committee Awaiting Assembly Appropriations Committee Suspense Hearing
AB 2346	**Lee**	Provides additional procurement options for local jurisdictions in meeting their SB 1383 requirements. As introduced, the bill will allow compost procured from community, on-farm,	Passed Assembly Appropriations Committee On the Assembly Floor,

		and backyard compost to count towards a jurisdiction's procurement requirement. It also allows investments in organics infrastructure to count towards procurement, and simplifies the use of direct service providers. *Note: This bill is sponsored by StopWaste, who is actively soliciting additional pathways for expanding compost market development. Please reach out to Kelly Schoonmaker.*	recommended for Consent Calendar
AB 2511	**Berman**	Would extend the sunset on CalRecycle's Plastic Market Development Payments to incentivize use and reclaim of rPET in the state.	Passed Assembly Natural Resources Committee Awaiting Assembly Appropriations Committee Suspense Hearing
AB 2514	**Aguiar-Curry**	Among other provisions, the bill would add waste-to-hydrogen and pipeline injection of biomethane to 1383 procurement. *Note: This bill is sponsored by the Bioenergy Association of California. While the bill has gotten better over two rounds of amendments, CAW continues to oppose the inclusion of additional waste-to-energy strategies to SB 54.*	Passed Assembly Natural Resources Committee Awaiting Assembly Appropriations Committee Hearing
AB 2648	**Bennett**	Would prohibit the sale of single-use plastic bottles in State facilities. *Note: CAW is opposed to this bill unless amended to remove "plastic" as there are concerns about unintended consequences of switching to harder to recycle single-use containers.*	Passed Assembly Natural Resources Committee Awaiting Assembly Appropriations Committee Suspense Hearing
AB 2734	**Bennett**	Expands upon the Healthy Soils Act: common application, allows equipment sharing, allows grants for up to 5 years for on-farm demo projects.	Passed Assembly Agriculture Committee Awaiting Assembly Appropriations Committee Suspense Hearing
AB 2762	**Friedman**	Would establish gradual targets for increasing the use of reusable beverage containers, as well as stipulate the creation of a Reusable Beverage	Passed Assembly Natural Resources Committee

		Container Managed System to oversee, govern, and facilitate reuse across industry stakeholders. *Note: The bill is sponsored by the Story of Stuff Project.*	Awaiting Assembly Appropriations Committee Hearing
AB 2902	**Wood**	Addresses a variety of issues rural jurisdictions face in SB 1383 implementation. The bill would extend the sunset for rural jurisdictions in the existing regs, but requires them to undertake other activities to divert organics. It would also direct CalRecycle to incentivize carbon farming, edible food recovery, and animal feed, as well as creating training and model ordinances for community composting. AB 2902 would also exclude exempt parts of counties for purposes of calculating the population-based procurement requirement, and allows jurisdictions with existing low population exemptions three years to come into compliance once the county exceeds the population threshold, and allows jurisdiction that generate less than 200,000 tons of waste or that are located in areas with large bear populations to apply for alternative 1383 compliance strategies. *Note: Californians Against Waste supports this bill in concept, although we have concerns about a couple of provisions. This bill is sponsored by Rural County Representatives of California (RCRC).*	Passed Assembly Natural Resources Committee Was heard on 5/1 by the Assembly Appropriations Committee & was placed on the "Suspense File"
AB 2916	**Friedman**	Would prohibit buoy, dock, and other pier-related devices from being composed of exposed expanded polystyrene.	Passed Assembly Environmental Safety & Toxic Materials Committee Awaiting Assembly Appropriations Committee Hearing
ACA 16	**Bryan**	Would enshrine the right to clean air and water and a healthy environment in the State	Passed Assembly Natural Resources Committee

		Constitution.	Was heard on 5/1 by the Assembly Appropriations Committee & was placed on the "Suspense File"
AJR 10	**Irwin**	Urges the President and Congress to enact the federal Food Date Labeling Act of 2023.	Passed Assembly Floor Awaiting a hearing in Senate Health Committee

CAW-Tracked Senate Bills

Bill	Author	Description	Status
SB 551	**Portantino**	Would streamline beverage manufacturer reporting requirements for recycled plastic content.	Passed Assembly Natural Resources Committee Awaiting Assembly Appropriations Committee Hearing
SB 615	**Allen & Min**	Would create an end-of-life management system for electric vehicle batteries that are not being used or repurposed.	Awaiting a hearing in Assembly Environmental Safety & Toxic Materials Committee
SB 707	**Newman**	Would enact the Responsible Textile Recovery Act of 2023, which would require producers to establish a stewardship program for the collection and recycling of a covered product. It would define a "covered product" to include any post consumer apparel or post consumer textile article that is unwanted by a consumer. The bill would also require a program operator to submit a complete stewardship plan to the department for review and Approval. *Note: This bill is sponsored by the California Product Stewardship Council.*	Awaiting a hearing in Assembly Natural Resources Committee
SB 903	**Skinner**	Would establish legislative intent to phase out non-essential uses of per-and polyfluoroalkyl substances (PFAS), which are "forever chemicals" that are hazardous to human health and the environment.	Passed Senate Environmental Quality Committee Awaiting Senate Appropriations Committee Suspense Hearing

		Note: This bill is sponsored by Natural Resources Defense Council & Breast Cancer Prevention Partners.	
SB 972	**Min**	This bill directs CalRecycle to provide additional technical assistance to local jurisdictions, along with reports to the legislature on SB 1383 implementation. *Note: This bill is sponsored by the California League of Cities.*	Passed Senate Environmental Quality Committee Awaiting Senate Appropriations Committee Hearing, recommended for Consent Calendar
SB 1036	**Limón**	Regulates voluntary carbon offsets to limit double counting and other "junk offsets."	Passed Senate Environmental Quality Committee and Senate Judiciary Committee Awaiting Senate Appropriations Committee Suspense Hearing
SB 1045	**Blakespear**	Proposes three changes to support the permitting of composting facilities: requiring Air and Water Districts to respond in a timely manner to permit applications, reclassifying compost facilities as Essential Public Services, and tweaking local zoning to support composting. *Note: This bill is sponsored by the California Compost Coalition.*	Passed Senate Local Government Committee & Senate Environmental Quality Committee Awaiting Senate Appropriations Committee Hearing
SB 1046	**Laird**	Would require CalRecycle to develop a programmatic environmental impact report that streamlines the development of small and medium-sized compost facilities.	Passed Senate Floor Awaiting committee assignment in the Assembly
SB 1066	**Blakespear**	Would establish a Producer Responsibility Organization for the financing and collection of unwanted or expired marine flares, in turn shifting the cost of managing this product from local ratepayers to the industry responsible for producing them. *Note: This bill is sponsored by National Stewardship Action Council.*	Passed Senate Environmental Quality Committee and Senate Judiciary Committee Awaiting Senate Appropriations Committee Suspense Hearing
SB 1113	**Newman**	Extends existing bottle bill pilot projects until	Passed Senate Environmental

		2033.	Quality Committee Awaiting Senate Appropriations Committee Suspense Hearing
SB 1135	**Limón**	Would establish the California Compost Tax Credit Fund which allows for taxpayers to claim credits for compost application and disbursement.	Passed Senate Natural Resources & Water Committee and Senate Revenue & Taxation Committee Awaiting Senate Appropriations Committee Hearing
SB 1143	**Allen**	Would establish a producer responsibility organization (PRO) for Household Hazardous Waste, which would be charged with financing, operations, and proper disposal. *Note: The bill is sponsored by National Stewardship Action Council.*	Passed Senate Environmental Quality Committee & Senate Judiciary Committee Awaiting Senate Appropriations Committee Suspense Hearing
SB 1147	**Portantino**	Would set health-based limits for plastic in tap water and bottled drinking water.	Passed the Senate Environmental Quality Committee Awaiting Senate Appropriations Committee Hearing
SB 1175	**Ochoa-Bogh**	Would require the State Air Resources Board to consider alternatives to census tracts when deciding boundaries for low-population or elevation waivers for waste reduction targets. *Note: The author has agreed to CAW's proposed amendments that would limit this consideration to future regulatory processes and not be retroactive.*	Passed Senate Environmental Quality Committee Awaiting a vote on Senate Floor
SB 1208	**Padilla**	Would prohibit the State Water Resources Control Board from issuing waste discharge permits for a new landfill in the Tijuana River National Estuarine Research Reserve or Tijuana tributary. This is targeting the proposed East Otay Mesa Landfill in San Diego County.	Passed Senate Environmental Quality Committee Awaiting Senate Appropriations Committee Hearing
SB 1231	**Allen**	Would create an on ramp for producers who do not qualify to make recyclability claims under SB 343 but are on track to	Passed Senate Environmental Quality Committee

		becoming recyclable under SB 54. *Note: Californians Against Waste is currently watching this bill and has no position.*	Awaiting Senate Appropriations Committee Suspense Hearing
SB 1280	**Laird**	Would prohibit the manufacture and sale of disposable propane cylinders. *Note: This bill is sponsored by the California Product Stewardship Council, and marks the third attempt at addressing this problematic waste stream.*	Passed Senate Environmental Quality Committee Awaiting a vote on Senate Floor
SB 1302	**Blakespear**	Would allow "recycling machines" to be certified to dispense CRV payout and receive processing payments.	Passed Senate Environmental Quality Committee Awaiting Senate Appropriations Committee Hearing
SB 1420	**Caballero, Archuleta, Dodd, Newman**	Would establish State Air Resources Board renewability quotas in retail hydrogen, require hydrogen to have no net increase in air pollutants, and streamline CEQA processes for biomass and hydrogen projects. *Note: Californians Against Waste is opposed to SB 1420 as written.*	Passed Senate Environmental Quality Committee and Senate Energy, Utilities and Communications Committee Awaiting Senate Appropriations Committee Hearing

Bills no longer moving

Bill	Author	Description	Status
AB 2844	**Calderon**	This was a spot bill on recycled concrete materials.	Dead. The author's office says they are not moving forward with this bill.
SB 1167	**Blakespear**	**Reusable Mugs for Dine-In** - Would prohibit chain restaurants from providing single-use drinkware to customers who are consuming their beverage on the premises. *Co-sponsored by 5 Gyres, Californians Against Waste, Heal the Bay, and Surfrider Foundation*	Dead. Did not pass Senate Environmental Quality Committee.
SB 1232	**Grove**	Would allow CalRecycle to issue waivers to "all or part of a rural jurisdiction where there is low population density and limited waste collection"	Dead. Did not pass Senate Local Government Committee.

		for meeting organic waste reduction targets. *Note: Similar to SB 1175, CAW is opposing this bill since re-opening the exemptions in SB 1383 would hinder program implementation.*	
SB 1349	**Padilla**	Bottle Bill Processing Payments	Dead. Did not pass Senate Environmental Quality Committee.
SB 1426	**Blakespear**	This bill undercuts local waste franchises by allowing businesses to use non-franchise haulers as long as they offer a different form of diversion. (For instance, anaerobic digestion instead of composting.)	Dead. Did not pass Senate Environmental Quality Committee.
AB 2658	**Bains**	Would exempt food processors from SB 1383 requirements if they already have programs in place to divert organics.	Dead. Did not pass Assembly Natural Resources Committee.

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 tool[3] 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 2021[6] 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 Institute[7,] 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, an 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 disproportionally 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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