# Attachment No. PC 4

Safety Existing Conditions and Background Analysis Report

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General Plan Update

# Safety Element Existing Conditions and Background Analysis

**JUNE 2024**

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# Acronyms, Abbreviations, Key Terms

| Acronym/Abbreviation/Term | Expanded From |
|---|---|
| AB | Assembly Bill |
| AlertOC | Alert Orange County |
| BRIC | Building Resilient Infrastructure and Communities |
| BW-12 | Biggert-Waters Flood Insurance Reform Act of 2012 |
| CAL FIRE | California Department of Forestry and Fire Protection |
| Cal OES | California Governor's Office of Emergency Services |
| CalEPA | California Environmental Protection Agency |
| CCC | California Coastal Commission |
| CDAA | California Disaster Assistance Act |
| CERT | Community Emergency Response Team |
| CGS | California Geological Survey |
| CIP | capital improvement program |
| City | City of Newport Beach |
| CoSMoS | Our Coast, Our Future's Coastal Storm Modeling System |
| CSWC | California State Warning Center |
| DRA | drought risk assessment |
| DWR | California Department of Water Resources |
| EAP | Energy Action Plan |
| EIFD | enhanced infrastructure financing district |
| EOC | Emergency Operations Center |
| EOP | emergency operations plan |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| GETS | Government Emergency Telecommunications System |
| GHG | greenhouse gas |
| GIS | geographic information system |
| GSA | groundwater sustainability agency |
| GSP | groundwater sustainability plan |
| HMGP | Hazard Mitigation Grant Program |
| HVAC | heating, ventilation, and air conditioning |
| IPAWS | Integrated Public Alert and Warning System |
| IPCC | Intergovernmental Panel on Climate Change |
| JWA | John Wayne Airport |
| LCP | Local Coastal Program |
| LHMP | local hazard mitigation plan |
| NIMS | National Incident Management System |
| NBFD | Newport Beach Fire Department |
| NBMC | Newport Beach Municipal Code |

| Acronym/Abbreviation/Term | Expanded From |
|---|---|
| NCRF | National Coastal Resilience Fund |
| NFIP | National Flood Insurance Program |
| NOAA | National Oceanic and Atmospheric Administration |
| NOI | Notice of Interest |
| NWS | National Weather Service |
| OCCC | Orange County Climate Coalition |
| OCWD | Orange County Water District |
| OPC | California Ocean Protection Council |
| OPR | Office of Planning and Research |
| SB | Senate Bill |
| SCE | Southern California Edison |
| SEMS | Standardized Emergency Management System |
| SQG | small quantity generator |
| SSMP | Sewer System Management Plan |
| SSO | sanitary sewer overflow |
| UHII | Urban Heat Island Index |
| UWMP | urban water management plan |
| WEA | Wireless Emergency Alert |
| WPS | Wireless Priority Service |
| WSCP | Water Shortage Contingency Plan |
| WUI | wildland-urban interface |

# Executive Summary

The Safety Element's general purpose is to protect residents, businesses, structures, infrastructure, and city functions. It fulfills this by providing analysis of natural and human-made hazards and dictating high-level policy to mitigate, prepare for, respond to, and recover from hazards.

The City of Newport Beach's (City) adopted General Plan includes topics that relate to the adopted Safety Element in other adopted elements, most notably the adopted Land Use Element, Natural Resources Element, Harbor and Bay Element, and Housing Element. There are other overlapping planning documents that the City maintains related to the Safety Element. The local hazard mitigation plan (LHMP) is a document that addresses similar topics but, focuses on shorter-term projects and mitigation and fulfills Federal post-disaster funding incentives. There is also the emergency operations plan (EOP), which is a plan for operations in the event of an emergency. The urban water management plan (UWMP) is another important City document that overlaps with water availability for firefighting purposes. Each of these documents should be consistent with the Safety Element analysis and policy.

Safety elements and their requirements are mandated by the State, though there are certain aspects that the State recommends or incentivizes. Across the State, local governments are updating their safety elements to comply with Senate Bill (SB) 379, which mainly responds to the prior unmet need to update safety elements to take into account changing hazards. Other State laws, including Assembly Bill (AB) 747 and SB 99, have added planning requirements related to evacuation. Federally, the LHMP is the main interaction with safety element regulations, but LHMP content does not dictate or require anything within safety elements. However, California's AB 2140 is an incentive-based option that allows local governments to incorporate their LHMP into their safety elements and provides the benefit of State-matching funds for post-disaster funding. There are other regional influences that interact with safety elements, including mutual aid and regional water management, but these should generally be incorporated in safety elements through policies that retain consistency but should not dictate what is included in a safety element.

The City has several hazards present that require analysis and should be addressed in the updated Safety Element. Due to the proximity to the ocean and number of structures along the oceanfront and bay, coastal hazards, including flooding, tsunamis, and more, are one of the most prominent hazards. There is also potential for fire hazards along the eastern portion of the City, and geologic risks spread throughout the City based on physical characteristics of the land. No part of the City is at risk of surface rupture, but there is potential for damages due to ground shaking from earthquakes. Other hazards that present more minimal risk to the City but are still present include hazardous materials, extreme heat, and aviation hazards. In regard to vulnerable populations, older adults are the most prominent population present, but both renters and homeowners experiencing cost burden are also present in relatively high numbers. The City also has several critical facilities, public facilities, and infrastructure that have potential to be impacted by certain hazards differently depending on the facility and where it is located within the City.

The updated Safety Element will build upon the work that has already been done through several different departments at the City. When considering mitigation, the Newport Beach Municipal Code (NBMC) is the strongest implementation pathway. The NBMC dictates development standards and maintenance requirements, among other things, and mitigates many hazards, including fire, flooding, extreme heat, and seismic and geologic hazards. Community education and involvement programs are also available, with the Community Emergency Response Team (CERT) program offering the clearest connection between the community and public safety. There are also

emergency response efforts mainly spearheaded by the fire department and police department that cover notifications, evacuation, mutual aid, and shelters and cooling centers.

When considering a future safe from hazards, there are a variety of issues and opportunities that exist. Barriers to implementation can include funding and competing interests that can cause contradicting actions, such as the development of housing occurring in an area with inherent hazard risks. There are also opportunities to do more, which are most effective with strong support from residents. Certain policies exist that can mitigate the issues present and uplift the opportunities. Overall, the updated Safety Element will pursue policies that meet State requirements, are feasible and favorable to residents, and continue to provide a safer environment in Newport Beach.

# 1 Introduction

Safety elements are a required element of general plans. They address natural and human-caused hazards and the potential short- and long-term risks to human life, property, and economic and social dislocation resulting from hazard events, including air pollution, extreme heat, flooding, geologic hazards, hazardous materials, and wildfires. Because environmental changes affect and potentially exacerbate the impact of hazards, safety elements are also required to address environmental changes within each applicable hazard section.

The City of Newport Beach (City) is currently undertaking a General Plan Update. This report serves as initial technical support for the City's update to the Safety Element. The document provides a high-level overview of the adopted Safety Element, discusses goals and policies that address hazards, and evaluates conditions as they relate to each identified hazard, which populations are most vulnerable to hazards, and how the City is currently addressing these hazards. This report also provides pathways to ensure continuity between goals and policies that may appear in other elements and concludes with recommendations to strengthen and enhance the updated Safety Element as part of the comprehensive General Plan Update. The updated Safety Element will build upon the adopted General Plan's vision of responsive public safety services that are considered to be amongst the best in the nation.

To support the update to the City's Safety Element, this report analyzes the following potential hazards that pose a potential risk in Newport Beach.

## Coastal Hazards

Coastal hazards come in the form of both sudden and gradual threats. Storm surge, tsunamis, and rogue waves can occur rapidly, inundating coastal areas and causing damage to structures and properties. Coastal erosion, which wears away at beaches and coastal bluffs, is caused by wind, rain, and high tides. Sea-level rise is the increase in ocean level. It has the potential to submerge coastal areas, both built and natural environments, as the sea level increases, resulting in beach loss, erosion of foundations of structures, and changes to brackish water ecosystems (e.g., estuaries).

## Seismic Hazards

Seismic hazards are caused by earthquakes and include fault rupture, seismic shaking, liquefaction, and landslide. Earthquakes are caused by the movement of tectonic plates, which are pieces of the earth's crust, when the stress between tectonic plates becomes greater than the friction holding them in place, leading to sudden release of pressure and causing shaking. Earthquakes in which the sea floor is suddenly displaced by the same process can lead to tsunamis.

## Geologic Hazards

Geologic hazards result from surface earth processes that can lead to harm to a community or the environment. They include slope failures, compressible soils, and expansive soils, each of which can lead to issues with the foundations of structures.

### Flooding Hazards

Flooding hazards include inland flooding from heavy precipitation or storms or dam failure. Flooding can sustain damage to structures, utilities, and transportation systems, and can disrupt the natural environment via soil erosion and deforestation. Dam failures can be particularly damaging, as the sudden release of water, flowing at high velocity, can destroy property and cause injury or loss of life.

### Fire Hazards

Wildland fires are a natural feature of forested areas. However, due to farming, urban development, and fire suppression efforts, wildland fires have become a hazard of concern, particularly to communities near forested or other natural areas (i.e., the wildland-urban interface [WUI]).

Urban fires cause damage to buildings or infrastructure. In cases where a fire cannot be contained, the fire may spread to surrounding properties and destroy entire structures. Common causes of urban fires are stoves, short-circuited electrical equipment, breaches in gas pipelines, large transportation accidents, or downed electrical transmission wires.

### Hazardous Materials Management

Hazardous materials events are marked by the release of harmful concentrations of hazardous or toxic substances into the environment. Often these releases are caused by leaks or failure of storage containers or other equipment, which result from industrial accidents, vehicle crashes, and impacts from disasters such as earthquakes or floods.

### Aviation Hazards

Airports create noise and safety hazards that can be detrimental for residents, businesses, and property owners. Typical activities include commercial service, cargo service, and general aviation. Airports and certain types of development can be hazardous when located close together, which is why careful planning must be done to minimize risk and plan for a coordinated response to any potential incident. Noise from airports can negatively impact residents and businesses located nearby; preventing excessive noise impacts is a primary concern for airport planning and operation.

### Extreme Heat

Extreme heat references excessively hot days, heat waves, or multiple days in a row of extreme heat, and warm nights that do not allow people's bodies to cool off and recover. It is commonly the deadliest hazard in the United States, and many of its impacts to human health are difficult to track as it can cause health complications as a result of stress on the body. Extreme heat has become more intense and frequent in recent years and is projected to continue to worsen.

## 1.1 Element Purpose and Update Process

The Safety Element of the General Plan addresses natural and human-caused hazards in Newport Beach and the potential short- and long-term risk to human life, property, and economic and social dislocation. Hazards evaluated to inform the update to the Safety Element include coastal hazards, seismic and geologic hazards, flooding, fire, hazardous materials, aviation hazards, and extreme heat. The changing environment affects and potentially

exacerbates the impact of many hazards; therefore, this is also assessed in consideration of each applicable hazard.

Safety elements must evaluate conditions as they relate to each identified hazard, which populations are most vulnerable to hazards, and how the City is currently addressing these hazards. This assessment, paired with information distilled through the General Plan Update Outreach and Engagement Program, will act as a foundation to inform the development of the goals, policies, and actions of the updated Safety Element, which will provide the City with a roadmap to reduce the potential short- and long-term risk of hazards and their impacts. Goals, policies, and actions of the updated Safety Element should align with other hazard or emergency planning documents and should include a comprehensive hazard planning strategy including mitigation, preparation, response, and recovery.

In addition to the required components, during safety element development or updates, local governments must consult the California Geological Survey (CGS) of the Department of Conservation and provide a draft of their safety elements for review to determine if all known seismic and other geologic hazards have been addressed. Local governments that contain a State fire responsibility area or very high fire hazard severity zone must provide a draft safety element to the State Board of Forestry and Fire Protection to review for potential land use, policy, or strategy changes to reduce fire risk. Newport Beach has a very high fire hazard severity zone within city limits, so this consultation process with the Board of Forestry and Fire Protection is required.

Local governments can also optionally consult the California Governor's Office of Emergency Services (Cal OES), which can assist local governments with developing their safety elements and ensuring consistency with the local hazard mitigation plan (LHMP) and emergency operations plan (EOP). Furthermore, the Office of Planning and Research (OPR) Integrated Climate Adaptation and Resiliency Program can support local governments' compliance with Senate Bill (SB) 379 (see Section 4.2.2 for more information on SB 379).

## 1.1.1 Safety Element Implementation

While the adopted general plan serves as a framework for land use, development, and the future of the city, achieving its objectives and policies requires more specific tools. Implementation of the general plan, including its safety element, relies on specific plans, zoning ordinances, subdivision ordinances, public project consistency requirements, capital improvements, municipal operations, educational resources and engagement, and other mechanisms.

### Specific Plans

Through specific plans, cities can systematically implement the general plan within all or a portion of the planning area. Either the public or private sector may prepare a specific plan, and any interested party may request its adoption, amendment, or repeal. Responsibility for adopting, amending, or repealing a specific plan lies with the city council; specific plans can also be adopted by voter initiative and are subject to referendum. Moreover, specific plans may be adopted by resolution (such as with a general plan) or by ordinance (such as with zoning ordinances), or some combination therein. Specific plans must describe:

- The distribution, location, and extent of land uses, including open space, in the plan area
- The proposed distribution, location, extent, and intensity of public and private infrastructure, including transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities in the plan area

- Standards and criteria for proposed development and conservation, development, and utilization of natural resources
- Implementation measures, including regulations, programs, and public works projects, and financing measures to carry out the above

Specific plans are effective tools for specifying implementation programs to specific geographic areas or sites. They also enable cities to stipulate development timing or schedule infrastructure installation to phase in long-term development described in the general plan. For example, if a safety element contains policies for the implementation of flood-resistant public infrastructure, through a specific plan the city can specify an implementation program for areas with high flood risk and phase in infrastructure improvements over time that align with the development patterns and needs of the area.

Specific plans must be consistent with the general plan; zoning ordinances, subdivisions, public works projects, development agreements, and land projects must be consistent with applicable specific plans.

## Zoning

Zoning provisions classify the specific and immediate uses of land, including which uses are to be permitted, conditionally permitted, and prohibited within specific zones. Safety elements provide for policies to reduce exposure or vulnerability to hazards present in the community; zoning ordinances can be used to translate long-term safety objectives into concrete regulations and land use decisions. Conditional use permits, coastal development permits design review, floodplain zone districts, open-space zoning, planned unit development zoning, local coastal program implementation plans, and specific plan zoning districts are examples of zoning tools that may be used to implement objectives and policies of the safety element.

As a charter city with a population less than two million, the City of Newport Beach is not subject to the requirement that zoning provisions be consistent with the general plan. However, the City has adopted an ordinance stating that all Zoning Code provisions be consistent with the General Plan (NBMC Section 20.10.030). This consistency requirement renders zoning as an effective tool to implement the updated Safety Element.

## Local Coastal Program

The California Coastal Act is a State law that governs development in the coastal zone, and the California Coastal Commission (CCC) is the State agency that implements the California Coastal Act. The CCC maintains regulatory authority and permitting jurisdiction over the use of land and water in the coastal zone until a local government prepares an LCP that includes both a Land Use Plan and an Implementation Plan. Generally, the Land Use Plan is either a portion of a city's General Plan or a distinct plan that indicates the kinds, locations, and intensities of land uses in that city's coastal zone and includes resource protection and development policies. In Newport Beach, the Coastal Land Use Plan is a distinct document. The Implementation Plan is made up of zoning ordinances and maps that implement and further delineate the policies of the Land Use Plan. The Newport Beach LCP was certified by the CCC in 2017[1] and has been amended regularly to clarify and update existing policies and to incorporate new policies to reflect emerging planning issues and the best available science.[2] The Local Coastal Program Implementation Plan sets forth policies and procedures that govern the use of land and water in the coastal zone

1 The Land Use Plan portion of the Local Coastal Program (LCP) was first certified by the CCC in 2005, and the Implementation Plan followed in 2017. An LCP is not considered certified until both the Land Use Plan and Implementation Plan are approved by the CCC.

2 Local governments are allowed up to four major amendments per year.

within City limits, with the exception of Newport Coast. Newport Coast is governed by a previously certified and currently effective Newport Coast segment of the Orange County LCP, which was certified prior to the area's incorporation into the City's jurisdiction.

## Subdivision Regulations

The Subdivision Map Act establishes local subdivision procedures and provides cities and counties with authority to regulate the design and improvement of subdivisions as well as require dedications of public improvements or related impacts fees and require compliance with objectives and policies of the general plan (Government Code Section 66410). Through this authority, cities can promote safety element objectives and policies. As such, subdivisions can be made to support objectives relating to floodplain management, wildland fire safety, and urban forestry, among others.

## Capital Improvements

Capital facilities must be consistent with the general plan, per Government Code Section 66473 and Friends of B Street v. City of Hayward (1980) (106 Cal.App.3d 988). Publicly owned facilities such as streets and roads, water and sewer facilities, public buildings, and parks are each considered capital facilities.

The safety element must address evacuation routes, peakload water supply requirements, flooding, and minimum road widths in relation to fire and geologic hazards; therefore, the safety element should establish policies to ensure the safety of capital facilities when exposed to hazards. Other hazards, such as extreme heat, may not have statutory requirements, but can still be included in the assessment and policy of the safety element. In turn, capital facilities must be designed and implemented to be consistent with the safety element and other general plan elements. Capital facility consistency with the safety element may be assessed during the local planning agency's annual review of the capital improvement plan for consistency with the general plan.

## Municipal Operations

Some aspects of safety relate to ensuring continued or quickly available city operations after a hazard. Through proper planning and organization within the city, critical city functions can be maintained. Additionally, some processes may better serve residents by being streamlined after a hazard. This may take the form of modified operations with remote or virtual functions or reallocation of city staff to promote rebuilding and resilience. There are limited State requirements related to these efforts for cities, but through Executive Order S-04-06, model Continuity of Operations Plans and resources have been developed. Furthermore, several of these efforts have been strengthened with the recent pandemic, which tested what city operations are possible in a virtual or hybrid environment.

## Educational Resources and Engagement

Educational resources are another form of implementation that is not required but that can offer large benefits to the preparedness of residents. Resources and programs can come in multiple forms, including online resources developed by the city or by outside agencies, notifications for financial incentive programs, in-person events or trainings for individual safety, or ongoing programs that provide community benefits through collective action. Each type of engagement has merit that must be balanced with city capacity, hazard priorities, and local interest.

### Measures and Metrics

Implementation measures are vital to realizing general plan goals. Implementation measures are specific actions the local government will take to put the objectives, policies, and strategies of the general plan into practice. They can include step-by-step outlines for strategies, resource allocations, timelines, partners in implementation, monitoring and evaluation, among others. While some implementation measures directly respond to State requirements, others are up to the local government's discretion. In general, implementation measures should consider local needs and should be complimentary and mutually reinforcing (i.e., actions should build on one another to form an integrated program).

In addition to implementation measures, some local governments use implementation metrics, which track progress towards achieving objectives established in the general plan. These metrics can be tracked and updated annually, or on another regular basis, and ideally made available to the public.

## 1.2 Relationship to Other Planning Documents

General plan elements should form an integrated, internally consistent plan. The safety element, being either related to or identified in statute with several other general plan elements, should both avoid redundancy with other elements and maintain consistency with each related element. Table 1 below indicates the relationship between the safety element and other general plan elements adapted from OPR's General Plan Guidelines.

**Table 1. Correlations among Elements**

| Land Use | Harbor and Bay | Housing | Natural Resources | Circulation | Recreation | Noise | Historic Resources | Arts and Cultural |
|---|---|---|---|---|---|---|---|---|
| In statute | Related | Related | In statute | Related | Related | N/A | Related | N/A |

**Source:** OPR (Office of Planning and Research). 2017. "Required Elements." Chapter 4 in *General Plan Guidelines*. https://www.opr.ca.gov/planning/general-plan/guidelines.html#:~:text=OPR%20is%20required%20by%20Government%20Code%20Section%2065040.2,%E2%80%9Chow%20to%E2%80%9D%20resource%20for%20drafting%20a%20general%20plan.
**Note:** N/A = not applicable.

The City's Safety Element directly relates to topics in the Land Use, Harbor and Bay, Housing, Natural Resources, Circulation, Recreation, and Historic Resources Elements of the General Plan. The Safety Element identifies hazards and hazard abatement provisions to guide land use decisions related to zoning, subdivisions, and entitlement permits, including those in or adjacent to coastal zones—the concern of the Harbor and Bay Element. As housing and other structures can be impacted by seismic and geologic hazards, fire, and flooding, the Housing Element depends on the Safety Element to provide strategies to reduce risks associated with these hazards. Natural resources management is implicated in the Safety Element in regard to wildfire and urban fire risk; plant types and fuel modification in developments are addressed in the Safety Element. The Safety Element also addresses emergency response and evacuation routes, which informs the Circulation Element to ensure that streets are sized adequately for fire truck access and other needs of first responders. Recreation, especially coastal recreation, is considered in the Safety Element as an economic activity that natural and human-caused hazards may impact. Lastly, the Historic Resources Element is of concern in as far as historic and paleontological resources may be at risk of impacts from various hazards.

# 2 General Plan Review

## 2.1 Adopted Safety Element

The City's adopted Safety Element identifies natural and human-induced hazards and establishes goals and policies aimed at reducing the potential risk of death, injuries, property damage, and economic and social dislocation resulting from those hazards. The Hazards Assessment Study,[3] which informed the analysis and policies of the Safety Element, evaluated historical hazardous events and a series of scenarios for each hazard's potential impacts in the future. The following hazards were evaluated in the Hazard Assessment Study:

- **Coastal hazards**, including tsunamis and rogue waves, storm surges and seiches, hurricanes and tropical storms, sea-level rise, and coastal erosion
- **Seismic and geologic hazards**, including earthquakes, liquefaction (ground failure such as lateral spreading, flow failure, ground oscillation, loss of bearing strength, and ground lurching), landslides and rockfall, based on locations of fault lines, whether they are active or inactive, sediment deposit location and type, etc.
- **Flooding hazards**, including storm flooding from winter storms, thunderstorms and tropical rains, and flash floods, riverine flooding, and seismically induced inundation from dam failure and aboveground storage tanks
- **Fire hazards,** including vegetation fires (i.e., wildland fires) and structural fires, including those caused by earthquake-induced fires
- **Hazardous materials hazards**, including impacts on air quality from pollutants such as carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide; drinking water quality impacts caused by toxic chemical release (e.g., ammonia, catechol, hydrogen fluoride, nitric acid, tetrachloroethylene), including leaking underground storage tanks, household hazardous waste and recycling, and oil fields and methane gas seeps, among others
- **Aviation hazards**, including airplane crashes (both cargo and passenger planes) on or near airport property

Since the publication of the adopted Safety Element, several hazard conditions have evolved and require updating in the Safety Element update. The seismic and geologic hazards assessment should be updated with recent reports from CGS to identify hazard levels by geographic area, including new information about fault zones affecting the Newport Beach area. Flooding hazards likely also require updating, as extreme precipitation frequency and intensity has shifted, potentially resulting in different flood zone boundaries. While structural fire hazard exposure may be similar to that of 2006 levels, wildland fire risk has increased and has the potential to impact structures within the City, particularly those that are close to vegetated areas (such as the San Joaquin Hills area).

The adopted Safety Element did not include the potential hazard of extreme heat, which impacts many communities across the Southern California region. Heat waves and other extreme heat events can lead to heat-related illness and even death, particularly for populations sensitive to extreme heat such as young children, pregnant women, older adults, people experiencing homelessness, and people with chronic medical conditions, including heart disease, mental illness, poor blood circulation, and obesity.

[3] City of Newport Beach. 2004. *Technical Background Report*. June 2004. https://www.newportbeachca.gov/government/departments/community-development/planning-division/general-plan-codes-and-regulations/general-plan.

Lastly, neither the Hazard Assessment Study nor the Safety Element evaluated the risk factors associated with the changing environment, which may increase the severity and/or frequency of several hazard categories, including coastal hazards, flooding, fire, and extreme heat. To comply with SB 379 (see Section 4, Regulatory Review), the City must also update its Safety Element to address adaptation and resilience either directly or by incorporating a changing environmental assessment and mitigation actions from its LHMP.

## 2.2 Adopted Land Use Element

The adopted Land Use Element outlines the City's land use policies and strategies. It designates the location and extent of various land uses, balancing residential, commercial, and recreational needs, promoting open space, and maintaining the City's coastal character. It also addresses issues related to sustainable development, transportation, and community aesthetics to guide the City's future growth and development. Furthermore, this element correlates the policies of each of the other General Plan elements into a coherent set of development policies. As such, it is the central organizing element of the General Plan as a whole.

The Land Use Element must take into consideration exposure to hazards, such as flood-prone areas or fault lines, when designating land uses and zoning. Land use planning should also take into account the emergency response services needed for changes in intensity of development or changes in zoning that may result in new housing or commercial development. Lastly, the Land Use Element should align land use and development with resilience strategies identified in the Safety Element.

## 2.3 Adopted Harbor and Bay Element

The adopted Harbor and Bay Element provides the policy framework to guide development and uses on the Newport Harbor and adjacent waterfront properties. The aim is to preserve the diversity of existing uses—including recreational boating activities, visitor-serving commercial, and waterfront residential—while balancing the demand for additional housing and mitigating impacts on the public such as noise, traffic, parking and impacts on sensitive habitats, among others.

Goal 8 of the adopted Harbor and Bay Element is particularly relevant to the Safety Element: "Enhancement and protection of water quality of all natural water bodies, including coastal waters, creeks, bays, harbors, and wetlands."[4] Within this goal, policies address chemical water pollution, groundwater contamination, and storm drain sewer system, among other topics. Similarly, Goal 7 of the adopted Safety Element addresses potential soil and water contamination from hazardous materials that are biproducts of methane gas extraction, oil operations, underground storage tanks, and hazardous waste generators. Such contamination can have an immediate and direct impact on public health and safety as well as natural habitats and water bodies.

The Safety Element also addresses several components of coastal hazards, including impacts of tsunamis and rogue waves, storm surge, and coastal erosion. Included in the adopted Safety Element's policies is protection of coastal-dependent uses through implementation of breakwaters, harbor channels, seawalls, and other infrastructure that aims to reduce risk of erosion, sand loss, and damage to harbor structures.

[4] City of Newport Beach. 2006. "Harbor and Bay Element." In *City of Newport Beach General Plan.* https://www.newportbeachca.gov/government/departments/community-development/planning-division/general-plan-codes-and-regulations/general-plan.

## 2.4 Adopted Circulation Element

The adopted Circulation Element intends to balance the City's future growth, service levels for all travel modes, and community characteristics. As such, the goals and policies therein are balanced with the goals and policies of the Land Use and Housing Elements to ensure that land use and transportation are coordinated efforts. Aside from supporting regional goals of reducing vehicle miles traveled to reduce greenhouse gas (GHG) emissions, the Circulation Element also calls for tsunami warning signs, evacuation planning, and battery back-up systems for traffic signals. As part of evacuation planning, the Circulation Element calls for efficient and safe access for emergency vehicles to all residential, commercial, and industrial areas. These considerations directly link to the Safety Element, which plans for evacuation of residents in the event of a human-made or natural disaster. Policies address evacuation routes, evacuation response plans, and emergency evacuation programs for Balboa Peninsula and other areas during a natural disasters. As such, the Safety Element and Circulation Element must be coordinated in evacuation planning.

## 2.5 Adopted Housing Element

The Housing Element establishes goals, policies, and actions for the preservation, improvement, and development of housing to meet existing and projected housing needs. Housing need is identified in the 2021–2029 Regional Housing Needs Assessment according to several income categories (e.g., low- and moderate-income households). The City must provide for its "fair share" of the regional housing need in its Housing Element while considering economic, environmental, and fiscal factors that may constrain housing development.

The Safety Element may impact the location and design of housing to minimize exposure to natural hazards, such as earthquakes, floods, and wildfires. The Safety Element may also include strategies to enhance community resilience, including energy-efficient housing. On the other hand, the location and intensity of housing development identified in the Housing Element may have implications for emergency response and evacuation planning. Likewise, in the event of a natural disaster, the availability of housing and temporary shelters can be a concern that is considered in the Housing Element.

## 2.6 Adopted Recreation Element

The adopted Recreation Element intends to ensure sufficient parks and recreation facilities are provided for the City's residents and that those parks and recreation facilities are appropriate for the residential and business population. In addition, the Recreation Element addresses recreation programs, shared facilities, coastal recreation and support facilities, marine recreation, and public access. Although the Recreation Element does not specifically address safety from hazards, the Safety Element includes goals and policies to mitigate the risk of geologic hazards, such as liquefaction, flooding, and wildfire, from impacting public infrastructure and facilities, including parks and recreation facilities. Through policies aimed to protect coastal uses, the Safety Element also addresses the development of shoreline management plans, which provide for coastal recreation.

## 2.7 Adopted Natural Resources Element

The adopted Natural Resources Element intends to direct the City's actions regarding the conservation, development, and utilization of natural resources. This Element addresses water supply, water quality (including drinking water), air quality, biological resources, open space, archaeological and paleontological resources, mineral

resources, visual resources, and energy. Moreover, the Natural Resources Element intends to conserve resources and use them efficiently to ensure development in the City is sustainable for future generations and provides for the health and well-being of current residents.

The Safety Element assesses risks from human-made and natural hazards on the built environment and natural environment and provides strategies to minimize those risks. Hazards identified in the Safety Element, such as flooding, wildfire, and geologic hazards, have potential impacts on all of the topics of concern in the Natural Resources Element (water supply and quality, air quality, biological resources, and so on). Additionally, natural resource conservation and utilization practices can affect the risk level of the impacts of hazards. The Natural Resources Element and Safety Element must be coordinated to balance the needs of both natural resource conservation, development, and use, and the need to minimize risk from hazards.

## 2.8 Adopted Noise Element

Noise impacts are not typically in the purview of safety elements. However, it is a concern for aviation hazards, which are assessed in the Safety Element. The John Wayne Airport (JWA) Access and Noise Office monitors compliance with regulations on aircraft noise limits, which places limits on operational capacity, hours of operation, and noise levels.[5]

## 2.9 Adopted Historic Resources Element

In face of development pressures upon historic sites and paleontological resources, the adopted Historic Resources Element intends to preserve early structures and archaeological sites, orient new development towards adaptive re-use of historic sites, and increase awareness of the City's history. Protections against natural and human-caused hazards is outside the scope of the adopted Historic Resources Element. This is where the Safety Element policies relating to minimizing seismic and geologic hazards is relevant. The Safety Element includes policies to update building and fire codes to ensure seismic safety design, requiring the retrofitting of unreinforced masonry buildings, which are prone to damage during seismic and geologic hazards, when undergoing remodels. These provisions must be considered with flexible building requirements provided to historic buildings and other exceptions available to historically significant structures, sites, or landmarks.

[5] John Wayne Airport, Orange County. 2023. "Access & Noise FAQs." https://www.ocair.com/about/administration/access-noise/access-noise-faqs/.

# 3 Regulatory Review

Safety elements are mandated by State requirements, but there are also Federal, State, regional, and local policies, programs, and regulations that support and impact safety elements, which should be considered. These requirements, policies, and programs are outlined in this section.

## 3.1 Federal

### 3.1.1 Local Hazard Mitigation Plan Regulations

The Disaster Mitigation Act of 2000 creates a framework for State, local, and tribal and territorial governments to engage in hazard mitigation planning to receive non-emergency disaster assistance. It promotes a proactive approach to disaster management by encouraging mitigation planning, providing funding for mitigation projects, involving the public and interested parties, and improving coordination among government agencies.

The key provisions of the Act are as follows:

- Mitigation Planning: The Act requires State and local governments to develop and adopt hazard mitigation plans, often called local hazard mitigation plans (LHMPs). These plans outline strategies for identifying, assessing, and reducing the risks posed by various natural and human-made hazards, such as floods, earthquakes, and hurricanes. LHMPs must be updated every 5 years.
- Funding: The Act authorizes the allocation of Federal funds to support hazard mitigation planning and projects. This financial assistance is provided to State and local governments to implement mitigation measures, making communities more resilient to disasters.
- Public Participation: The Act promotes public participation in the planning and decision-making processes related to disaster mitigation. It encourages involving community members and interested parties to ensure that mitigation efforts reflect local needs and priorities.
- Coordination: The Act stresses the importance of coordination among Federal, State, and local agencies, as well as non-governmental organizations, in disaster mitigation efforts. Effective collaboration is seen as essential for successful hazard reduction.
- Building Codes and Standards: The Act encourages the adoption and enforcement of building codes and construction standards that take into account the risks posed by various hazards. This helps ensure that new structures are more resilient to disasters.
- Disaster Resilience: The Act seeks to increase the resilience of critical infrastructure, including transportation systems, utilities, and communication networks, to minimize disruption during disasters.
- Pre-Disaster Mitigation Program: The Act establishes the Pre-Disaster Mitigation Program, which provides grants to support projects that reduce the risk of future disasters. These projects may include structural improvements, land-use planning, and community education initiatives.
- Research and Data Collection: The Act supports research and data collection efforts to better understand and predict natural hazards, as well as assess their potential impact on communities.

The City has addressed disaster mitigation by completing and adopting an LHMP, which analyzes several potential hazards, including earthquakes, floods, tsunamis, wildfires, unstable slopes, and strong winds. The LHMP includes

action items and programs to assist the City in reducing risk and preventing loss from future hazard events and provides resources and information pertinent to disaster mitigation planning. See Section 3.4.1, 2016 Local Hazard Mitigation Plan, for more information.

During Safety Element updates, the LHMP is able to be incorporated by reference as a result of Assembly Bill (AB) 2140. This incorporation allows for policy and background consistency even if the Safety Element does not include all topics or policies included in the LHMP. See Section 3.2.5, AB 2140, for more information about that process.

# 3.2 State

## 3.2.1 OPR Safety Element Guidelines

OPR provides comprehensive guidelines for all required general plan elements, including the safety element, consistent with Government Code Section 65302, which establishes the scope, authority, and requirements for the general plan. The guidelines stress the need for local governments to analyze vulnerability and exposure to various hazards, taking into account the location of critical infrastructure, population density, and land use patterns. Following this analysis, local governments must adopt policies and strategies to mitigate risks and enhance community resilience. This includes promoting land-use patterns that minimize exposure to hazards, encouraging the development of resilient infrastructure, and ensuring that emergency response plans are in place. Moreover, the guidelines underscore the importance of ongoing monitoring and evaluation to assess the effectiveness of safety measures and adapt the general plan as needed to address evolving threats.

The safety element must address the following hazards:[6]

- Seismically induced surface rupture, ground shaking, and ground failure
- Tsunami, seiche, and dam failure
- Slope instability leading to mudslides and landslides;
- Subsidence
- Liquefaction and other known seismic hazards
- Flooding
- Wildland and urban fires
- Climate change

In its safety element, a local government must analyze the above hazards in terms of the community's vulnerability and exposure; identify their location, frequency, and severity; and establish policies and strategies to mitigate risks.

### Adaptation and Resilience

Although adaptation and resilience should be addressed in other elements of city and county general plans, the safety element typically contains the primary discussion of adaptation and resilience. As such, as there are shifts in environmental conditions, safety elements should consider and plan for the environmental conditions possible

[6] OPR (Office of Planning and Research). 2017. "Chapter 4: Required Elements." In *General Plan Guidelines*. https://www.opr.ca.gov/planning/general-plan/guidelines.html#:~:text=OPR%20is%20required%20by%20Government%20Code%20Section%2065040.2,%E2%80%9Chow%20to%E2%80%9D%20resource%20for%20drafting%20a%20general%20plan.

at the end of the planning horizon. For example, policies and strategies should adequately adapt and build resilience to more frequent and severe heat waves, more intense precipitation events, heightened wildfire risk, and coastal flooding and sea-level rise (if applicable), among other risks.

### Consultation Requirements

The guidelines require that cities and counties consult with various government agencies prior to preparing or revising their safety element. Those agencies include CGS and Cal OES, which, during the consultation process, provide updated hazard information known by and available to the department or agency, such as information pertaining to known fault lines or changes in risk level. After the local government has completed its draft safety element, or amendment of its safety element, and prior to adopting the safety element, it must provide the draft to CGS for review to determine if all known seismic and other geologic hazards are addressed, pursuant to Government Code Section 65302.5(a).[7] Additionally, if the local government contains a State fire responsibility area or a very high fire hazard severity zone, the local government must provide a draft of its safety element or amendment to its safety element to the State Board of Forestry and Fire Protection prior to adoption. In this consultation process, the Board may recommend changes to land use and policies or strategies for reducing fire risk. Additional consultation requirements apply to local governments located in the Sacramento and San Joaquin Drainage Districts.

## 3.2.2 SB 379

SB 379 (2017) mandates that cities and counties integrate adaptation into their general plans (typically in the safety element). For cities or counties with an adopted LHMP, starting January 1, 2017, upon the subsequent revision of the LHMP, the city or county must address adaptation strategies in its safety element. If the local government does not have an adopted LHMP, the safety element of the general plan must address adaptation and resilience strategies by January 1, 2022. If a local government has adopted an LHMP or other plan that complies with the above requirements (and others in Government Code Section 65302[g]), the safety element should incorporate the adopted plan by reference and show how each requirement of SB 379 was met.

The update of the safety element pursuant to SB 379 must include the following:

1. A vulnerability assessment that identifies environmental change risks to the local government, including those applicable to specific geographic areas (to inform this assessment, local governments may refer to a number of resources from Federal, State, regional, and local agencies, as listed in Government Code Section 65302[g])
2. A set of adaptation and resilience goals, policies, and objectives
3. A set of feasible implementation measures to carry out those goals, policies, and objectives

Additionally, after the local government revises its safety element to comply with SB 379, upon each revision of the housing element, the planning agency must review the safety element and identify any new information not available previously and, as applicable, revise the safety element.

[7] Government Code, Title 7, Division 1, Chapter 3, Section 65302.5(a). https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=65302.5.&lawCode=GOV.

The City may comply with the requirements of SB 379 by updating its General Plan to include adaptation and resilience strategies. Upon the 7th cycle revision of its Housing Element, the City must review its Safety Element to determine if updates to reflect new information available at that time necessitate a Safety Element revision.

### 3.2.3 AB 747

AB 747 (2019) mandates that local governments' safety elements must be reviewed and updated, upon the next revision of their LHMP, to identify evacuation routes and their capacity, safety, and viability under several emergency scenarios. If a local government has adopted another plan, such as an EOP or LHMP, that complies with the above requirements, the safety element should incorporate the adopted plan by reference and show how each requirement was met.

The adopted Newport Beach Safety Element provides a policy to plan evacuation routes for coastal areas based on tsunami inundation maps. This policy partially responds to AB 747, but other hazard scenarios or strategies may warrant consideration to more comprehensively comply.

### 3.2.4 SB 99

SB 99 (2020) would require the city or county, upon the next revision of the housing element on or after January 1, 2020, to review and update the safety element to include information identifying residential developments in hazard areas that do not have at least two emergency evacuation routes.

### 3.2.5 AB 2140

AB 2140 (2006) authorizes local governments to adopt their LHMP approved by the Federal Emergency Management Agency (FEMA) into the safety element of their general plans. Doing so makes the local government eligible to be considered for part or all of its local-share costs on eligible Public Assistance funding to be provided from the State through the California Disaster Assistance Act (CDAA). For the local government to be eligible, the LHMP must include the following:

1. An initial earthquake performance evaluation of public facilities that provide essential services, shelter, and critical government functions
2. An inventory of potentially hazardous private facilities, such as multiunit, soft story, concrete tilt-up, and concrete frame buildings
3. A plan to reduce risks from private and public facilities during disasters

The Public Assistance funding mechanism described above is applicable after a disaster occurs. The CDAA allows the State to pay up to 18.75% of the local-share costs for Public Assistance projects when the legislature has authorized additional State funding post-disaster. The usual local-share cost is 25% of the total project cost; under the above circumstances, however, local governments that comply with AB 2140 will be eligible to be considered for the remaining 6.25% of the local-share costs to be covered by the State. AB 2140 does not mandate requirements for local governments.

Given LHMPs expire after 5 years, the City's current adopted LHMP (2016) is expired and, therefore, the City is not in compliance with AB 2140. However, if the City were to adopt an updated LHMP, meeting the above requirements, additional funding assistance may become available through this bill if it is incorporated into the Safety Element.

# 3.3 Regional

## 3.3.2 Regional Water Management

Integrated regional water management is a collaborative effort in which cities, counties, water agencies, special districts, non-government organizations, community and environmental groups, disadvantaged communities, and tribes work together to identify and implement water management solutions. The goals of this approach are to increase self-reliance, reduce conflict, build resilience, and achieve social, environmental, and economic goals. The Regional Water Management Planning Act (SB 1672) catalyzed this effort in 2002, followed by the subsequent approval by California voters of $2 billion on bond funds to plan and implement over 1,450 projects across California. These bond measures included Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002), Propositions 1E (the Disaster Preparedness and Flood Protection Bond Act of 2006), Proposition 84 (the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006), and Proposition 1 (the Storm Water Grant Program (SWGP), begun in 2014).

In addition, several integrated regional water management grant programs have delivered bond funding since 2002.

- Planning grants fund efforts by regional water management groups to develop, adopt, and update plans to identify strategies and projects to address water management needs, including climate change vulnerability.
- Implementation grants fund project implementation with a wide range of benefits. Thus far these grants have helped fund over 800 integrated regional water management projects.
- Disadvantaged community and tribal involvement grants support the involvement of such communities in integrated regional water management planning and decision-making processes, enabling greater access to funding for projects to benefit these communities.

Under the Sustainable Groundwater Management Act (SGMA) of 2014, local agencies are required to form groundwater sustainability agencies (GSAs) for high- and medium-priority water basins.[8] This constitutes a new structure for managing groundwater resources, led primarily on the local level. As priority designations and boundaries shift over time, new GSAs may be formed, reorganized, consolidated, or withdrawn if a basin is no longer high or medium priority. The planning deadline for California's first round of groundwater sustainability plans (GSPs) was January 31, 2020, for basins subject to critical conditions of overdraft, and January 31, 2022, for all other high- and medium-priority basins.

Local agencies are tasked with coordinating with their GSAs on a basin-wide scale on groundwater management issues. A local agency that decides to become a GSA must perform the duties of the GSA when developing, implementing, and enforcing a groundwater sustainability program. If an area of a high- or medium-priority basin falls outside the management area of the GSA, the county is presumed to be the GSA for that area unless the county opts out of that role.

Newport Beach lies within the Orange County Water District (OCWD). The City, along with other local agencies within OCWD, has participated in developing and implementing an alternative to the GSP, known as a Basin 8-1

[8] DWR (California Department of Water Resources). 2023. "Sustainable Groundwater Management Act (SGMA)." https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management.

Alternative, as allowed under the California Water Code Section 10723 to comply with the SGMA.[9] The Basin 8-1 Alternative plan is updated every 5 years; the last update was in 2017.

# 3.4 Local

## 3.4.1 2016 Local Hazard Mitigation Plan

The LHMP adopted in 2016[10] updates the 2008 Disaster Mitigation Plan, The LHMP analyzes current exposure and vulnerability to natural hazards and describes actions that the City's departments, agencies, organizations, and residents can take to reduce those risks. The LHMP works in conjunction with the General Plan Safety Element and the EOP (see below). While safety elements provide a more high-level framework, emphasizing long-range and comprehensive policies to minimize hazard risk, LHMPs center on shorter-term projects or programs based on quantifiable vulnerability, loss, and risk analysis. The focus of the EOP, as detailed in the following section, is to address methods for conducting emergency operations, mutual aid processes, and roles and responsibilities of agencies, among other items. Given these differing focuses, the City coordinates implementation of the LHMP with the EOP as well as the capital improvement program (CIP) and City Building and Fire Codes.

The criteria for risk assessment the LHMP must fulfill to comply with Federal requirements (44 CFR Part 201 Section 322) are as follows:

- Identify and describe hazards (i.e., natural conditions or phenomenon with potential impacts on the City), including the use of geographic information system (GIS) data as available
- Profile the history of past hazard events, including causes and characteristics
- Assess vulnerability for each hazard, including that of critical facilities within hazardous areas, estimate potential losses, and analyze development trends such as geography and environment, population, land use, housing, employment and industry, and transportation patterns

The City conducted qualitative and quantitative assessment of hazards for the 2016 update of the LHMP, including HAZUS (a GIS-based natural hazard analysis tool developed by FEMA) analyses discussion with the Advisory Committee and in public workshops. The City calculated the score, on a scale of 1 to 9, of potential hazard impacts based on geographic extent, probability of occurrence, and potential risk. The hazards with the highest scores were strong ground shaking (i.e., earthquake), wildfires, and Santa Ana strong winds, followed by surface fault rupture, liquefaction, riverine flooding, coastal flooding, and thunderstorms.

## 3.4.2 Emergency Operations Plan

The EOP is designed as a reference and guidance document that serves as the foundation for disaster response and recovery operations for the City. The EOP complies with the Standardized Emergency Management System (SEMS), the National Incident Management System (NIMS), the Incident Command System, the National Response Framework, and the National Preparedness Guidelines. The authority providing for the EOP at the City level is the

[9] Orange County Water District. n.d. "Groundwater Management Plan, SGMA Alternative Plan, Santa Ana River Watermaster, & Imported Water Recharge Report." https://www.ocwd.com/what-we-do/groundwater-management/groundwater-management-plan/.

[10] City of Newport Beach. 2016. "Local Hazard Mitigation Plan: City of Newport Beach, California." https://ecms.newportbeachca.gov/WEB/DocView.aspx?id=2867550&dbid=0&repo=cnb

Newport Beach Municipal Code (NBMC) Chapter 2.20 (Emergency Services); several authorities on the county, State, and Federal level are applicable, as well.

Contained in the EOP is the emergency organization, operational concepts for managing hazardous events, as well as policies, general procedures, and processes for coordinating with other operational area organizations in the Orange County Operational Area. The EOP does not, however, address hazard-specific emergency responses, scenarios, hazards, or threats; rather, hazard-specific annexes to the EOP, which supplement the base plan, outline specific response activities and response organizations.

While the EOP describes specific emergency preparedness and response organization and operations, the Safety Element addresses these topics in terms of emergency response priorities, strategies, and comprehensive hazard mitigation.

### 3.4.3 Urban Water Management Plan

The urban water management plan (UWMP)[11] was prepared and published in 2020 to meet the requirements of the UWMP Act of 1983 and California Water Code requirements. This UWMP is a comprehensive evaluation of the reliability of Newport Beach's water supply over a long-term horizon (20–25 years) based on an assessment of present and future water supply sources and demands in the City's service area. A new addition to the UWMP is the Water Shortage Contingency Plan (WSCP) (detailed below), which is the City's plan to prepare for and respond to water shortages.

The UWMP projects a 1% decrease in short-term water use (from 2020 to 2025) and a 5.2% increase in long-term water use (from 2025 to 2045) due to factors such as future demographics, water efficiency measures, and long-term weather variability. The City's service area being almost completely build out, with low land use and population increase expected, is a major factor in the low rate of increase in water use. SB X7-7 of 2010 set urban water use reduction targets for 2020 of 20% decrease compared to 2013 levels. The City joined the Orange County 20x2020 Regional Alliance, created to assist in complying with SB X7-7 targets, in collaboration with the Municipal Water District of Orange County, its retail member agencies, and the Cities of Anaheim, Fullerton, and Santa Ana. The City has met its 2020 water use target of 207 gallons per capita per day, having achieved 160 gallons per capita per day.

As noted in the UWMP, the City's water supply in 2020 was a combination of imported water, local groundwater, and recycled water: 68%, 28.5%, and 3.5% respectively. By 2045, water supply is planned to shift to 82% groundwater, 14.5% imported water, and 3.5% recycled water, in keeping with the City's goal of reducing its dependence on imported water. To assess potential drought impacts, the City conducted a drought risk assessment (DRA) as part of its UWMP. The DRA, which assessed the City's ability to supply water under a 5-year drought scenario, concluded that water supplies would be more than adequate.

Safety elements must address peakload water supply requirements, according to Government Code Section 65302(g)(1), in the context of fire and geologic hazards. Peakload water supply requirements describe the supply of water needed to meet both domestic water and firefighting needs during the season and time of day when demand on a water system is at its peak. Therefore, the scope of safety elements regarding water supply is narrower

[11] City of Newport Beach. 2021. *2020 Urban Water Management Plan: Final Draft*. May 2021. https://www.newportbeachca.gov/government/departments/utilities.

than that of the UWMP. The safety element does not engage in long-term water supply planning; however, it may incorporate assessment or findings of the UWMP to support its peakload water supply analysis.

### Water Shortage Contingency Plan

The WSCP[12] is the City's operating manual and strategic planning document to prevent catastrophic service disruptions by engaging in proactive mitigation strategies for water shortage. Further, the prescriptive information and standardized action levels, along with implementation actions, provides the City's governing body, staff, and the public with pre-determined steps to manage a water shortage. To inform these steps, the WSCP included a water supply reliability analysis, which assessed factors that could contribute to water supply constraints, availability of alternative supplies, and the effect these have on meeting customer water demands, as well as assessment of water supplies under various conditions: a normal water year, a single dry water year, and a drought lasting 5 years (supplementing the DRA described above). At the time of analysis, the City found no projected shortage condition due to drought that would trigger customer demand reduction actions.

## 3.4.4 Building Code

The Building Code, contained in Chapter 15 of the NBMC, adopts and incorporates standards and requirements of the 2022 California Building Code. The purpose of the California Building Code, and by extension the Newport Beach Building Code, is to "safeguard public health, safety, and general welfare through structural strength, means of egress facilities, stability, access to persons with disabilities, sanitation, adequate lighting and ventilation and energy conservation; safety to life and property from fire and other hazards attributed to the built environment; and to provide safety to fire fighters and emergency responders during emergency operations."[13] Specifically in regards to the Safety Element, the Building Code aims to mitigate the impacts to buildings of several hazards, including, but not limited to, extreme heat, earthquakes, flooding, and hazardous materials. Towards this, the Building Code includes several important requirements such as cool roof materials, seismic safeguards, and more energy efficient materials, among many other protective standards.

The Building Code applies to new developments, as well as structures that are being significantly repaired or renovated, meaning that the benefits of the Building Code are implemented over a long period of time. Furthermore, though the Building Code may not apply to existing structures, if property owners (residential or non-residential) seek to make significant improvements to the structure, under certain conditions, the City may enforce updated standards in the permitting approval process.

Additionally, the City requires compliance with the California Green Building Standards Code (CALGreen) for new residential and non-residential construction; residential additions or alterations of existing buildings that increase building conditioned area, volume, or size; non-residential additions of 1,000 square feet or greater; and non-residential alterations exceeding $200,000[14]. CALGreen mandates that buildings be designed to include green building and construction measures, specified as mandatory application checklists in the code. Additionally, CALGreen provides application checklists for voluntary green buildings measures.

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12 City of Newport Beach. 2021. "2020 Water Shortage Contingency Plan Final Draft." May 2021. https://www.newportbeachca.gov/government/departments/utilities.

13 California Building Code. 2022. Title 24, Part 2, Chapter 1.1.2. https://codes.iccsafe.org/content/CABC2022P1/chapter-1-scope-and-administration

14 State of California. 2022. "CALGreen." https://codes.iccsafe.org/content/CAGBC2022P1/preface . See Section 3.3.1, Green Building Standards Code.

### 3.4.5 Fire Code

To reduce wildfire risk, the City and the Newport Beach Fire Department (NBFD) have implemented a variety of measures and policies to ensure the safety of its residents and infrastructure. These policies apply to specific WUI areas, where property lines interact with wildland or vegetative fuels, and include Very High Fire Hazard Severity Zones and Hazard Reduction Zones, per the California Department of Forestry and Fire Protection (CAL FIRE). The Newport Beach Fire Chief has designated areas of Newport Beach that are most at risk of wildfires as Hazard Reduction Zones, which are residential or commercial areas directly adjacent to natural open space in Newport Beach's eastern area. There are approximately 260 parcels considered Hazard Reduction Zones within the City's jurisdiction, including parcels in the Newport Coast, Morning Canyon, and Big Canyon communities. Affected property owners are subject to additional construction requirements defined in the Newport Beach Fire Code, or Section 9.04.380 of the NBMC, which requires fire-resistant ventilation screening for existing structures in Newport Beach's WUI areas.

Additionally, the NBFD Fire Prevention Division manages a series of vegetation management programs to reduce the risk of wildfires entering Newport Beach and to manage the growth of dry vegetation and weeds that pose as fire hazards. The City's weed abatement program reduces the amount of potential fire hazards through routine inspections of the 82 properties within designated weed abatement parcels. Per Chapter 10.48 of the NBMC, the Fire Marshal may declare a public nuisance and abate weeds, dry grass, brush, poison oak, and all rubbish and refuse on public and private property in Newport Beach. The Fire Prevention Division also manages the City's fuel modification zones, which are specific areas that have been treated to increase a development's resistance to fire and to improve its surrounding defensible space. Similar to the weed abatement program, City staff conduct inspections every spring and fall to ensure affected property owners are in compliance with regulations.

Further, the NBFD has received a top rating from the Insurance Services Office (ISO) for its national Public Protection Classification (PPC) Program. This notable accomplishment places NBFD in an elite category, as less than 1 percent of fire departments nationwide have earned this distinction.

The significance of the Public Protection Classification (PPC) program lies in its recognition of communities that excel in providing effective fire protection services for both citizens and property owners. It serves as a testament to a community's commitment and investment in fire mitigation, which is a proven and reliable predictor of future fire losses. Insurance companies utilize PPC information to establish fair premiums for fire insurance, often offering lower rates in communities that demonstrate superior protection. This creates a tangible economic incentive for communities to enhance and maintain their public fire protection services.

### 3.4.6 Floodplain Management

Floodplain management is Chapter 15.50 of the NBMC, and it covers several flood management methods for flood-prone areas, including restricting uses; protecting developments at the time of construction; limiting natural floodplain alterations; controlling filling, grading, and dredging; and preventing or regulating flood barriers. These measures apply to "Areas of Special Flood Hazard," which are identified by FEMA via the 2019 "Flood Insurance Study for Orange County, California and Incorporated Area." In addition to flooding, mudslides, and flood-related erosion are also protected against as a part of this code.

# 4 Existing Conditions

## 4.1 Hazards

This section assesses available data and information on hazards as they relate to Newport Beach. Topics assessed include coastal hazards, seismic and geologic hazards, flooding hazards, fire, hazardous material management, aviation hazards, and extreme heat.

### 4.1.1 Coastal Hazards

#### Tsunamis and Rogue Waves

Tsunamis and rogue waves are each low-probability but high-risk hazards. Locally generated tsunamis, caused by offshore faulting or coastal landsliding, could result in extensive loss of life and property in Newport Beach. Tsunami maps updated in 2021 from the California Department of Conservation indicate that the largest area of the City susceptible to tsunamis include West Newport, Balboa Peninsula, Lido Isle, Balboa Island, and Upper Newport Bay.[15] Coastline areas consisting of cliffs, however, are protected from the worst impacts of tsunamis. Port and harbor areas of Newport Beach are susceptible to not only tsunami inundation but tsunami currents: strong and erratic currents produced by tsunamis that can damage infrastructure and property, particularly floating vessels.[16]

Tsunami wave heights, also known as forecast amplitudes, are predicted by the National Tsunami Warning Center. The model predicts a high near-shore wave height of 5 feet for distance-source tsunamis and 13 feet for local source tsunamis, originating from the Catalina Fault.[17]

Rogue waves are very high waves that arise unexpectedly in the open ocean. Their erratic nature and unpredictability present challenges for planning and evacuation. Rogue waves have impacted the Orange County coast historically and have the potential to impact Newport Beach in the future.

#### Storm Surges

Storm surges are associated with low-pressure weather systems, such as hurricanes, and other events involving high winds and rainfall. During storm surges, the water level increases, which can result in coastal flooding, potentially causing damage to low-lying areas and existing structures. Moreover, if a storm surge occurs during a high tide, flooding can be significant.

Storm surging associated with a tropical storm has been reported only once in the history of Newport Beach, in 1939. In 2023, Hurricane Hilary, which had degraded to tropical storm status by the time it reached Orange County, delivered heavy rainfall and winds to Newport Beach. The City only experienced some localized flooding and debris

15 Department of Conservation. 2021. "Tsunami Hazard Area Map, Orange County." Produced by the California Geological Survey and the California Governor's Office of Emergency Services. Mapped at multiple scales.

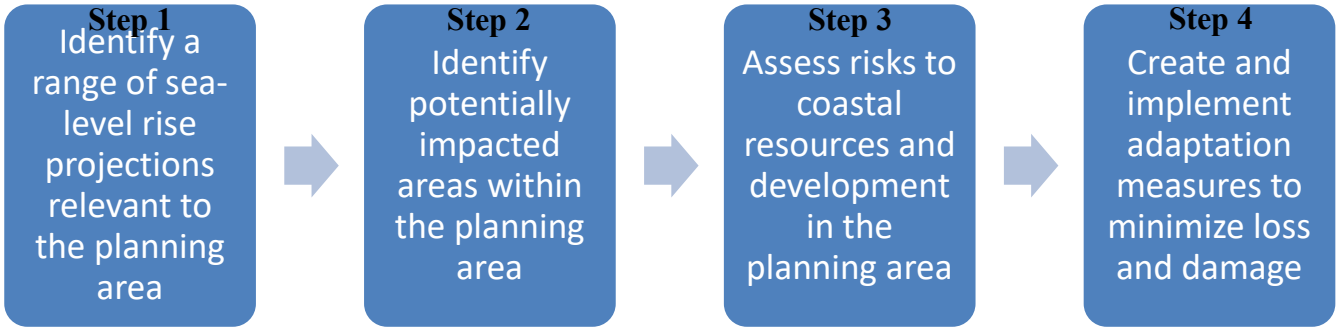
16 The SAFRR Tsunami Modeling Working Group. 2013. "Modeling for the SAFRR Tsunami Scenario—Generation, Propagation, Inundation, and Currents in Ports and Harbors." Chapter D in *The SAFRR (Science Application for Risk Reduction) Tsunami Scenario,* U.S. Geological Survey Open-File Report 2013–1170, 136 pp. http://pubs.usgs.gov/of/2013/1170/d/.

17 California Geological Survey. 2014. "CGS Special Report 236 – Tsunami Emergency Response Playbooks and FASTER Tsunami Height Calculation: Background Information and Guidance for Use." https://www.conservation.ca.gov/cgs/tsunami/reports.

flows, but pump crews and berms dug up at beaches prevented any substantial impacts. No storm surge was recorded as a result of the storm.[18] Therefore, the likelihood of storm surge in Newport Beach is low.

#### 4.1.1.1 Projected Sea-Level Rise in Newport Beach

Sea-level rise is a natural process that occurs due to the thermal expansion of sea water from rising ocean temperatures, the melting of Arctic and Antarctic ice sheets, the movement of tectonic plates, and land subsidence. Because thermal expansion and the melting of ice sheets is accelerating, sea levels are rising at an increasingly fast rate.[19] Although it is clear that sea-level rise is occurring and will continue to occur in the future, it is unclear how much sea levels will rise and the extent to which this will cause coastal flooding and cliff and beach erosion. For this reason, the California Coastal Commission (CCC) recommends planning for varying amounts of sea-level rise to protect coastal development based on the expected life span of development. Currently, Appendix A of the City's Local Coastal Program Implementation Plan, certified by CCC in 2017, declares the City's commitment to undertake a proactive program to monitor sea-level rise and also proposes the need to revise development standards in vulnerable areas. This commitment may serve as a preliminary action for the implementation of steps based on CCC's guidance for effective sea-level rise planning in coastal areas. These steps are outlined below.




The first step in planning for sea-level rise is to identify a range of sea-level rise projections relevant to Newport Beach. CCC recognizes the California Ocean Protection Council (OPC) Sea Level Rise Guidance (2018 Update) as the best available sea-level rise projections for California.[20] The OPC estimates amounts of sea-level rise in 2030, 2050, and 2100 based on assumptions about GHG emission trends developed by the Intergovernmental Panel on Climate Change (IPCC) as well as one extreme scenario. The assumptions associated with each scenario are outlined below:

- The low-emissions scenario assumes that emissions will be curbed significantly around the globe in the coming decades. However, the low-emissions trajectory would not begin until around 2050 due to "committed warming." Committed warming refers to the amount of warming resulting from past GHG

18 Orange County Register. 2023. "Tropical Storm Hilary: How Orange County's Cities Fared." August 21, 2023. https://www.ocregister.com/2023/08/21/tropical-storm-hilary-how-orange-countys-cities-fared/.

19 National Climate Assessment. 2014. "Climate Change Impacts in the United States." http://s3.amazonaws.com/nca2014/low/NCA3_Climate_Change_Impacts_in_the_United%20States_LowRes.pdf?download=1.

20 As of late 2023, OPC, in collaboration with the California Ocean Science Trust, is in the process of convening a scientific Task Force to update future sea-level rise scenarios based on two recent reports: the IPCC Sixth Assessment Report, which indicates that projections of extreme sea-level rise (i.e., H++ scenario) are less plausible yet also indicates increased certainty to 2050 sea-level rise projections, and the 2022 Sea-Level Rise Technical Report, which has integrated findings from the IPCC report to better guide planning and decision-making guidance. The following assumptions are based on existing findings and guidance and are subject to change based on future OPC findings and guidance.

emissions that can no longer be avoided. This means that, even if emissions are dramatically reduced in the coming decades, the effects of committed warming will continue to manifest even after reductions are made because natural systems are slow to respond to changes in GHG concentrations.[21] For this reason, OPC does not provide low-emissions sea-level rise projections for 2030 or 2050.

- The high-emissions scenario assumes that global GHG emissions will continue as "business as usual." Because global emissions reductions have not been reduced by any significant amount since IPCC developed the high emissions scenario, the potential for following this high-emissions trajectory is becoming more likely.
- The extreme scenario, also known as the H++ scenario, assumes continued high emissions and the rapid and complete melting of the West Antarctic ice sheet toward the end of the 21st century. The probability of this scenario is unknown, but it is thought to be extremely low. Furthermore, recent IPCC findings suggest this scenario is less plausible due to observations of increased surface mass balance in the Antarctic ice sheet. Nonetheless, OPC recommends considering it when planning for coastal development with extreme risks, such as power plants, hazardous waste sites, and airports.

Under these assumptions, OPC is able to project the amount of sea-level rise resulting from each scenario. Furthermore, OPC has determined the probability of these different sea-level rise projections in 2030, 2050, and 2100, which can help to understand what amounts of sea-level rise are most likely to occur under each scenario. Table 2 shows the projected amounts of sea-level rise for Los Angeles, the closest National Oceanic and Atmospheric Administration (NOAA) tide gauge to Newport Beach. The projection ranges in the "Likely Range" column in Table 2 are most likely to occur, but least severe. For this reason, OPC recommends that projections in the "Likely Range" are appropriate to consider when planning for coastal development with shorter lifespans and higher risk tolerance (i.e., low risk aversion), such as local streets that are not part of evacuation routes, active transportation infrastructure, green infrastructure, parks, and green spaces. The projections in the "1-in-20 Chance" column have a 5% chance of occurring but are more severe than those in the "Likely Range" column. OPC recommends that the "1-in-20 Chance" projections should generally be used to plan for coastal development with medium risk aversion, such as maintenance facilities, industrial buildings, mechanical equipment, piers, and docks. The projections in "1-in-200 Chance" column have a 0.5% chance of occurring but are more severe than the projections in the "1-in-20 Chance" column. OPC recommends that the "1-in-200 Chance" projections should be used to plan for development with medium-high risk aversion, such as homes and businesses, transportation centers, and some subterranean infrastructure. The projections in the "H++ Scenario" column are extreme and their probability of occurring is unknown. Nonetheless, the H++ Scenario projections are important to consider when planning for projects with extreme risk aversion, such as power plants, airports, wastewater treatment plants, and hazardous waste sites.

[21] OPC (California Ocean Protection Council). 2018. *State of California Sea-Level Rise Guidance 2018 Update*. https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf.

**Table 2. Projected Sea-Level Rise in Los Angeles**

| | Likely Range (Low Risk Aversion) | 1-in-20 Chance (Medium Risk Aversion) | 1-in-200 Chance (Medium-High Risk Aversion) | H++ Scenario (Extreme Risk Aversion) | |
|---|---|---|---|---|---|
| | 66% probability SLR is between: | 5% probability SLR meets or exceeds: | 0.5% probability SLR meets or exceeds: | (Probability unknown) | Selected CoSMoS Scenario |
| **2030, High Emissions** | 0.2–0.5 ft | 0.6 ft | 0.7 ft | 1.0 ft | 0.8 ft (0.25 m) |
| **2050, High Emissions** | 0.5–1.0 ft | 1.2 ft | 1.8 ft | 2.6 ft | 1.6 ft (0.5 m) |
| **2100, Low Emissions*** | 0.7–2.1 ft | 3.0 ft | 5.4 ft | None** | 4.1 ft (1.25 m) |
| **2100, High Emissions** | 1.3–3.2 ft | 4.1 ft | 6.7 ft | 9.9 ft | 4.9 ft (1.5 m) |

**Source**: OPC. 2018. "State of California Sea-Level Rise Guidance 2018 Update." https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf.
CoSMoS = Our Coast, Our Future's Coastal Storm Modeling System; SLR = sea-level rise; ft = feet; m = meters.

* Low emissions trajectory is only included for 2100 projections because it is likely that the high emissions trajectory will continue until at least 2050 on a global scale due to committed warming.

** The H++ scenario assumes a high emissions trajectory and the complete melting of Antarctic ice sheets. Therefore, a low emissions trajectory projection does not exist for this scenario.

To understand the potential impact of sea-level rise on Newport Beach based on its topography, this analysis uses the Our Coast, Our Future's Coastal Storm Modeling System (CoSMoS), as is recommended by CCC. CoSMoS was developed in partnership with the U.S. Geological Survey and uses the best available data and physical process models to predict coastal flooding extent and duration, wave runup and velocity, cliff retreat, shoreline position, and groundwater intrusion under different sea-level-rise scenarios. CoSMoS models sea-level rise in increments of 0.25 meters up to 5 meters. For this reason, it is not possible to model the precise amounts of projected sea-level rise associated with each of the scenarios listed in Table 2. Therefore, this analysis relies on the selected CoSMoS scenario projections listed in the right column of Table 2. Nearly all of these selected CoSMoS scenario projections fall between the 1-in-20 chance and 1-in-200 chance projections and, therefore, are medium to medium-high risk averse scenarios. The only exception is the 2030 projection of 0.8 feet, which falls between the 1-in-200 chance and H++ scenario projections, making it a high risk adverse scenario. This number was chosen because it is the smallest amount of sea-level rise modeled by CoSMoS other than 0 feet (i.e., the current sea level at the mean high-water line). Therefore, the City will be well prepared even for unlikely high amounts of sea-level rise by planning for the selected CoSMoS scenario projections.

#### 4.1.1.2 Potentially Affected Areas and Populations

The second step in planning for sea-level rise is identifying potentially affected areas. Using CoSMoS, this section identifies areas that would be affected by coastal flooding and cliff and beach erosion under the selected CoSMoS scenarios listed in Table 2.

#### 4.1.1.2.1 Coastal Flooding

As sea levels rise, the potential for coastal flooding increases. This is especially true during storm surges and high tides.[22] For this reason, CoSMoS shows current sea levels and predicts future sea levels at the mean high water line, or the average location of the shoreline during high tide, and enables users to toggle the severity of storm events to demonstrate how more severe storms can cause more widespread flooding. For the sake of simplicity, however, this analysis only considers flooding under average storm conditions. Average storm conditions are equivalent to an annual storm of mild severity.

Figure 1, Coastal Flooding Citywide, shows the possible extent of coastal flooding during an average storm event under the selected CoSMoS scenarios in 2030, 2050, and 2100. The current extent of flooding during an average storm event is shown in light blue. Most of these areas are sandy beaches or wetland areas in Upper Newport Bay. Therefore, few developed areas are currently at risk during such an event. Under the selected CoSMoS scenarios, however, Newport Beach would experience 0.8 feet (0.25 meters) of sea-level rise by 2030, 1.6 feet (0.5 meters) by 2050, and 4.1 to 4.9 feet (1.25 to 1.5 meters) by 2100, depending on whether GHG emissions are reduced globally. The areas that could be flooded during an average storm event with 0.8 feet of sea-level rise are shown in medium blue. These include almost the entirety of Balboa Island and the western portion of Balboa Peninsula. With 1.6 feet of sea-level rise, flooding during an average storm event could extend into the areas shown in dark blue. These areas include much of the central portion of Balboa Peninsula, including the area near Newport Beach Pier. Finally, the areas shown in purple and magenta could flood during an average storm event with 4.1 to 4.9 feet of sea-level rise, respectively. These areas include the neighborhoods and beaches near the Santa Ana River jetty; Balboa Coves; Mariner's Mile; many of the remaining islands in Newport Harbor; and portions of Balboa Peninsula, Corona del Mar State Beach, and Little Corona del Mar Beach. Therefore, many of Newport Beach's most built-out areas, densely populated neighborhoods, and vibrant business communities are at risk of flooding during an average storm even with relatively small amounts of sea-level rise. This flooding could be even more severe during unusually large storm events, which are also likely to increase in frequency.

[22] CCC (California Coastal Commission). 2018. "Consequences of Sea Level Risk for Communities, Coastal Resources, and Development." Chapter 4 in *Sea Level Rise Policy Guidance.* Adopted November 7, 2018. https://documents.coastal.ca.gov/assets/slr/guidance/2018/4_Ch4_2018AdoptedSLRGuidanceUpdate.pdf.

**Figure 1.** Coastal Flooding Citywide

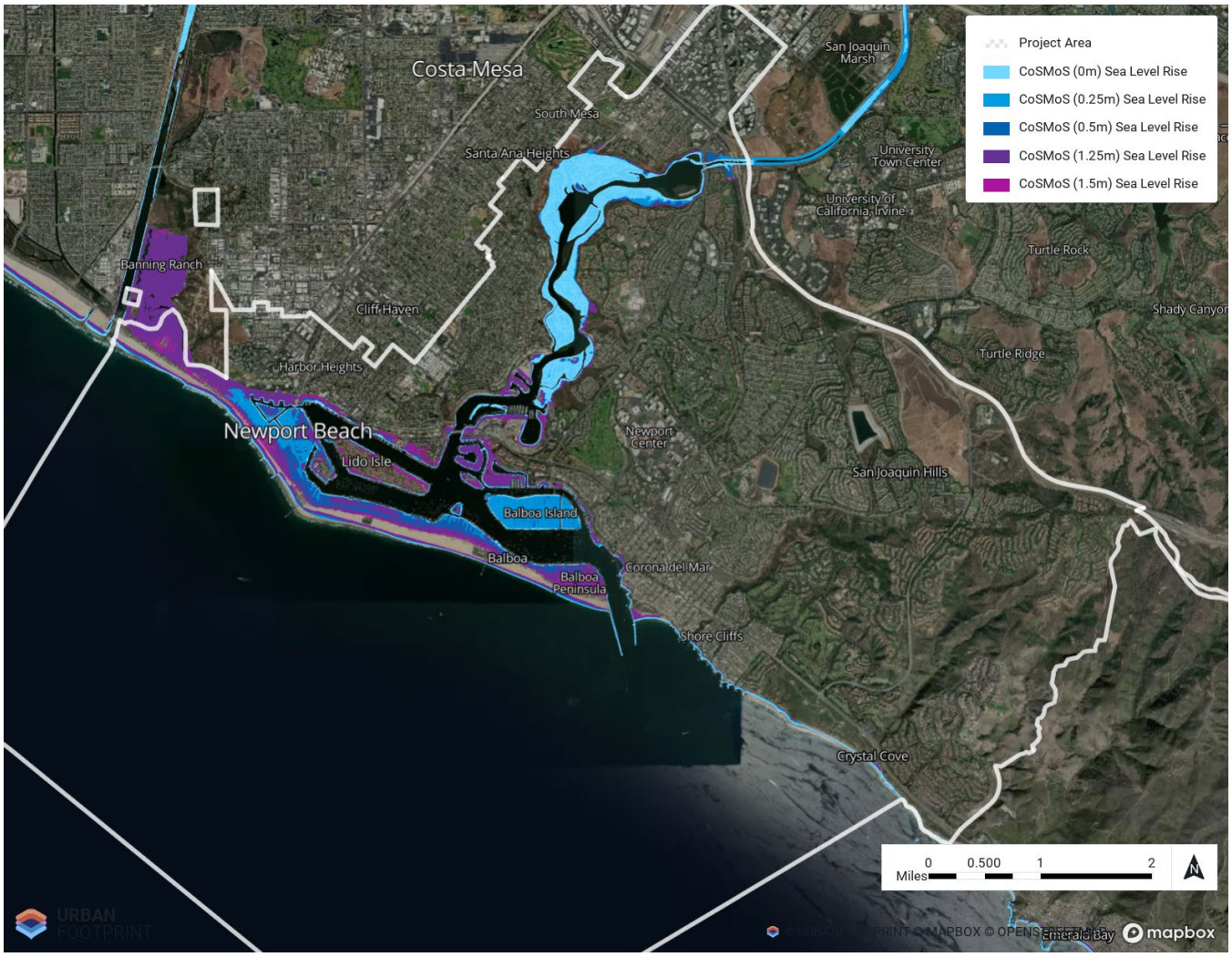



Figure 2, Coastal Flooding in Newport Harbor, and Figure 3, Coastal Flooding in Newport Bay, are subsets of Figure 1. They show the extent of coastal flooding during an average storm event in Newport Harbor and Newport Bay. These are the two areas of Newport Beach where flooding is expected to be most widespread, even under low amounts of sea-level rise.

**Figure 2.** Coastal Flooding in Newport Harbor

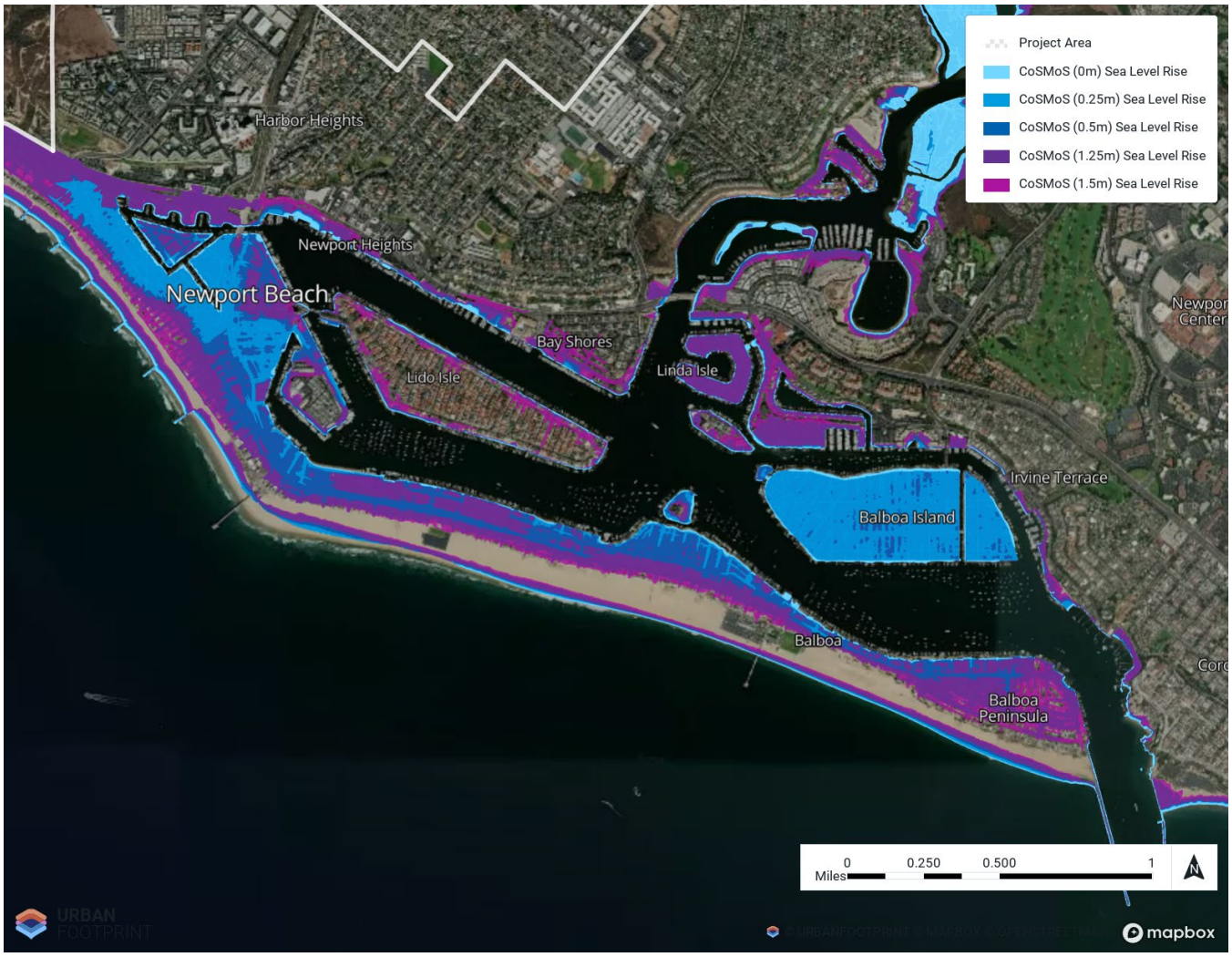
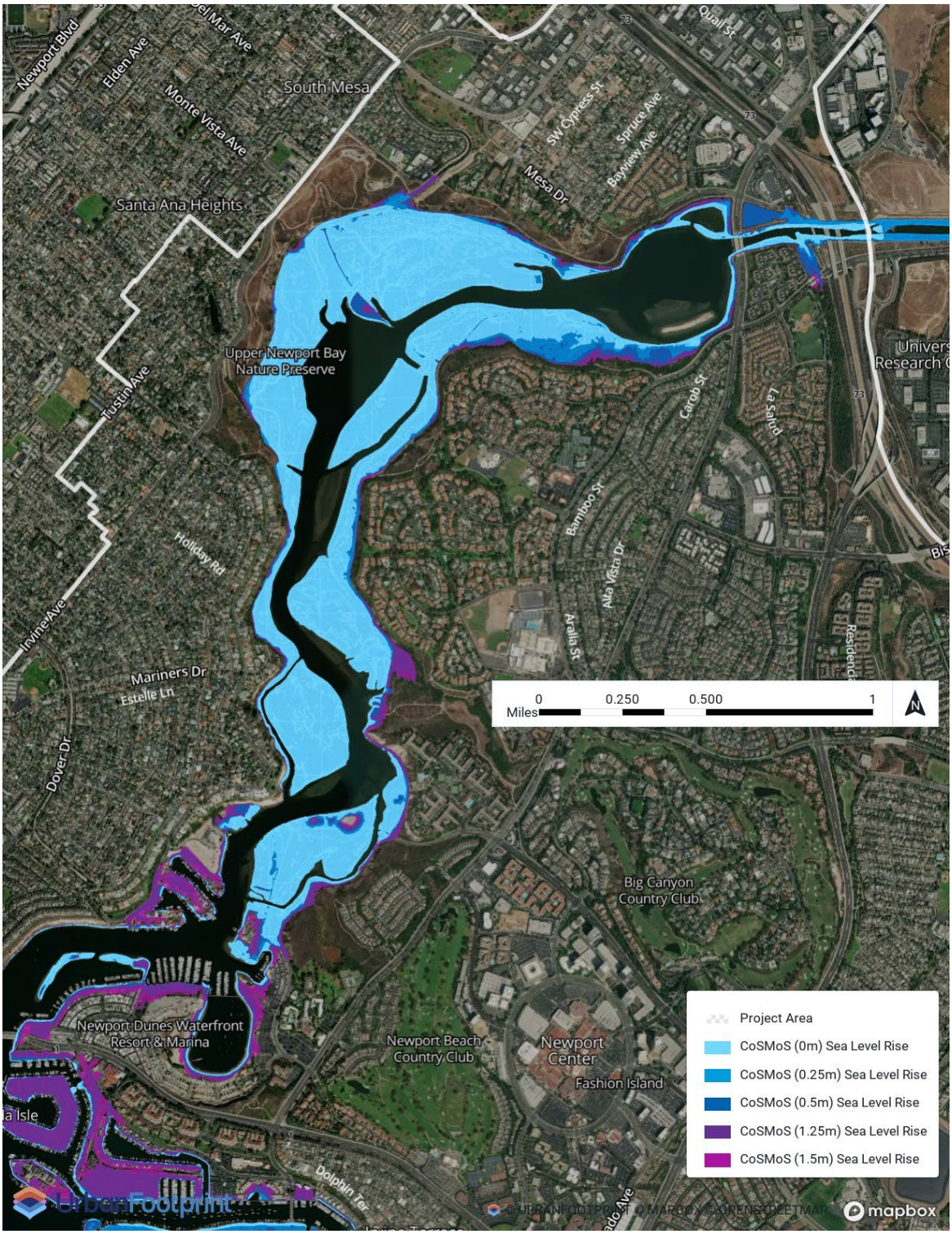


**Figure 3.** Coastal Flooding in Newport Bay



#### 4.1.1.2.2 Beach and Cliff Erosion

In addition to causing coastal flooding, the higher tides and storm surges associated with sea-level rise can erode beaches and cliffs at faster rates.[23] Because Newport Beach is lined with both sandy beaches and coastal bluffs, coastal erosion has the potential to affect many areas within Newport Beach.

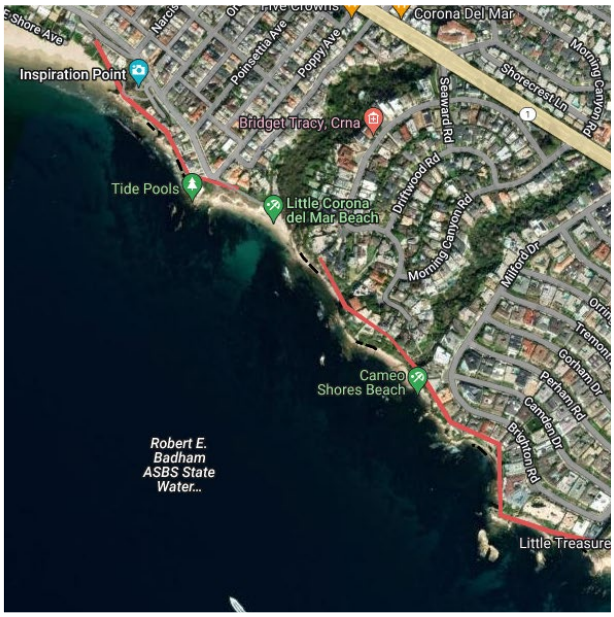
CoSMoS predicts the future position of cliff top edges and shorelines as they relate to wave patterns under different sea-level-rise scenarios and allows users to toggle between the "Hold the Line" and "Beach Nourishment" scenarios. Hold the Line assumes that erosion will not move past anti-erosion measures and into urban infrastructure. Therefore, Hold the Line necessitates the regular maintenance of anti-erosion measures, which are collectively referred to as "cliff armoring." Cliff armoring includes sea walls, vegetation, and rockpiles that break waves before they reach cliff edges. Beach Nourishment assumes that local governments will implement beach nourishment programs in which sand is artificially transported to beaches, as needed. This analysis assumes that the City will continue to maintain coastal infrastructure and implement its beach nourishment program.

Corona del Mar is one of two areas in Newport Beach that has coastal cliffs and, thus, experiences cliff erosion. Figure 4, Cliff Erosion in Corona del Mar, shows the location and extent of cliff retreat in Corona del Mar under the selected CoSMoS scenarios for 2030, 2050, and 2100. As shown in red, the cliff top edge moves farther inland as the amount of sea-level rise increases. Forecasted cliff retreat is especially extensive along Ocean Boulevard near Inspiration Point and the Cameo Shores neighborhood. As demonstrated by the black dashed line, some cliff areas are protected by infrastructure and may not experience as much erosion as they would otherwise.

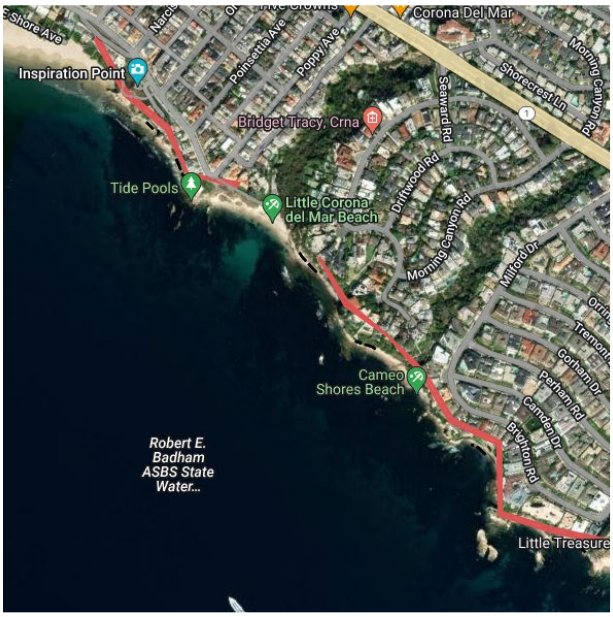
[23] CCC. 2018. "Consequences of Sea Level Risk for Communities, Coastal Resources, and Development." Chapter 4 in *Sea Level Rise Policy Guidance.* Adopted November 7, 2018. https://documents.coastal.ca.gov/assets/slr/guidance/2018/4_Ch4_2018AdoptedSLRGuidanceUpdate.pdf..

**Figure 4.** Cliff Erosion in Corona del Mar

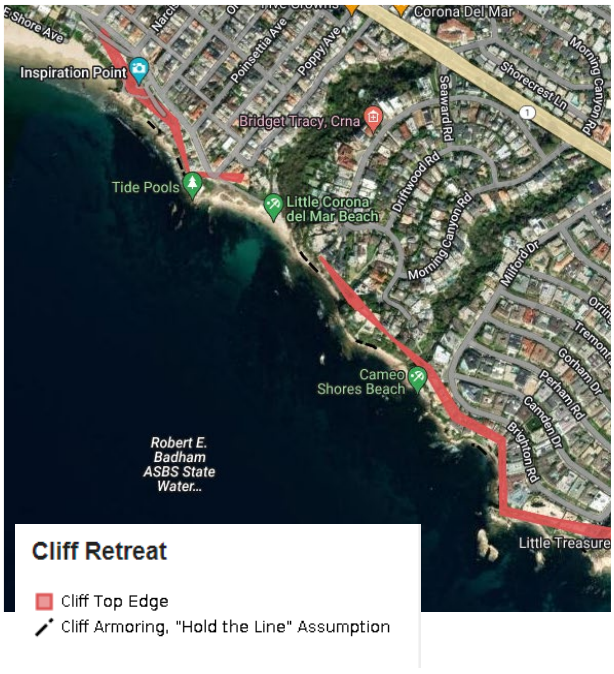
0.25m SLR (2030)



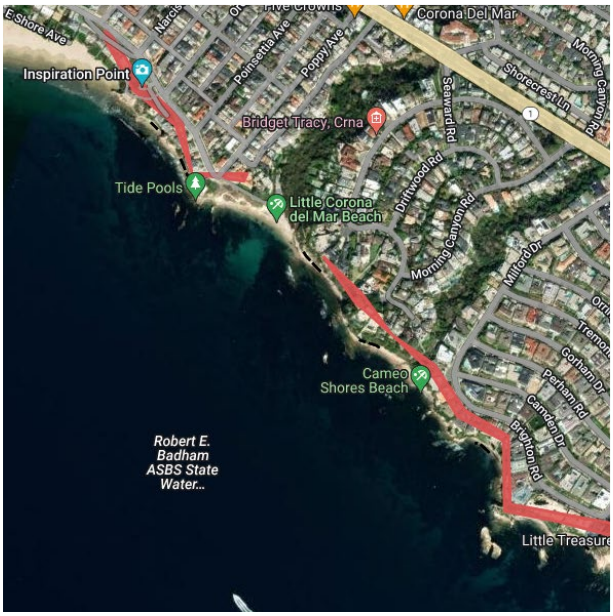

0.5m SLR (2050)




1.25m SLR (2100, low emissions)




1.5m SLR (2100, high emissions)



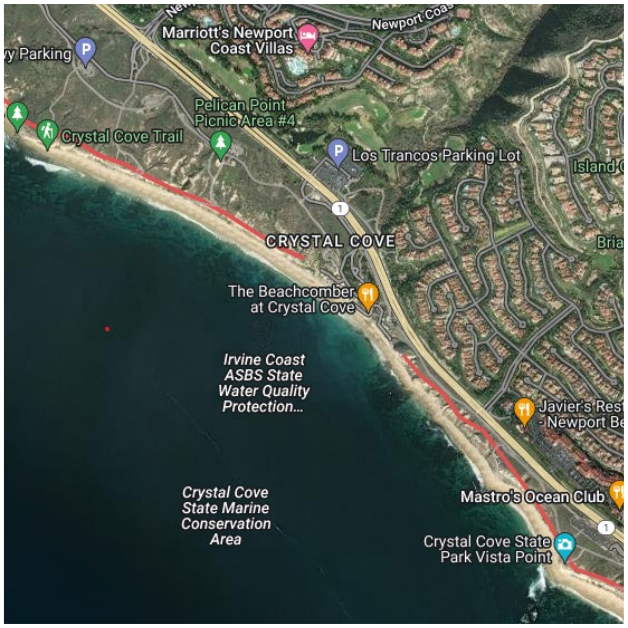
The second area that experiences cliff erosion is Newport Coast. Figure 5, Cliff Erosion in Newport Coast, shows the location and extent of cliff retreat in Newport Coast under the selected CoSMoS scenarios for 2030, 2050, and 2100. As shown in red, the cliff top edge moves farther inland as the amount of sea-level rise increases. The areas most likely to be affected are Crystal Cove State Park and Pacific Coast Highway near Crystal Cove Shopping Center. Moreover, the coastal cliffs in Newport Coast are largely undeveloped and have little to no infrastructure to hold the line.

Although sandy beach erosion occurs throughout most of Newport Beach, this section focuses on the beaches north of Newport Beach Pier and on the Balboa Peninsula because they are not lined by cliffs like the beaches in Corona del Mar and Newport Coast are. Figure 6, Beach Erosion North of Newport Beach Pier, shows the location and extent of shoreline retreat north of Newport Beach Pier under the selected CoSMoS scenarios for 2030, 2050, and 2100. As shown in orange, the shoreline (mean high water line) moves farther inland and changes shape as the amount of sea-level rise increases. The beaches in this area tend to experience the worst beach erosion in Newport Beach because they face southwest and are subject to strong currents that move sand northward. This erosion will likely accelerate with greater amounts of sea-level rise, creating smaller beaches in this area.

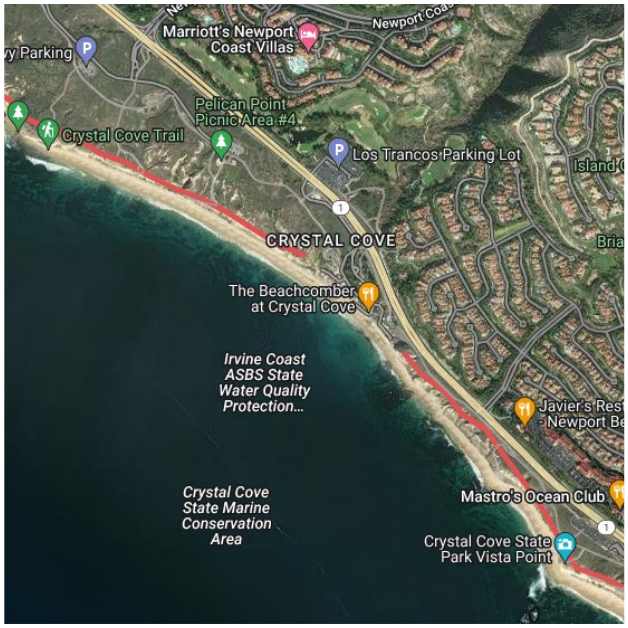
As shown in Figure 7, Beach Erosion on Balboa Peninsula, the extent of shoreline retreat on Balboa Peninsula is not as severe as on the beaches north of Newport Beach Pier. This is because the beaches on Balboa Peninsula are predominantly south-facing, and currents cannot move sand northward as easily. Nonetheless, Balboa Peninsula will experience more beach erosion as sea levels rise and create smaller beaches. This is particularly the case near the south side of Newport Beach Pier.

**Figure 5.** Cliff Erosion in Newport Coast

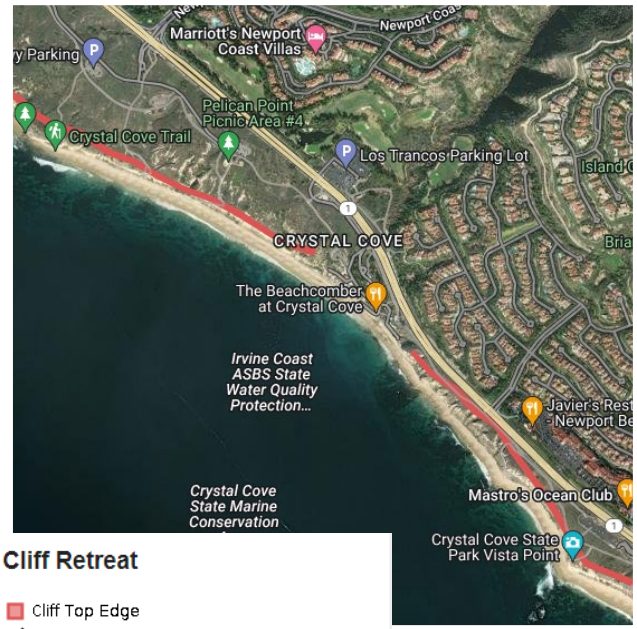
0.25m SLR (2030)




0.5m SLR (2050)




1.25m SLR (2100, low emissions)




1.5m SLR (2100, high emissions)

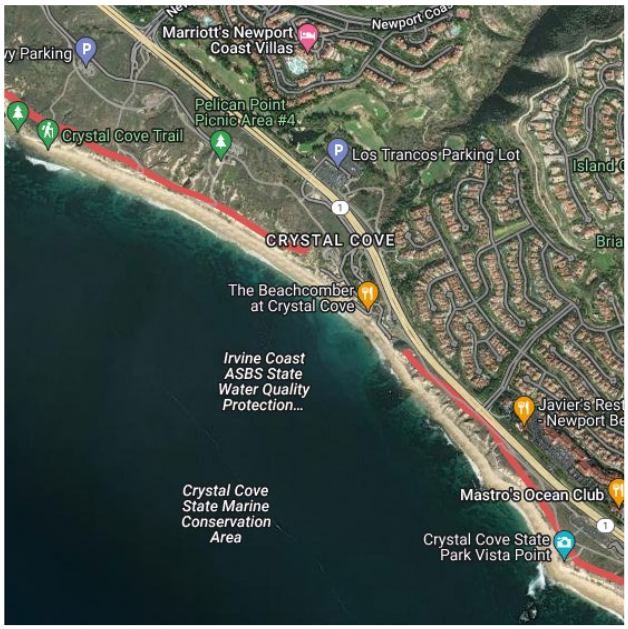
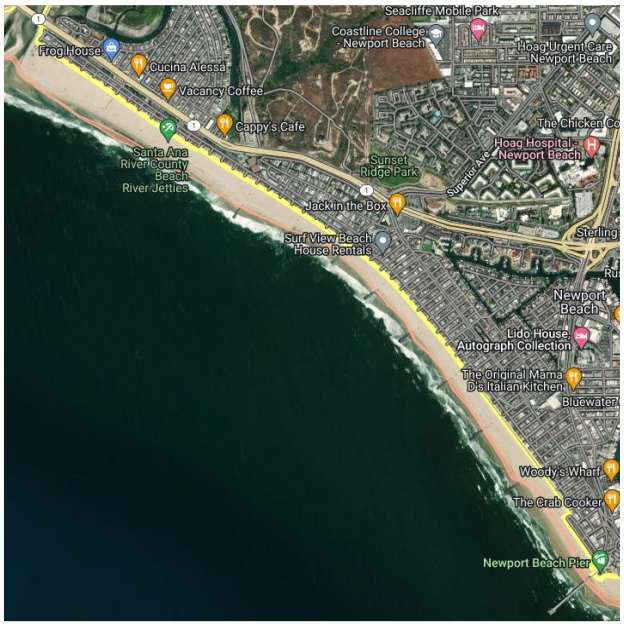
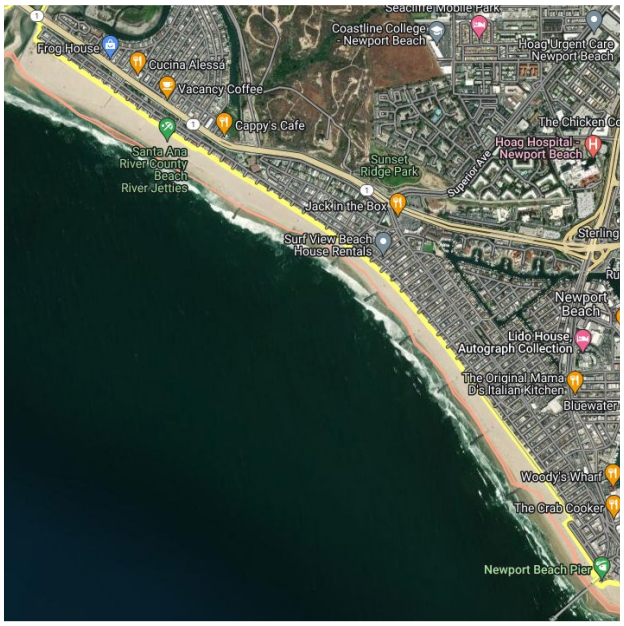


**Figure 6.** Beach Erosion North of Newport Beach Pier

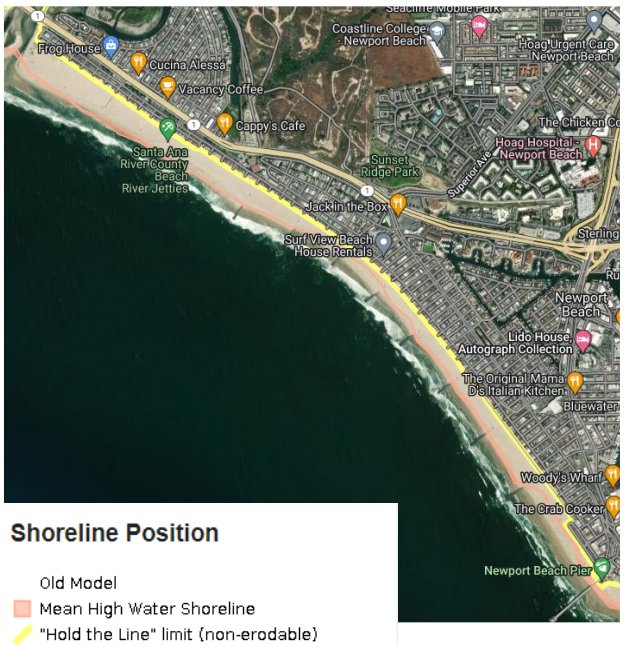
0.25m SLR (2030)




0.5m SLR (2050)




1.25m SLR (2100, low emissions)




1.5m SLR (2100, high emissions)

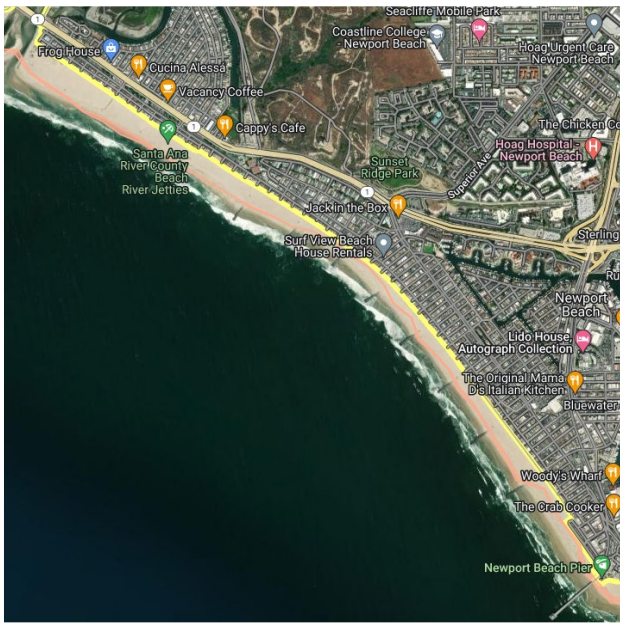
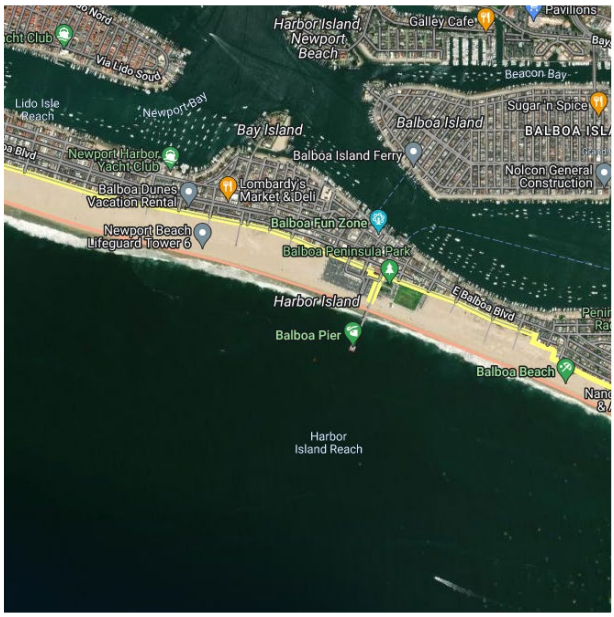
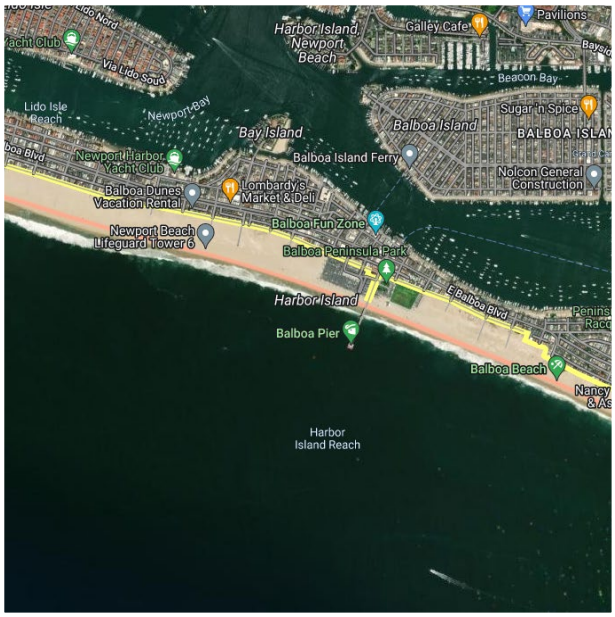


**Figure 7.** Beach Erosion on Balboa Peninsula

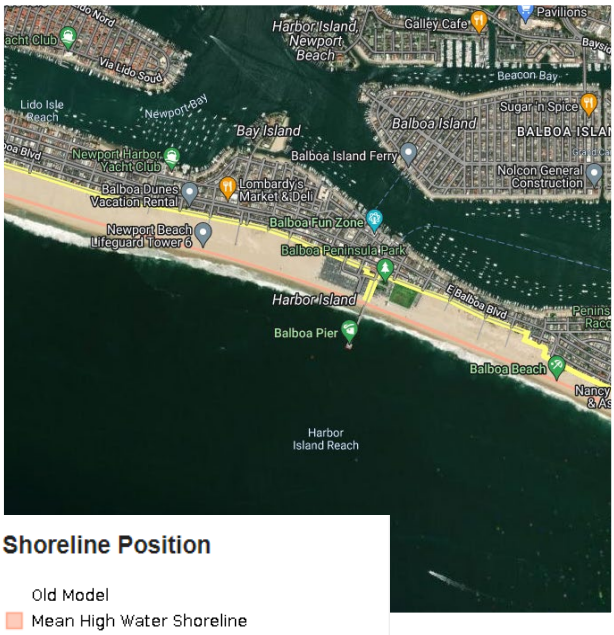
0.25m SLR (2030)



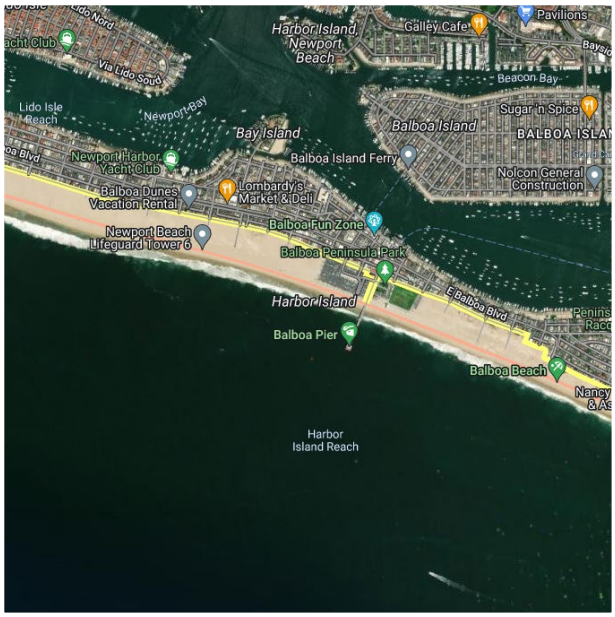

0.5m SLR (2050)




1.25m SLR (2100, low emissions)




1.5m SLR (2100, high emissions)



#### 4.1.1.3 Vulnerability Assessment

The third step in planning for sea-level rise is to assess risks to coastal resources and development. This section assesses the vulnerability of coastal development to coastal flooding and erosion under the selected CoSMoS sea-level rise scenarios.

##### 4.1.1.3.1 Coastal Flooding

Figure 1 shows the areas that would experience coastal flooding during an average storm event under the selected CoSMoS scenarios, but it does not assess potential loss and damage to development that could be caused by this flooding. Table 3, Development Vulnerable to Coastal Flooding, does this by estimating the number of dwelling units and the non-residential building area that could be affected by coastal flooding under each selected CoSMoS scenario. As shown, thousands of dwelling units and millions of square feet in non-residential structures could be affected by flooding even with relatively small amounts of sea-level rise. As the amount of sea-level rise increases, so does the number of affected structures. This flooding could result in costly damage to public and private property, displacement of residents, and structural failure. At worst, this flooding is a threat to public safety that could lead to injury and death.

**Table 3. Development Vulnerable to Coastal Flooding**

| | 2030 | 2050 | 2100 | |
|---|---|---|---|---|
| | 0.25-Meter SLR | 0.5-Meter SLR | 1.25-Meter SLR (low) | 1.5-Meter SLR (high) |
| Residential dwelling units (number) | 5,328 | 6,778 | 10,089 | 10,849 |
| Retail services building area (square feet) | 697,538 | 728,850 | 804,806 | 834,499 |
| Restaurants building area (square feet) | 562,088 | 599,327 | 742,083 | 776,667 |
| Accommodation building area (square feet) | 1,179,121 | 1,217,120 | 1,477,376 | 1,519,865 |
| Arts and entertainment building area (square feet) | 260,616 | 267,601 | 281,820 | 282,421 |
| Other retail building area (square feet) | 623,009 | 669,770 | 749,808 | 768,267 |
| Office services building area (square feet) | 554,635 | 595,427 | 901,830 | 944,177 |
| Education building area (square feet) | 4,720 | 4,720 | 9,681 | 9,681 |
| Medical services building area (square feet) | 269,209 | 305,678 | 564,659 | 568,230 |
| Transportation/warehouses building area (square feet) | 597,464 | 631,324 | 764,523 | 791,723 |
| Wholesale building area (square feet) | 107,063 | 111,414 | 127,601 | 131,453 |

**Source:** Urban Footprint. 2023. "Urban Footprint Base Canvas" https://urbanfootprint.com/platform/built-environment/.
**Note:** SLR = sea-level rise.

The selected CoSMoS scenarios are considered to be between medium and medium-high risk averse, with the exception of the 2030 selected CoSMoS scenario, which is highly risk averse. This means that there is a less than 5% chance that the actual amount of sea-level rise experienced in 2030, 2050, and 2100 will meet or exceed the amount of sea-level rise modeled in the selected CoSMoS scenarios for each year. In other words, the data in Table 3 is likely an overestimate of the number of dwelling units and non-residential building area what will be affected. Nonetheless, it is important to plan for these unlikely yet extremely damaging scenarios.

#### 4.1.1.3.2 Beach and Cliff Erosion

The extent to which beach and cliff erosion will affect existing coastal development varies greatly in different parts of Newport Beach. This is because some beaches and cliffs are more developed or adjacent to development than others.

As shown in Figure 4 the cliffs in Corona del Mar are densely developed with homes, roads, sidewalks, and beach access points. Therefore, cliff erosion in Corona del Mar has the potential to cause significant loss and damage to coastal development. This is especially true under scenarios with greater amounts of sea-level rise. By 2100, cliff erosion could encroach upon many homes in the Cameo Shores neighborhood and parts of Ocean Boulevard. Moreover, it could make it difficult or impossible to access Little Corona Beach.

Unlike Corona del Mar, the cliffs in Newport Coast are mostly undeveloped and are entirely within Crystal Cove State Park. Therefore, there is less potential for cliff erosion to cause loss or damage to homes and other buildings in Newport Coast. As shown in Figure 5, however, cliff erosion could disrupt beach access and encroach upon the portion of East Coast Highway directly in front of Crystal Cove Shopping Center. This is especially likely under either of the 2100 scenarios.

As shown in Figure 6 and 7, beach erosion is projected to increase with sea level rise, potentially threatening coastal development. Moreover, storms with high-energy waves often carry sand away from the dry beach to offshore bars or submerged berms and cause increased erosion of dunes and coastal bluffs[24]. With heightened risk of high-intensity storms, whereas once-a–century water levels are expected to become an annual event, beaches and bluffs are expected to be increasingly vulnerable to erosion[25]. Specifically, Balboa Peninsula, the bluffs along the Upper Newport Bay, and slots and canyons within San Joaquin Hills are areas of significant concern for erosion. One particularly vulnerable area is the public parking lot just north of Newport Beach Pier, which could be affected by beach erosion under higher amounts of sea-level rise.

### 4.1.1.4 Vulnerable Populations

Vulnerability to coastal hazards, including coastal flooding, rogue waves, tsunamis, and slower-moving hazards such as cliff erosion, is primarily a function of proximity to the coast. However, evacuating during catastrophic events is often more difficult for people with disabilities, older adults, households without cars, and people with limited English proficiency. Further, rebuilding or repairing after coastal flooding can be more difficult for renters, who may not receive assistance but would face housing impacts, and people who are housing burdened, who may not be able to pay for repairs. Additionally, during an emergency where response depends on emergency notification and post-disaster resource messaging, people with limited English proficiency can be left out. Table 4 outlines the rate

[24] California Coastal Commission. 2018. “Briefing on shoreline protective devices and their effects on beaches and coastal processes.” https://documents.coastal.ca.gov/reports/2018/8/w6e/W6e-8-2018_report.pdf

[25] Governor’s Office of Planning and Research, California Natural Resources Agency, and California Energy Commission. 2018. “Los Angeles Region Report.” California’s Fourth Climate Change Assessment. https://climateassessment.ca.gov/regions/.

of these populations in Newport Beach, which shows that older adults, severely cost-burdened renters, and severely cost-burdened homeowners are the most prevalent vulnerable populations..

**Table 4. Populations Vulnerable to Coastal Hazards**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Disability[1] | 3.6% | 5.3% |
| Older Adults[2] | 23.6% | 16.4% |
| Households without Car Access[3] | 4.0% | 4.4% |
| Renter Severe Housing Cost Burden[4] | 22.2% | 26.9% |
| Homeowner Severe Housing Cost Burden[5] | 13.1% | 11.4% |
| Limited English Speaking[6] | 3.46% | 19.3% |

**Source:** Public Health Alliance. 2022. "The California Healthy Places Index." https://map.healthyplacesindex.org/.
**Legend:** Quartile 1 = Good, Quartile 2 = Moderate, Quartile 3 = Poor, Quartile 4 = Challenged
**Note:** The table is colored to indicate how the City of Newport Beach and Orange County compare to other California cities and counties on average, not to indicate that certain traits are overall "good" or "bad."

1 Percent of people who have a disability.
2 Percent of people aged 65 and over.
3 Percent of households without access to a car.
4 Percent of renters who pay more than 50% of their income towards housing costs.
5 Percent of homeowners who pay more than 50% of their income towards housing costs.
6 Percent of people aged 5 and older who speak English less than very well.

## 4.1.2 Seismic and Geologic Hazards

Tectonic movement along the San Andreas Fault and its broad zone of subsidiary faults has resulted in a large degree of geologic diversity in Newport Beach. This, along with sea-level fluctuations, has resulted in a landscape that is also diverse in geologic hazards: surficial earth processes that have the potential to cause loss or harm to the community or the environment.

### 4.1.2.1 Geologic Hazards

#### Slope Failures

Slope failures often occur as elements of interrelated natural hazards in which one event triggers a secondary event such as a storm-induced mudflow. Slope failure can occur on natural and human-made slopes. The City's remaining natural hillsides and coastal bluff areas that are generally vulnerable to slope failures include the San Joaquin Hills and bluffs along Upper Newport Bay, Newport Harbor, and the Pacific Ocean. Recently recorded landslides occurred along the 1900 block of Galaxy Drive on March 3, 2023, impacting three homes and the 1900 block of Galaxy Drive on April 4,2024. Despite the vulnerability to slope failures, relatively few have impacted hillside structures in the City, likely due to implementation of hazard abatement provisions in the City's Excavation and Grading Code (NBMC Chapter 15.10), which requires Chief Building Official inspection of existing slope conditions and determination of hazard level, and sets permit requirements for grading.

### Compressible Soils

Compressible soils underlie a significant part of the City, typically in the lowland areas and in canyon bottoms. These are generally young sediments of low density with variable amounts of organic materials. Under the added weight of fill embankments or buildings, these sediments will settle, causing compression. Low-density soils, if sandy in composition and saturated with water, will also be susceptible of the effects of liquefaction during a moderate to strong earthquake.

### Expansive Soils

Some of the Newport Beach area, including both surficial soils and bedrock, features fine-grained components that are moderate to highly expansive. These materials may be present at the surface or exposed by grading activities. If built upon, expansive soils can cause significant damage to structures, including heaving and cracking to foundations, roads and sidewalks, and walls.

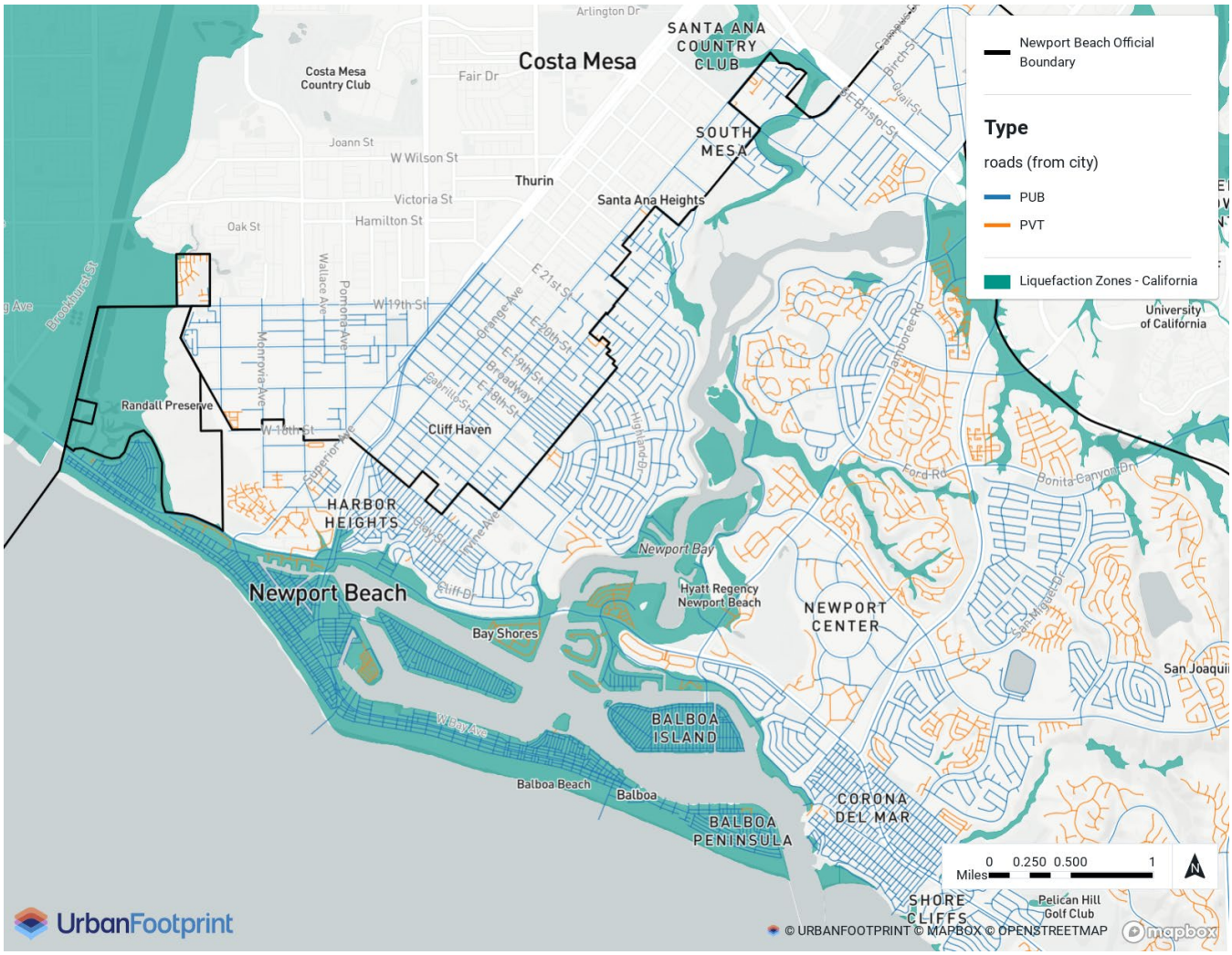
## 4.1.2.2 Seismic Hazards

Newport Beach is located in the northern part of the Peninsular Ranges Province, an area that is exposed to risk from multiple earthquake fault zones. The highest risks originate from the Newport-Inglewood fault zone, the Whittier fault zone, the San Joaquin Hills fault zone, and the Elysian Park fault zone, each with the potential to cause moderate to large earthquakes that would cause ground shaking in Newport Beach and nearby communities. Earthquake-triggered geologic effects also include surface fault rupture, landslides, liquefaction, subsidence, and seiches. Earthquakes can also lead to urban fires, dam failures, and toxic chemical releases, all human-made hazards.

### Liquefaction

Strong ground shaking can result in liquefaction. Liquefaction, a geologic process that causes ground failure, typically occurs in loose, saturated sediments primarily of sandy composition. Areas of Newport Beach susceptible to liquefaction and related ground failure (i.e., seismically induced settlement) include areas along the coastline that includes Balboa Peninsula, in and around the Newport Bay and Upper Newport Bay, in the lower reaches of major streams in Newport Beach, and in the floodplain of the Santa Ana River. It is likely that residential or commercial development will never occur in many liquefiable areas, such as Upper Newport Bay, the Newport Coast beaches, and the bottoms of stream channels; however, other structures (such as bridges, roadways, major utility lines, and park improvements) in these areas are vulnerable to damage from liquefaction. As shown in Figure 8, Liquefaction Zones, the greatest risk of damage resulting from liquefaction is in Balboa Peninsula and Balboa Island, which have been densely developed with residential and commercial structures, roads, and other infrastructure.

**Figure 8**. Liquefaction Zones



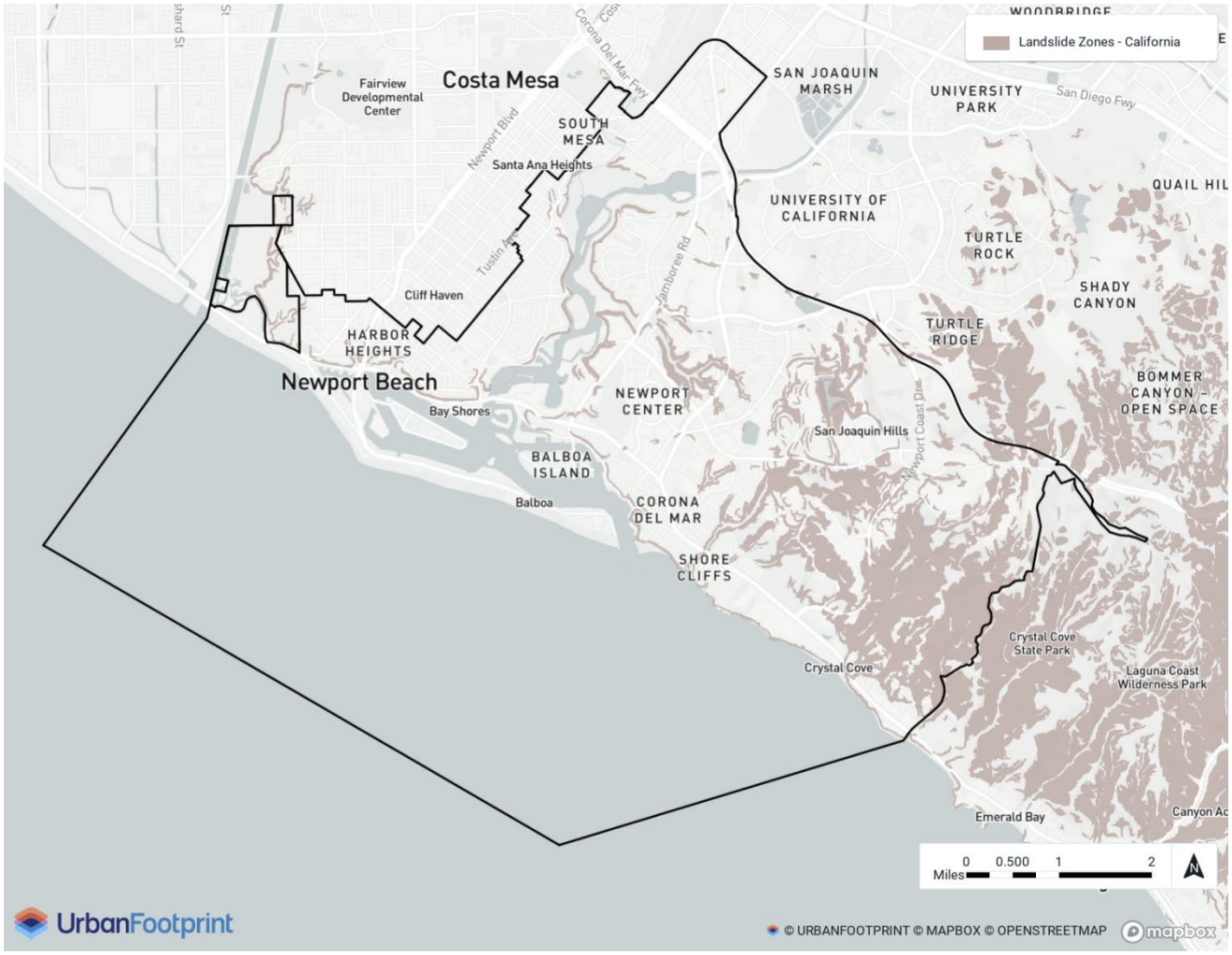

## Slope Failure

Strong ground motions can also worsen existing unstable slope conditions, particularly if coupled with saturated ground conditions. Seismically induced landslides can overrun structures, people, or property, sever utility lines, and block roads, thereby hindering rescue operations after an earthquake. As shown in Figure 9, Landslide Zones, much of the area in eastern Newport Beach, adjacent to Crystal Cove State Park, and west of Newport Coast Drive between San Joaquin Hills Road and Pacific Coast Highway, has been identified as vulnerable to seismically induced slope failure and susceptible to landsliding by CGS.[26] Additionally, the sedimentary bedrock that crops out in the San Joaquin Hills is locally highly weathered. In steep areas, strong ground shaking can cause slides or rockfalls in this material. Rupture along the Newport-Inglewood fault zone and other faults in Southern California could reactivate existing landslides and cause new slope failures throughout the San Joaquin Hills. Slope failures can

[26] California Geologic Survey. 2023. "Landslide Inventory." Department of Conservation. https://www.conservation.ca.gov/cgs/maps-data.

also be expected to occur along stream banks and coastal bluffs, such as Big Canyon, around San Joaquin Reservoir, Newport and Upper Newport Bays, and Corona del Mar.

**Figure 9.** Landslide Zones




## 4.1.2.3 Vulnerable Populations

Vulnerability to geologic and seismic hazards depends on location. Homes and businesses located in areas with heightened risk of earthquake, landslide, liquefaction, or other geologic and seismic events are naturally more susceptible to damage; likewise, people living in such areas have heightened risk of injury or loss of life. Furthermore, certain groups may have more difficulty recovering after a major seismic or geologic event. Populations in this category include low-income households, especially renters. Other sensitivities concern challenges accessing information about emergency response or evacuation, which can be a challenge for people over the age of 65 and those who have limited English proficiency. Evacuation or displacement challenges are also present for people with disabilities. In Newport Beach, older adults and severely cost-burdened homeowners and renters are most common as populations vulnerable to seismic and geologic hazards (Table 5).

**Table 5. Populations Vulnerable to Seismic and Geologic Hazards**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Renter Severe Housing Cost Burden[1] | 22.2% | 26.9% |
| Homeowner Severe Housing Cost Burden[2] | 13.1% | 11.4% |
| Older Adults[3] | 23.6% | 16.4% |
| Disability[4] | 3.6% | 5.3% |
| Limited English Speaking[5] | 3.46% | 19.3% |

**Source:** Public Health Alliance. 2022. "The California Healthy Places Index." https://map.healthyplacesindex.org/.
**Legend:** Quartile 1 = Good, Quartile 2 = Moderate, Quartile 3 = Poor, Quartile 4 = Challenged
**Note:** The table is colored to indicate how the City of Newport Beach and Orange County compare to other California cities and counties on average, not to indicate that certain traits are overall "good" or "bad."

1 Percent of renters who pay more than 50% of their income towards housing costs.
2 Percent of homeowners who pay more than 50% of their income towards housing costs.
3 Percent of people aged 65 and over.
4 Percent of people who have a disability.
5 Percent of people aged 5 and older who speak English less than very well.

### 4.1.3 Flooding Hazards

Inland flooding can occur due to flash flooding from small, natural channels, or more moderate and sustained flooding from the Santa Ana River and San Diego Creek. FEMA identifies 100- and 500-year flood zones, which include the low-lying areas in West Newport at the base of the bluffs, the coastal areas that surround Newport Bay, all low-lying areas adjacent to Upper Newport Bay, along the lower reaches of Coyote Canyon, in the lower reaches of San Diego Creek, and in a portion of Buck Gully. A 100-year flood zone is an area with a 1% chance or higher chance of experiencing a flood each year and a 500-year flood zone is an area with a 0.2% chance or higher chance of experiencing a flood each year. Most flooding along these second- and third-order streams is not expected to impact significant development. However, flooding in the coastal areas of Newport Beach would impact residential and commercial zones along West Newport, Balboa Peninsula, and Balboa Island, and the seaward side of Pacific Coast Highway. Figure 10 shows the 100- and 500-year flood zones, or areas with a1% and 0.2% chance of flooding each year. It should be noted that since flood level is statistically computed using past data, as more data becomes available, the levels can change. FEMA is required to review community flood maps every five years[27].

Extreme storms, including atmospheric rivers, can produce intense precipitation that leads to both coastal and inland flooding. Between 1979 and 2013, 72 atmospheric rivers made landfall along the Southern California coast, an average of 2 to 3 events per year. The frequency of atmospheric river events may increase in the future and may carry high amounts of water vapor compared to historic conditions. The peak season of atmospheric river occurrence may lengthen, thereby extending the flood-hazard season in California in general. Current global models predict a nearly 40% increase in precipitation during atmospheric river events in Southern California by end-century under a high emissions scenario.[28] These factors increase the risk of severe flooding that has the potential to overwhelm stormwater infrastructure, damage structures and other infrastructure, impair water quality, and lead to localized impacts such as road closures and inundation of homes and businesses.

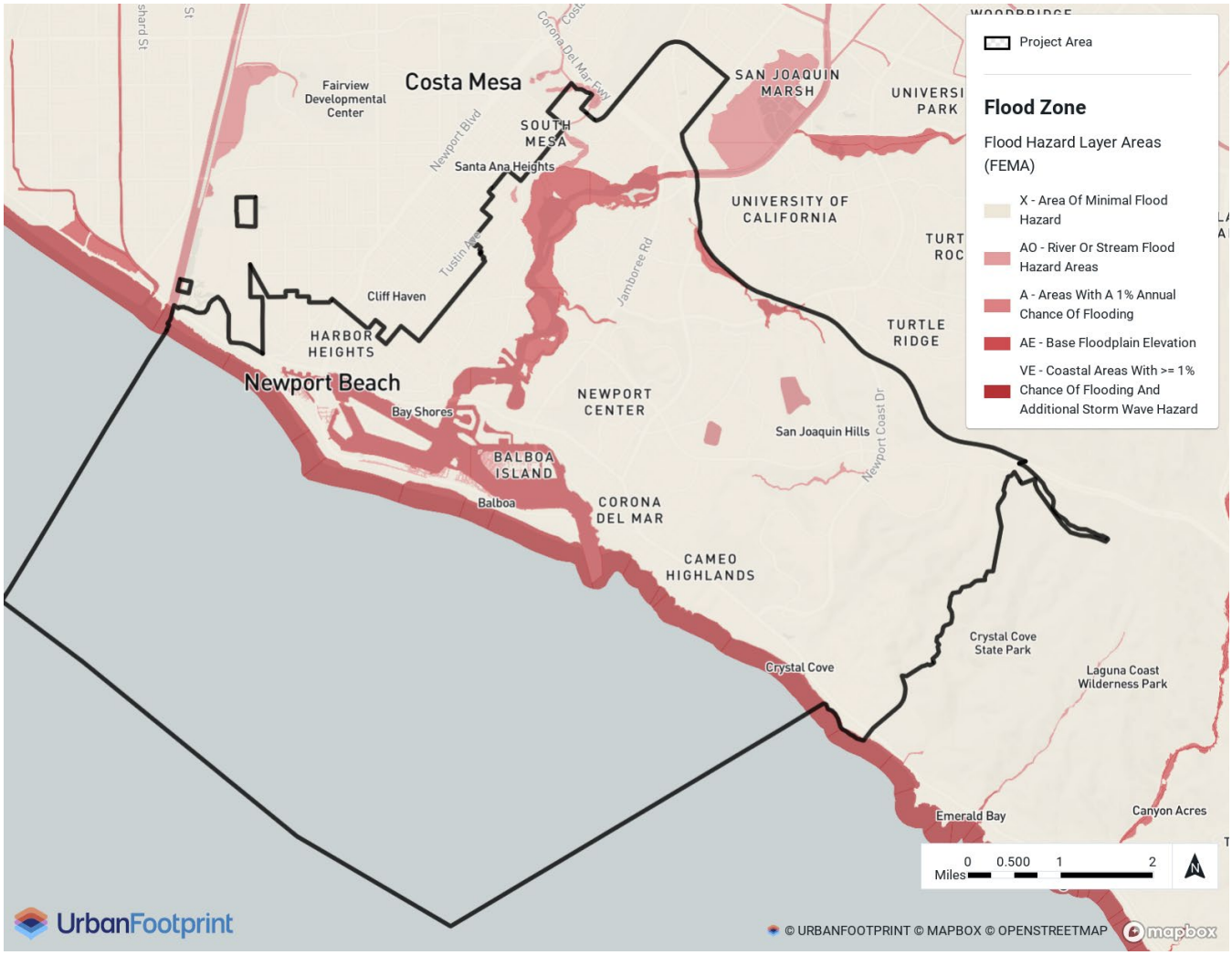
27 FEMA. "Notice to Congress: Monthly Update on Flood Mapping" www.fema.gov/sites/default/files/documents/fema_notice-congress_062023.pdf
28 Governor's Office of Planning and Research, California Natural Resources Agency, and California Energy Commission. 2018. "Los Angeles Region Report." California's Fourth Climate Change Assessment. https://climateassessment.ca.gov/regions/.

Various flood control measures have helped mitigate flood damage in Newport Beach. These include restricting or prohibiting uses that risk water or erosion hazards; requiring uses vulnerable to floods to be constructed to mitigate flood damage; setting standards for filling, grading, dredging, and other activities that can increase flood damage potential; and regulating construction of flood barriers that unnaturally divert flood waters, resulting in increased flood risk elsewhere (see NBMC Chapter 15.50). Recent actions addressing flooding include a cooperative project with the California Department of Transportation to restore flood conveyance capacity in Semeniuk Slough, completed in 2017.

In addition, seismically induced inundation, flooding resulting from water retention structure failure due to an earthquake, can also occur in Newport Beach. Portions of Newport Beach are threatened by flooding from Harbor View Dam, Big Canyon Dam, San Joaquin Reservoir, and Sand Canyon Dam. These dams were constructed either for flood risk reduction or water supply, but strong ground shaking could result in dam failure. Inundation maps from the California Department of Water Resources (DWR)[29] indicate that Sand Canyon, San Joaquin Reservoir, and Big Canyon have "extremely high" potential downstream impacts to life and property, meaning dam failure is expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more. Harbor View Dam is rated as "high," meaning dam failure is expected to cause loss of at least one human life. For all dams except for those with "low" potential downstream impacts, emergency action plans have been prepared by the owner. The Division of Safety of Dams within DWR assesses jurisdictional dams and their related structures, which includes dams owned by public agencies, private organizations, and individual landowners, for safety and performance.

[29] DWR. 2023. "California Dam Breach Inundation Maps." https://fmds.water.ca.gov/maps/damim/.

**Figure 10.** Flood Zones




### 4.1.3.1 Vulnerable Populations

Vulnerability to flooding can be due to physical disabilities or age that make evacuation more challenging or income and ownership status. Low-income households, particularly renters without rental insurance, can face greater challenges recovering from flooding events and can face greater risk of displacement if their residence damaged by floodwaters. Additionally, recovering from flooding events can be more difficult for low-income homeowners or renters who are severely housing burdened (i.e., households who pay 50% or more of their income towards housing costs or rent). In Newport Beach, older adults and severely cost-burdened homeowners and renters are the most common populations vulnerable to flooding (Table 6).

**Table 6. Populations Vulnerable to Flooding**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Disability[1] | 3.6% | 5.3% |

**Table 6. Populations Vulnerable to Flooding**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Older Adults[2] | 23.6% | 16.4% |
| Renter Severe Housing Cost Burden[3] | 22.2% | 26.9% |
| Homeowner Severe Housing Cost Burden[4] | 13.1% | 11.4% |

**Sources:** Public Health Alliance. 2022. "The California Healthy Places Index." https://map.healthyplacesindex.org/.
**Legend:** Quartile 1 = Good, Quartile 2 = Moderate, Quartile 3 = Poor, Quartile 4 = Challenged
**Note:** The table is colored to indicate how the City of Newport and Orange County compare to other California cities and counties on average, not to indicate that certain traits are overall "good" or "bad."

1 Percent of people who have a disability.
2 Percent of people aged 65 and over.
3 Percent of renters who pay more than 50% of their income towards housing costs.
4 Percent of homeowners who pay more than 50% of their income towards housing costs.

### 4.1.4 Fire

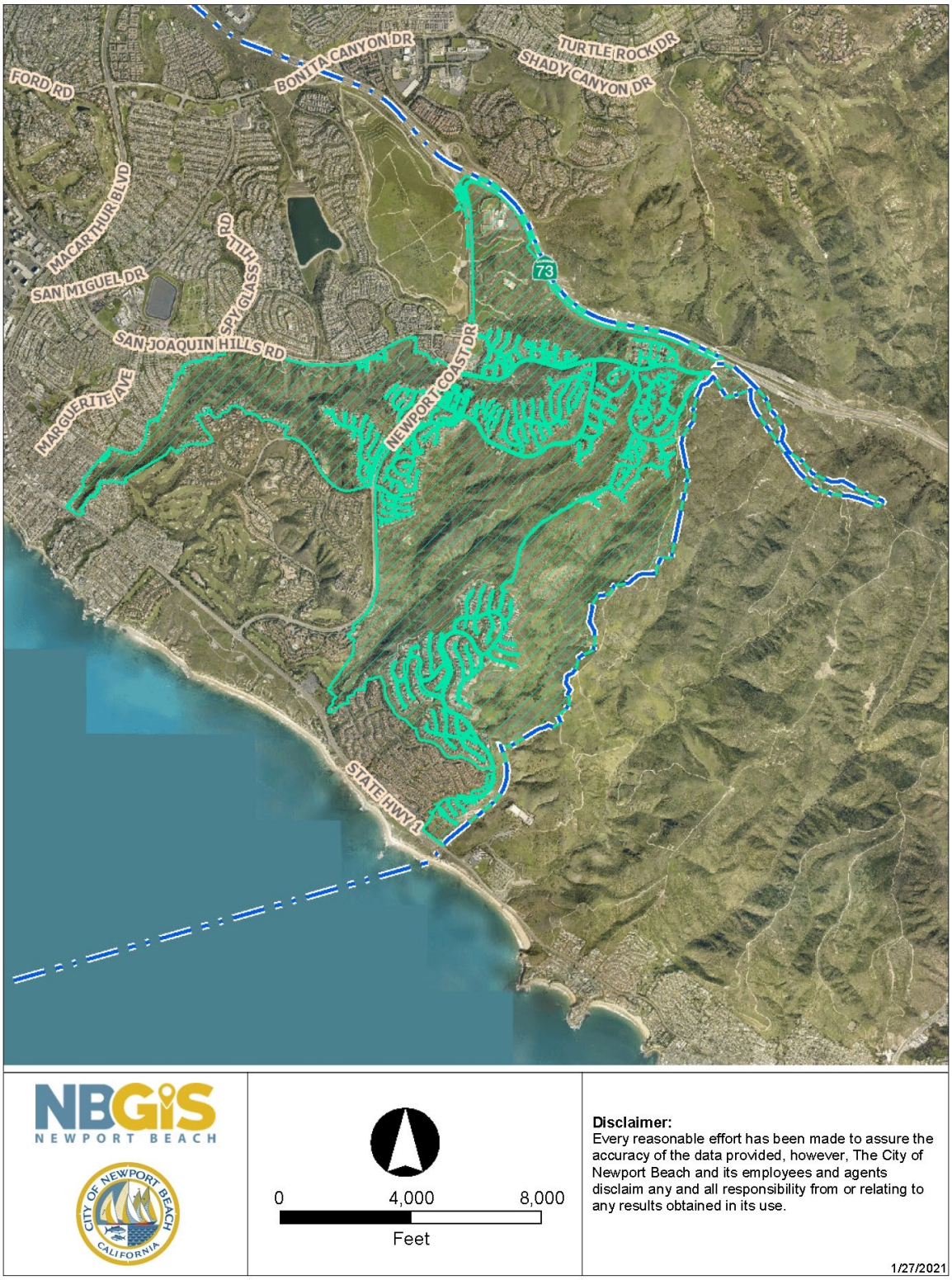
Wildfires could reach Newport Beach through ember cast, which is when firebrands from a wildfire shoot off and are carried by wind currents.[30] According to the CAL FIRE 2022–2023 Regulatory Adoption, neighboring Crystal Cove State Park on the eastern border of Newport Beach is characterized as a Very High Fire Hazard Severity Zone for the local responsibility area and the State responsibility area, meaning properties in the eastern sections of Newport Beach, such as the San Joaquin Hills and Shore Cliffs, are susceptible to wildfire exposure.[31] **Figure 11** shows the Fire Hazard Severity Zones in the City's jurisdiction.

**Figure 12** shows the local history of fires within and adjacent to Newport Beach. Of those mapped, the largest fire was the Laguna Beach Fire of 1993, which burned more than 14,000 acres across Crystal Cove State Park, Laguna Beach, Irvine, and Newport Beach; it caused an estimated $528 million in damages.[32] Although fires have occurred in the years since the Laguna Beach Fire, many of these have been contained before they could spread further.

Future projections using statistical models show an increase in the number of wildfires and burned area in the Southern California region by mid-century under a high emissions scenario. Wildfire burned area is projected to increase over 75% for fires not driven by Santa Ana winds, and 60% for Santa Ana-based fires, under this scenario. By end-of-century, under either a low or high emissions scenario, the rate of increase in burn area is projected to slow slightly, as warmer conditions decrease the available fuel for wildfires.

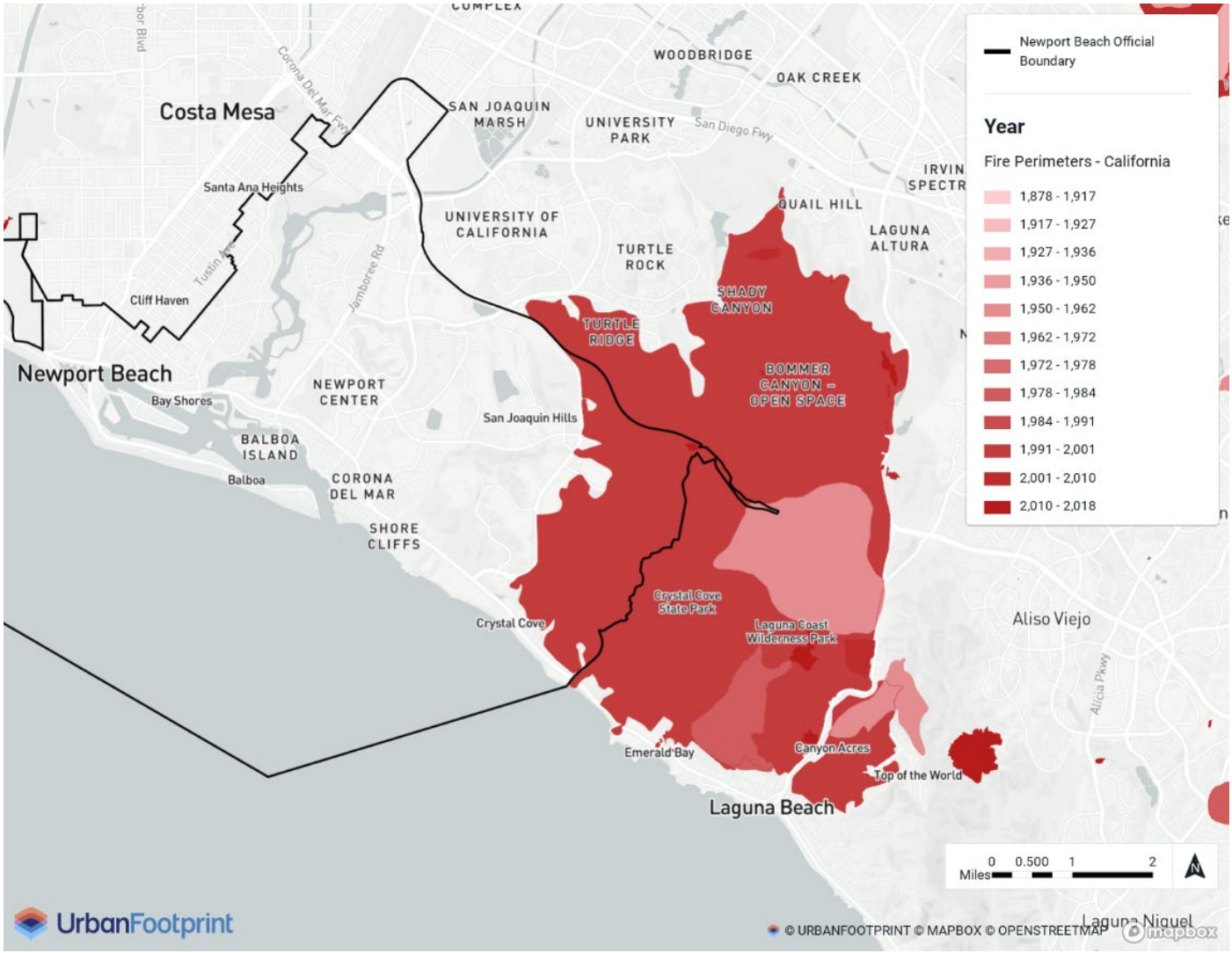
30 As of 2023, CAL FIRE is updating its fire hazard severity mapping. It is anticipated that the hazard zones will expand as a result of ember-cast fires.
31 CAL FIRE. 2023. "Fire Hazard Severity Zones." Accessed 12/7/2023. https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones.
32 Orange County Fire Department. n.d. *Orange County Firestorm 1993 October 26–November 4*. https://www.ocfa.org/Uploads/Transparency/OCFA-AAR-Orange%20County%20Firestorm.pdf.

**Figure 11.** Fire Hazard Severity Zones



In those areas identified as susceptible to wildland fire, NBFD enforces regulations that reduce the amount and continuity of fuel (vegetation) available, firewood storage, debris clearing, proximity of vegetation to structures, and other measures aimed at hazard reduction. These regulations are located in several sections of the NBMC: the City has adopted the 2022 California Fire Code and 2022 California Building Code with local amendments, which include provisions regarding construction standards in new structures and remodels, road widths and configurations designed to accommodate the passage of fire trucks and engines, and requirements for minimum fire flow rates for water mains. Additionally, the City's property development standards include provisions relating to fuel modification, which applies to all development within and adjacent to wildland fire hazard areas, aimed at reducing fire encroachment into structures from adjacent vegetation.

**Figure 12.** Fire Perimeters




Urban fires are also a safety concern. Many factors contribute to an area being at risk of structural damage: fire departments' capabilities to contain and control fires, including the construction size and type, built-in protection, density of construction, street widths, and occupancy size. Many of the structures in the older portions of Newport Beach, some dating back to the 1930s, are susceptible to urban fires. These areas were built to older building

standards and fire codes, made from non-fire-resistive construction materials, and built with no internal sprinklers and other fire safety systems in place. These areas include Balboa Peninsula, Balboa Island, and Corona del Mar.

Through the Building Code and Fire Code, amended in 2022 (see Sections 4.4.1 through 4.4.3 for more detail), the City requires sprinklers to be installed in all new residential structures and buildings, provided the building has a total building area of greater than 5,000 square feet, and in all existing buildings when certain conditions are met, such as certain increases in buildings size or additional stories added above the second floor.

Earthquake-induced fires have the potential to be the worst-case fire-suppression scenarios for a community. An earthquake can cause multiple ignitions distributed over a broad geographic area. Breaks in the gas mains and the water distribution system, for example, could lead to seismically induced fires.

### 4.1.4.1 Vulnerable Populations

Vulnerability to wildfire includes populations who face greater challenges evacuating during wildfire events, those who are sensitive to wildfire smoke, and those who face greater challenges recovering after wildfires. People over the age of 65, people with disabilities, and those with limited car access may face greater difficulties evacuating during wildfires and have greater risk of injury or loss of life. People with respiratory conditions such as asthma, older adults, and young children are more sensitive to the impacts of wildfire smoke. Low-income households face steeper recovery after wildfires, especially in the event of property damage or loss. In Newport Beach, older adults and severely cost-burdened homeowners and renters are most common as populations vulnerable wildfire impacts (Table 7).

**Table 7. Populations Vulnerable to Fire**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Renter Severe Housing Cost Burden[1] | 22.2% | 26.9% |
| Homeowner Severe Housing Cost Burden[2] | 13.1% | 11.4% |
| Older Adults[3] | 23.6% | 16.4% |
| Young Children[4] | 3.9% | 5.93% |
| Disability[5] | 3.6% | 3.2% |
| Asthma[6] | 8.05% | 8.32% |
| Limited Car Access[7] | 4.0% | 4.4% |

**Source:** Public Health Alliance. 2022. "The California Healthy Places Index." https://map.healthyplacesindex.org/.
**Legend:** Quartile 1 = Good, Quartile 2 = Moderate, Quartile 3 = Poor, Quartile 4 = Challenged
**Note:** The table is colored to indicate how the City of Newport Beach and Orange County compare to other California cities and counties on average, not to indicate that certain traits are overall "good" or "bad."

1 Percent of renters who pay more than 50% of their income towards housing costs.
2 Percent of homeowners who pay more than 50% of their income towards housing costs.
3 Percent of people aged 65 and over.
4 Percent of people aged 5 and under.[5] Percent of people who have a disability.
6 Percent of people with asthma.
7 Percent of households without access to a car.

## 4.1.5 Hazardous Materials Management

Hazardous materials are substances that are toxic, ignitable or flammable, reactive, and/or corrosive. These include substances that show high acute or chronic toxicity, are carcinogenic, have bioaccumulative properties (accumulates in the body's tissues), are persistent in the environment, or are water-reactive. Hazardous materials release can cause short-term and/or long-term effects upon the public from exposure to the hazardous material. Handling, storage, use, and manufacturing of hazardous materials are regulated by, the U.S. Environmental Protection Agency (EPA) at the Federal level and by the California Environmental Protection Agency (CalEPA) along with the Department of Toxic Substances Control and several other agencies with various other regulatory functions (e.g., California Occupational Safety and Health Administration, California Integrated Water Quality System) at the State level. CalEPA oversees the Unified Program, which consolidates these various agencies' programs to ensure regulatory agencies consistently apply Statewide standards when they issue permits, conduct inspections, and engage in enforcement activities. The Newport Beach Fire Department maintains operational permits for facilities with known hazardous materials that exceed their permitted amount of hazardous materials. This includes hazardous materials inventory statements, quantities, locations, and types. These facilities are inspected on an annual basis.

### Toxic Release Inventory

According to the EPA records, there are two facilities in the Newport Beach area that are listed in the Toxics Release Inventory: one near its border with the City of Irvine and one near its border with the City of Costa Mesa. The facilities are Jazz Semiconductor (computers/electronics products) and Hixson Metal Finishing (fabricated materials sector). Between these two facilities, though Hixson Metal Finishing comprises the vast majority, they manage 841.2 thousand pounds of production-related waste. Approximately 34.5 thousand pounds are disposed of on site and off site, with the majority (28.5 thousand pounds) disposed of off site. Moreover, releases disposed of on site are released into the air and comprise primarily of hydrochloric acid, hydrogen fluoride, and ammonia.[33]

CalEPA closely monitors the emissions from these facilities to ensure that their annual limits are not exceeded. The South Coast Air Quality Management District also issues permits to facilities that emit chemicals, both toxic and nontoxic, into the atmosphere. These facilities include restaurants, hotels, dry-cleaners, and other small businesses.

### Hazardous Waste

Approximately 88 small quantity generators (SQGs) operate in the Newport Beach area. SQGs are generators of less than 1,000 kilograms of hazardous waste per calendar month and/or 1 kilogram or less of acute or extremely hazardous waste per calendar month.[34] Although many SQGs are exempt from Federal regulations, the State sets requirements for SQGs regarding hazardous waste management and disposal. There are 17 large quantity generators (LQGs) in Newport Beach. These sites generate more than 1,000 kilograms of hazardous waste, or 1 kilogram of acute hazardous waste, per month, and include pharmacies, gas stations, hospitals, industrial

[33] EPA (Environmental Protection Agency). 2021. "Toxic Release Inventory (TRI) Program." https://www.epa.gov/toxics-release-inventory-tri-program.

[34] DTSC (Department of Toxic Substances Control). 2023. "Households and Small Quantity Generators." https://dtsc.ca.gov/households-and-small-quantity-generators/.

operations, and others[35]. US EPA regulates hazardous waste generation, transportation, treatment, storage, and disposal under the authority of the Resource Conservation and Recovery Act (RCRA), adopted in 1976[36].

CalEPA also publishes data on sea-level rise and hazardous waste facilities.[37] None of the large-quantity hazardous waste generators in Newport Beach are at risk from sea-level rise, according to EPA data.

### Leaking Underground Storage Tanks

The Orange County Environmental Health Department provides oversight and conducts inspections of all underground tank removals and installation of new tanks. According to data from the State Water Resources Control Board, 97 underground storage tank leaks have been reported in the Newport Beach area. Of these, 96 sites have been either cleaned up or deemed to be of no environmental consequence, leaving 1 case that is still open and in the process of remediation.[38]

### Oil Fields

Several oil seeps and oil-stained rock in outcrops led to prospectors drilling for oil in the Newport Beach area as early as 1904. It was not until 1922 when a commercial oil field was developed in the area. Today, there are two oil fields in the area: the Newport field within city limits, and the West Newport oil field within the City's sphere of influence.

In total, the City owns 16 oil wells for oil and gas production, of which 14 are still operational and 1 is used for water injection to increase productivity in operational wells. The oils wells' heads are located in unincorporated County of Orange land and slant drilled under City lands unto the Newport Offshore oil field. There are 33 abandoned oil wells located in numerous sites throughout Newport Beach, concentrated along the northwest boundary.[39] Oil production is approximately 20,000 barrels per year (as of 2020), down from 30,000 barrels in 2009 and 60,000 barrels in the 1980s. Thus, oil production has declined significantly but is still moderately productive. Currently, the City averages $1 million to $1.2 million in oil and gas revenue per year, which is then deposited into the Tidelands Fund, a fund the City holds in trust to be used to support and maintain tidelands.[40]

## 4.1.5.1 Vulnerable Populations

Populations vulnerable to hazardous materials exposure are those whose health is more sensitive to exposure to toxic chemicals. These groups include young children, pregnant and nursing women, and older adults. People without healthcare access are also more vulnerable because of financial barriers to seeking treatment for adverse health impacts. The most common of these groups in Newport Beach are older adults (Table 8).

Note: pregnant and nursing women are not included in the table below due to a lack of data.

35 EPA. 2024. "RCRAInfo Web." https://rcrapublic.epa.gov/rcrainfoweb/action/modules/hd/

36 EPA. 2023. "Summary of the Resource Conservation and Recovery Act." https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act

37 EPA. 2023. "Sea Level Rise & RCRA Hazardous Waste Facilities." https://rcrapublic.epa.gov/rcra-public-web/action/posts/5.

38 SWRCB (State Water Resources Control Board). 2023. "GeoTracker – Electronic Submittal of Information (ESI)." https://www.waterboards.ca.gov/water_issues/programs/ust/.

39 City of Newport Beach. 2006. "Natural Resources Element." In *City of Newport Beach General Plan*https://www.newportbeachca.gov/government/departments/community-development/planning-division/general-plan-codes-and-regulations/general-plan.

40 City of Newport Beach. 2023. "Utilities: Oil and Gas." https://www.newportbeachca.gov/government/departments/utilities/oil-and-gas.

**Table 8. Populations Vulnerable to Hazardous Materials**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Older Adults[1] | 23.6% | 16.4% |
| Young Children[2] | 3.9% | 5.93% |
| Uninsured Adults[3] | 4.4% | 10.7% |

**Sources:** Public Health Alliance. 2022. "The California Healthy Places Index." https://map.healthyplacesindex.org/.
California Department of Public Health. 2013–2015. "Maternal and Infant Health Assessment." https://www.cdph.ca.gov/Programs/CFH/DMCAH/MIHA/Pages/Data-and-Reports.aspx.
**Legend:** Quartile 1 = Good, Quartile 2 = Moderate, Quartile 3 = Poor, Quartile 4 = Challenged
**Note:** The table is colored to indicate how the City of Newport Beach and Orange County compare to other California cities and counties on average, not to indicate that certain traits are overall "good" or "bad."
1 Percent of people aged 65 and over.
2 Percent of people aged 5 and under.
3 Percent of adults aged 18 to 64 without health insurance.

## 4.1.6 Aviation Hazards

Airports are typically categorized by type of activities, including commercial service, cargo service, and general aviation. Airports and certain types of development can be hazardous when located close together, which is why careful planning must be done to minimize risk and plan for a coordinated response to any potential incident. Although hazardous incidents associated with air transportation are extremely rare, aircraft accidents have the potential to be severe.

Orange County owns and operates JWA, the only commercial-service airport in the county. General aviation, commercial aircraft and private jets share the airport's runway, terminal, and storage facilities. The airport spans more than 510 acres and operates two runways. The 2,887-foot runway serves general aviation, and the 5,700-foot main runway serves both commercial and general aviation aircraft.[41]

JWA currently handles about 11.3 million passengers annually and about 130 commercial flights per day. The airport is located along the northern boundary of Newport Beach and residential and commercial properties are located directly below the airport's primary departure pattern for commercial and general aviation aircraft. Noise, traffic, and aircraft emissions are adverse impacts to residents and businesses adjacent to JWA. Monitoring and mitigating the airport's operations and related impacts are priorities for the City.

The Newport Beach City Council and several other cities located along the airport's arrival and departure corridors have publicly agreed to oppose the following:[42]

- Any expansion of JWA beyond its current physical footprint;
- A second commercial runway or the extension of the existing runway;
- Any significant reduction in general aviation operations / facilities, which could allow for more commercial aircraft use; and
- Any detrimental change to air carrier or general aviation noise ordinances.

41 John Wayne Airport, Orange County. 2023. "JWA Overview." https://www.ocair.com/about/news-info/jwa-overview/.
42 City of Newport Beach. 2023. "John Wayne Airport Operations." https://www.newportbeachca.gov/government/departments/city-manager-s-office/john-wayne-airport.

The City's Aviation Committee, which meets quarterly, was formed to assist the City in implementing Council Policy A-17, or Airport Policy, and to continue to advocate for the JWA Settlement Agreement, which was extended twice, in 2003 and 2014, as a result of City Council and community groups' efforts.

Members of the General Plan Advisory Committee (GPAC) have noted that drone safety is also a topic of consideration with regards to aviation as well as fire response.

#### 4.1.6.1 Vulnerable Populations

Vulnerability to aviation hazards does not depend on population characteristics. Rather, vulnerability is a function of exposure to those hazards, which is based on proximity to JWA and its flight path.

### 4.1.7 Extreme Heat

Extreme heat is a hazard that was not included in the adopted Safety Element but is an emerging hazard, even in a coastal community with a high rate of shade like Newport Beach. Extreme heat days are relative to location, so in Newport Beach an extreme heat day is considered a day that exceeds 87.5°F. Historically, this happens about 3 days per year, but by 2050 this is projected to occur on average 11 days per year when using the high emissions scenario.[43] Members of the GPAC have noted that there have been instances of recent temperatures that exceeded 100°F and that preventable measures such as cooling areas, light street paving, light roof colors, and other measures should be considered.

#### 4.1.7.1 Vulnerable Populations

Vulnerability to extreme heat can include people who are especially sensitive to its impacts, like young children or older adults. It can also relate to high exposure, for example outdoor workers. In Newport Beach, older adults are the most common population vulnerable to extreme heat (Table 9).

**Table 9. Populations Vulnerable to Extreme Heat**

| Health Indicator | Location | |
|---|---|---|
| | Newport Beach | Orange County |
| Older Adults[1] | 23.6% | 16.4% |
| Young Children[2] | 3.9% | 5.93% |
| Outdoor Workers[3] | 4.56% | 6.15% |

**Sources:** Public Health Alliance. 2022. "The California Healthy Places Index." https://map.healthyplacesindex.org/.
California Department of Public Health. 2013–2015. "Maternal and Infant Health Assessment." https://www.cdph.ca.gov/Programs/CFH/DMCAH/MIHA/Pages/Data-and-Reports.aspx.
**Legend:** Quartile 1 = Good, Quartile 2 = Moderate, Quartile 3 = Poor, Quartile 4 = Challenged
**Note:** The table is colored to indicate how the City of Newport Beach and Orange County compare to other California cities and counties on average, not to indicate that certain traits are overall "good" or "bad."
1 Percent of people aged 65 and over.
2 Percent of people aged 5 and under.
3 Percent of outdoor workers.

43 California Energy Commission. 2023. "Cal-Adapt Extreme Heat Days & Warm Nights." https://cal-adapt.org/tools/extreme-heat.

# 4.2 Infrastructure

## 4.2.1 Stormwater and Wastewater

Harbor and bay regulations adopted by the City require that pollution be prevented in association with development and that safeguards be maintained to prevent pollution. The City also operates programs to protect the quality of water in the harbor and bay, such as a street sweeping and education programs about proper waste disposal.. Street and drainage improvements are identified through the City's CIP.

In compliance with Federal requirements under the Clean Water Act, the City adopted an ordinance to improve water quality by preventing and controlling stormwater runoff. In part, the ordinance sets forth requirements for all new development and significant redevelopment within Newport Beach, establishes a scope of inspections and compliance enforcement, and establishes discharge permit procedures. Additionally, the City adopted an ordinance to update its Subdivision Code to implement the adopted General Plan. The updated Subdivision Code includes drainage and flood protection requirements (NBMC Section 19.24.090).

The City's 2019 Sewer System Management Plan (SSMP)[44] provides goals relating to the management, operation, and maintenance of the wastewater collection system and prevention of sanitary sewer overflows (SSOs), which result in wastewater spills and surface water runoff into coastal waters, causing detrimental water quality impacts. SSOs can be caused by extreme precipitation events that overwhelm the capacity of the wastewater collection system. Through the SSMP, the City promulgates design and performance standards for its sanitary sewer systems, pump stations, and other components. Such standards are intended to ensure the proper function of the wastewater collection system. In the event of an SSO, the City's Overflow Emergency Response Plan comes into effect. This plan involves notification procedures to inform primary responders and regulatory agencies of the SSO, a program to coordinate response to the SSO, procedures to address traffic and crowd control and other emergency operations during the SSO, and a program of steps to contain and prevent further discharge of wastewater.

Additionally, to prevent saltwater intrusion into wastewater treatment plants, the City operates and maintains tidal valves, which allow stormwater to drain out under low tide conditions and prevent ocean water from backing up into the stormwater system.

## 4.2.2 Water

Water service in Newport Beach is provided by the City, Irvine Ranch Water District, and Mesa Consolidated Water District. Each agency maintains master plans for services, facilities, maintenance, and improvements necessary to support existing and projected population growth and development. Conservation practices are included within the respective plans.

In response to Executive Order B-29-15 on April 1, 2015, the City adopted in its municipal code (NBMC Chapter 14.17) prohibitions against wasteful practices relating to water use, including using potable water to wash sidewalks and driveways, allowing more-than-incidental runoff when irrigating turf and other ornamental landscapes, and using hoses without automatic shutoff nozzles to wash motor vehicles, among other restrictions. Outside of this action, the City has adopted numerous other ordinances regulating the use of water. This includes

[44] City of Newport Beach. 2019. *Sewer System Management Plan (SSMP)*. September 2019. https://www.newportbeachca.gov/government/departments/utilities/administration/reports.

regulations on water conservation and supply, water-efficient landscaping, and water quality. These regulations establish water conservation and water supply shortage programs, promote the efficient use of water and prevent water waste in landscaping, and prohibit non-stormwater discharges into storm sewers.

Per the City's 2020 UWMP, the City's water supply comes from a combination of imported water, which includes water from the Colorado River and the State Water Project; recycled water; and local groundwater, with groundwater from the Orange County Basin comprising the largest share.[45] In fiscal year 2019/2020, water supplies consisted of 68% groundwater, 28.5% imported water, and 3.5% recycled water. By 2045, groundwater is expected to consist of 82% of water supply, 14.5% imported water, and 3.5% recycled water. This indicates a growing reliance on groundwater and a shrinking dependence on imported water. However, the City's 2020 UWMP also refers to the Metropolitan Water District of Southern California's Seawater Desalination Program, which provides incentives for developing new seawater desalination projects in the Metropolitan Water District of Southern California's service area. Desalination projects would help to reduce reliance on imported water and increase local resilience. As noted in Section 4.1.1, groundwater intrusion may occur under varying sea level rise conditions. This can cause issues related to flooding, but can also negatively affect access to drinking water. This is because, as fresh groundwater used for drinking is pressed toward the surface, it could be exposed to toxins from potentially contaminated areas.

Water use within the City's service area has been relatively stable, with an average of 15,413 acre-feet per year, of which potable water use accounted for 97%. Of this usage in fiscal year 2019/2020, residential use comprised 58.9%; commercial, institutional, and industrial comprised 18.2%; and large landscape/irrigation comprised 18.1%; with the remaining other uses comprising 4.8%. In compliance with SB 7 as part of the Seventh Extraordinary Session (SB X7-7), known as the Water Conservation Act of 2009, the City more than met its 2020 water use target of 207 gallons per capita per day, achieving an average of 160 gallons per capita per day.

To plan for the event of water shortage due to drought, a catastrophic event (e.g., earthquake), or other circumstances, the City has created a WSCP (2020), to help maintain adequate, reliable supplies and reduce impacts of supply interruptions. The WSCP provides real-time water supply availability assessments and strategic steps to respond to actual conditions.[46]

### 4.2.3 Electricity

Electricity is an important aspect of our daily lives, and for some it is vital to preserving medication or running life-saving equipment. This makes energy resilience especially important. The grid can be impacted by several hazards, including high demand during extreme heat, planned public safety power shut offs due to wildfire risk, or other major hazards such as floods or earthquakes impacting infrastructure.

The sources of power for the grid is also changing. Provisions from numerous Senate Bills (SB 1038, SB 1078, SB 1250, SB 107, SB 350, and SB 1393) set the California Renewable Portfolio Standard, a goal to increase the amount of renewable energy that electric utilities procure. By December 31, 2030, 50% of retail electricity sales must be from eligible renewable energy sources. The Renewable Portfolio Standard applies to the electricity utility serving Newport Beach, namely Southern California Edison (SCE). SCE must report procurement of renewable energy sources to the California Energy Commission during each compliance period, of which the most recent was from 2017 to 2020 (followed

[45] City of Newport Beach. 2021. *2020 Urban Water Management Plan: Final Draft*. May 2021. https://www.newportbeachca.gov/government/departments/utilities/water-services.

[46] City of Newport Beach. 2021. *2020 Water Shortage Contingency Plan: Final*. June 2021. https://www.newportbeachca.gov/government/departments/utilities/water-services.

by compliance period 2021 to 2024). The California Public Utilities Commission then determines compliance for each period. SCE has continued to meet each year's Renewable Portfolio Standard target.

Newport Beach is within the SCE service area; thus, the electricity that powers residential and non-residential buildings reflects SCE's power mix in the Southern California region. Table 10 shows SCE's power content label for 2022, which shows the share of various energy sources that composed SCE's total power supply. Power sources can impact when and how quickly power can be supplied to the grid, with certain sources of power being less responsive than others.

## Table 10. Southern California Edison 2022 Power Mix

| Energy Resource | 2022 Power Mix (%) |
|---|---|
| **Renewable Energy Sources** | **35.8** |
| Biomass and Biowaste | 2.1 |
| Geothermal | 4.7 |
| Hydroelectric | 1.1 |
| Solar | 17.0 |
| Wind | 10.8 |
| **Coal** | **2.1** |
| **Large Hydroelectric** | **9.2** |
| **Natural Gas** | **36.4** |
| **Nuclear** | **9.2** |
| **Other** | **0.1** |
| **Unspecified** | **7.1** |

**Source:** Southern California Edison. 2022. Power Content Label. https://www.sce.com/sites/default/files/custom-files/PDF_Files/SCE_2022_Power_Content_Label_B%26W.pdf.

From 2017 to 2022, the share of renewable energy sources in the SCE power mix rose from 29% to 35.8%. The reliance on coal has reduced from 4% in 2017 to 2.1% in 2022; the share of natural gas increased from 34% in 2017 to 36.4% in 2022; and the share of large hydroelectric has decreased from 15% in 2017 to 9.2% in 2022. Energy from nuclear power has been relatively stable.[47]

One way to make the grid more resilient is by reducing the load, or the energy consumption, via energy efficiency improvements or behavioral changes. Through its involvement in the Orange County Cities Energy Partnership, the City coordinates with SCE, the Southern California Gas Company, and neighboring local governments to identify and create projects to improve energy efficiency and sustainability.[48] Actions include installing energy-efficient lighting; heating, ventilation, and air conditioning (HVAC) improvements; installing Energy Star rated appliances; and conducting technical energy audits of the City's major facilities, among others. The City's Energy Action Plan (EAP), finalized in 2013, provides a roadmap for the City to reduce its energy consumption and GHG emissions. Included in the EAP are energy audits of major City facilities, including City Hall, NBFD, Library Services, Municipal Operations, the Police Department, Public Works, and Recreation and Senior Services. Within municipal operations, the EAP

47 SCE (Southern California Edison). 2022. "2022 Power Content Label." https://www.sce.com/sites/default/files/custom-files/PDF_Files/SCE_2022_Power_Content_Label_B%26W.pdf.

48 City of Newport Beach. 2023. "Orange County Cities Energy Partnership." https://newportbeachca.gov/how-do-i-/learn-more-about/energy-conservation/orange-county-cities-energy-partnership.

includes electricity use for water production and wastewater, oil and gas, parks and trees, street lights, traffic control, operations support, and several other general fund activities.[49]

The City's 2013 EAP describes the City's long-term vision for citywide energy efficiency and contains goals, strategies, and examples that demonstrate effective reduction of energy usage and GHG emissions. The EAP is intended to reduce the City's carbon footprint, conserve and reduce energy use in municipal facilities, and raise public awareness on energy conservation and techniques. The document provides data on then-current gas and electric energy consumption of municipal facilities and potential municipal energy efficiency projects, such as the optimization of the Newport Beach Central Library's HVAC system and installation of occupancy sensors for lighting in municipal buildings that were not installed at the time.

The EAP's framework is centered around compliance with AB 32, the California Global Warming Solutions Act of 2006, which requires the State to reduce GHG emissions to 1990 levels by 2020. In the years since the EAP was published, the State of California has enacted numerous policies that build on target reductions established by AB 32. For example, SB 32, which passed in 2016, requires the State to reduce GHG emissions to 40% below 1990 levels by 2030. In December 2022, the California Air Resources Board released its Scoping Plan that aims to reduce GHG emission to at least 85% below 1990 levels by 2045. This new target was enacted as State law under AB 1279, the California Climate Crisis Act.

### 4.2.4 Telecommunication Services

The EOP Concept of Operations describes the Government Emergency Telecommunications System (GETS) and Wireless Priority Service (WPS) as "companion services for priority calling offered by the Cybersecurity and Infrastructure Security Agency (CISA)." GETS provides essential personnel priority access to local and long-distance landline networks during emergency situations, which enables communication during such situations when wireless networks are congested. WPS provides Federal, State, local, tribal, and territorial governments with priority service to phone lines during emergencies when wireless networks may be congested.[50]

### 4.2.5 Urban Forest

Trees offer multiple benefits related to natural hazards, most namely increased shade to reduce extreme heat exposure, improved stability to combat geologic hazards like landslides, and reduced runoff to limit flooding. The City Municipal Operations Tree Division maintains 35,000 trees located on public right-of-way and on public property. Additionally, Parks Maintenance maintains 204 acres of parks, 83 acres of facility landscape, and 377 acres of medians and roadsides (see Section 4.2.6, Essential and Public Facilities, below).

The Urban Heat Island Index (UHII) developed by CalEPA maps the temperature differential over time between urban census tracts and nearby rural reference points. In other words, the UHII shows how much the built environment—roads, buildings, and other infrastructure—increases temperature by absorbing and re-emitting heat from the sun. Urban areas with greater natural landscapes such as urban forests and water bodies tend to have less of an urban heat island effect. Being a coastal city, the urban heat island effect in Newport Beach is also modulated by its proximity to the ocean. However, heat waves and other extreme heat events can still pose a risk to cooler areas that are not accustomed to high temperatures. For example, many homes in Newport Beach are without air

[49] City of Newport Beach. 2013. *Energy Action Plan (EAP)*. July 2013. https://www.newportbeachca.gov/i-am-a/community-member/living-building-green/energy-action-plan-eap.

[50] City of Newport Beach. 2022. "Concept of Operations (ConOps)." Section 3 in *City of Newport Beach 2022 Emergency Operations Plan.*

conditioning units because they are not often needed. For this reason, health impacts from extreme heat events can be greatest in such areas, as was the case in the 2006 California heat wave.[51]

The City's trees and surrounding open spaces also increase the risk of wildfire in areas known as the WUI. These areas are the intersection between wildlands and urban or suburban areas. In Newport Beach, homes located in a WUI have certain Building Code regulations specific to them related to building materials for new, rebuilt, or significantly remodeled structures. There are also weed abatement, hazard reduction, and fuel modification programs that the City runs, which monitor and maintain vegetation in high-risk areas within Newport Beach.[52]

## 4.2.6 Essential and Public Facilities

The City has essential and public facilities that are important to protect from hazards. Essential facilities are those that are needed in the event of an emergency or during the immediate recovery after an emergency. Table 11 outlines essential and public facilities in Newport Beach and if any overlap with potential hazard zones such as FEMA flood zones, tsunami inundation zones, Very High Fire Hazard Severity Zones, landslide zones, liquefaction zones, or Alquist-Priolo fault zones.

**Table 11. Essential and Public Facilities**

| Facility Type | Facility Subtype | Name | Address | Cooling Center | Potentially Impacted By: |
|---|---|---|---|---|---|
| Essential Facility | Fire | Balboa Peninsula Fire Station #1 | 110 East Balboa Boulevard, Newport Beach, California 92661 | No | Liquefaction; tsunami |
| | | Peninsula Fire Station #2 | 2807 Newport Boulevard, Newport Beach, California 92663 | No | Liquefaction; tsunami |
| | | Fashion Island Fire Station #3 | 868 Santa Barbara Drive, Newport Beach, California 92660 | No | N/A |
| | | Balboa Island Fire Station #4 | 124 Marine Avenue, Newport Beach, California 92662 | No | Liquefaction; tsunami; 1.64-foot (0.5-meter) sea-level rise |
| | | Corona Del Mar Fire Station #5 | 410 Marigold Avenue, Newport Beach, California 92625 | No | N/A |
| | | Mariners Fire Station #6 | 1348 Irvine Avenue, Newport Beach, California 92660 | No | N/A |
| | | Santa Ana Heights Fire Station #7 | 20401 Southwest Acacia Street, Newport Beach, California 92660 | No | N/A |
| | | Newport Coast Fire Station #8 | 6502 Ridge Park Road, Newport Beach, California 92657 | No | Fire |

[51] CalEPA (California Environmental Protection Agency). 2023. "Understanding the Urban Heat Island Index." https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/.

[52] City of Newport Beach. 2023. "Wildland-Urban Interface." https://www.newportbeachca.gov/government/departments/fire/fire-prevention-division/wildland-urban-interface.

## Table 11. Essential and Public Facilities

| Facility Type | Facility Subtype | Name | Address | Cooling Center | Potentially Impacted By: |
|---|---|---|---|---|---|
| | Law Enforcement | Newport Beach Police Department | 870 Santa Barbara Drive, Newport Beach, California 92660 | No | N/A |
| | | Harbor Patrol-Marine Operations Bureau (Orange County Sheriff) | 1901 Bayside Drive, Corona del Mar, California 92625 | No | Liquefaction; tsunami |
| | | Cutter Narwhal (US Coast Guard) | 1911 Bayside Drive, Corona del Mar, California 92625 | No | Liquefaction; tsunami |
| | Civic Center | Civic Center/Emergency Operations Center | 100 Civic Center Drive, Newport Beach, California 92660 | Yes | N/A |
| | Hospital | Hoag Hospital – Newport Beach | 1 Hoag Drive, Newport Beach, California 92663 | No | N/A |
| | School | Newport Heights Elementary | 300 East 15th Street, Newport Beach, California 92663 | No | N/A |
| | | Roy O. Anderson Elementary | 1900 Port Seabourne Way, Newport Beach, California 92660 | No | N/A |
| | | Newport Harbor High | 600 Irvine Avenue, Newport Beach, California 92663 | No | N/A |
| | | Newport Elementary | 1327 West Balboa Boulevard, Newport Beach, California 92661 | No | Tsunami |
| | | Newport Coast Elementary | 6655 Ridge Park Road, Newport Beach, California 92657 | No | Fire |
| | | Mariners Elementary | 2100 Mariners Drive, Newport Beach, California 92660 | No | N/A |
| | | Horace Ensign Intermediate | 2000 Cliff Drive, Newport Beach, California 92663 | No | N/A |
| | | Corona del Mar High | 2101 Eastbluff Drive, Newport Beach, California 92660 | No | N/A |
| | | Harbor View Elementary | 900 Goldenrod Avenue, Corona del Mar, California 92625 | No | N/A |
| | | Eastbluff Elementary | 2627 Vista del Oro, Newport Beach, California 92660 | No | N/A |
| | | Abraham Lincoln Elementary | 3101 Pacific View Drive, Corona Del Mar, California 92625 | No | N/A |

## Table 11. Essential and Public Facilities

| Facility Type | Facility Subtype | Name | Address | Cooling Center | Potentially Impacted By: |
|---|---|---|---|---|---|
| Public Facility | Library | Central Library | 1000 Avocado Avenue, Newport Beach, California 92660 | No | N/A |
| | | Balboa Branch Library | 100 East Balboa Boulevard, Newport Beach, California 92661 | No | Liquefaction; tsunami |
| | | Crean Mariners Branch Library | 1300 Irvine Avenue, Newport Beach, California 92660 | No | N/A |
| | | Corona del Mar Branch Library | 410 Marigold Avenue, Corona del Mar, California 92625 | No | N/A |
| | Community Center | Newport Coast Community Center | 6401 San Joaquin Hills Road, Newport Coast, California 92657 | No | Fire |
| | | OASIS Senior Center | 801 Narcissus Avenue, Corona del Mar, California 92625 | Yes | N/A |
| | | Marina Park Community and Sailing Center | 1600 West Balboa Boulevard, Newport Beach, California 92663 | No | Liquefaction; tsunami |
| | | Bonita Creek Community Center | 3010 La Vida, Newport Beach, California 92660 | No | Liquefaction |
| | | Carroll Beek Community Center | 115 Agate Avenue, Newport Beach, California 92662 | No | Liquefaction; tsunami; 1.64-foot (0.5-meter) sea-level rise; 1% chance of flooding and storm wave hazard |
| | | Cliff Drive Community Center | 301 Riverside Avenue, Newport Beach, California 92663 | No | Landslide |
| | | Grant Howald Community Youth Center | 3000 5th Avenue, Corona del Mar, California 92625 | No | N/A |
| | | VJ Community Center | 1300 Irvine Avenue, Newport Beach, California 92660 | No | N/A |
| | | West Newport Community Center | 883 West 15th Street, Newport Beach, California 92663 | No | N/A |

**Note:** N/A = not applicable.
The "Potentially Impacted By" column was populated using Federal Emergency Management Agency flood zones, California Department of Forestry and Fire Protection Very High Fire Hazard Severity Zones, U.S. Geological Survey CoSMoS 3.0 sea-level rise mapping, and California Geological Survey Alquist-Priolo fault zones, tsunami inundation zones, landslide zones, and liquefaction zones.

# 4.3 Emergency Preparedness

Education and engagement are the cornerstone of an effective emergency preparedness program. Local agencies can minimize risk during emergencies by ensuring that the broader community is aware of local emergency preparedness strategies and how to respond in the event of an emergency. There are several methods by which the City can effectively work to ensure that residents and businesses are prepared for emergencies.

## 4.3.1 Education

Education of the public is a key component for reducing the likelihood of certain hazards occurring and preparing residents to respond during an emergency. NBFD posts resources on its website to educate the public about fire risk abatement practices, including a Wildfire Home Risk Assessment scoresheet, evacuation readiness, and links to CAL FIRE's educational video, "Ready, Set, Go!" The Fire Prevention Division also provides safety tips and information regarding causes of fires, escape planning, fire and safety equipment, household equipment for electrical appliances, and outdoors activities such as grilling, fireworks, and sky lanterns.

## 4.3.2 Social Media

The City's social media channels are used to share information pertaining to City matters and act as a supplement to the City's website. Currently, the City maintains four social media accounts: Facebook, X (formerly Twitter), Instagram, and YouTube.

The City's Facebook, X (formerly Twitter), and Instagram accounts share information related to City operations, notices, job postings, events and opportunities, and other community-related news. Posts are generally similar across the three social media feeds and intended to reach different demographics.

The City's YouTube channel is primarily used to share official City video communications, such as City Council meetings, Planning Commission meetings, lectures and programs hosted by the Newport Beach Public Library, and other similar events. Many of these videos are categorized by "playlists"; one such playlist is titled "Emergency Preparedness" and includes educational content for community members. Topics addressed include READY: an emergency preparedness guide, tours of fire stations, among others. The content primarily covers best practices related to the topic, and the content remains relevant despite many of the videos being released years ago.

## 4.3.3 Neighbor-to-Neighbor

The Newport Beach Community Emergency Response Team (CERT) provides educational and training programs to residents, schools, and businesses in emergency and disaster preparation, empowering community members to provide mutual life-saving interventions.[53] CERT is not intended to replace first responder duties; the purpose of CERT is to enable residents to assist one another in times of emergency when emergency response services are overwhelmed, particularly in the event of a major disaster when the number of people impacted, communication failures, and road blockages may temporarily prevent access to emergency services. Training topics include the following:

- General disaster preparedness

[53] City of Newport Beach. 2023. "Community Emergency Response Team (CERT)." https://www.newportbeachca.gov/government/departments/fire-department/life-safety-services-division/community-emergency-response-team-nbcert.

- Disaster psychology and team organization
- Disaster medical operations
- Fire suppression
- Terrorism awareness
- Light search and rescue

The NBFD also conducts a fire cadet program, the NBFD Cadet Program 309, which trains young people ages 15 to 21 in basic fire suppression skills and aptitudes needed to ride on a fire apparatus. One of the purposes of the program is to acquaint young people with fire and emergency response skills and cultivate an interest in fire and emergency services as a profession.

Members of the GPAC have noted that as the aging population grows, additional steps may be needed to ensure that the community is prepared in the event of an emergency. This could be through a sort of neighborhood watch or buddy system, where those in the community work to assist one another.

### 4.3.4 Other Engagement Resources

On occasion, the Newport Beach Public Library provides education on environmental topics that is catered to children and young teens. Hosted in partnership with the Environmental Nature Center, the "Wildlife in Our Own Backyard!" program is a hands-on learning experience that teaches children about nature and the ecosystems within and around Newport Beach. Event details are posted to the Public Library's children's calendar.[54] The library also provides book-lending services that residents can use to check out books on sustainability and resilience topics at no cost.

In addition to resources provided by the City, residents may visit educational centers throughout Newport Beach to learn more about the environment and sustainability and resilience topics. The Environmental Nature Center provides education on ecological responsibility and sustainable living practices through hands-on experiences with nature.[55] The facility contains 15 plant communities native to California, a wildlife habitat, and natural walking trails that serve as the backdrop for the center's many programs, including school field trips, summer nature camps, a nature preschool with a nature-based curriculum, and several community programs and events intended for all ages.

As an official partner, the City collaborated with the Environmental Nature Center to develop programs at Buck Gully Reserve, a 300-acre nature preserve that is currently undergoing restoration by the City and the Irvine Ranch Conservancy.[56] These programs provide the community with an immersive hiking experience and insight about the impacts of human development on the natural environment. Based in Upper Newport Bay, the Newport Bay Conservancy provides individuals of all ages with sustainability-focused education and hands-on experiences that help protect and preserve the bay's wildlife and natural resources. Programs include kayak tours, assisting with restoration projects, routine clean-up days, and community days.

54 Newport Beach Public Library. 2023. "Children's Calendar." Accessed November 27, 2023. https://www.newportbeachlibrary.org/calendar/children-s-calendar.
55 Environmental Nature Center. 2023. "Programs." Accessed November 27, 2023. https://encenter.org/visit-us/programs-2/.
56 Environmental Nature Center. 2016. "Community Partners." Accessed November 27, 2023. https://encenter.org/community-partners/.

Individuals may also learn about sustainable food practices at weekend farmer's markets, including the Newport Pier Farmers Market, held every Saturday from 9 a.m. to 2 p.m., and the Corona del Mar Farmers Market,[57] held every Saturday from 9 a.m. to 1 p.m. Here, visitors can interact with farmers and learn about sustainable growing practices that can be adopted at home.

## 4.4 Emergency Response

Any potential hazard in the City resulting from a human-caused or natural disaster may result in the need for evacuation of few or thousands of residents of Newport Beach. The City is currently using the National Incident Management System (NIMS) for emergency response in Newport Beach, where depending on the type of incident, several different agencies and disciplines may be called upon to assist with emergency response. Agencies and disciplines that can be expected to be part of an emergency response team include medical, health, fire and rescue, police, public works, and coroner. Additionally, policies and plans from the Orange County Operational Area Mutual Aid Plan, the State's Mutual Aid Plan, and the State's Fire and Rescue Mutual Aid System would be implemented.

Within the Newport Beach Police Department, the Emergency Services Coordinator updated the City's Emergency Operations Plan in 2022. The Emergency Operations Plan describes the different levels of emergencies, the local emergency management organization, and the specific responsibilities of each participating agency, government office, and City staff. A citywide drill, which involves implementation of the Emergency Operations Plan, is conducted annually.

Currently, NBFD provides basic life support, advanced life support, and emergency transportation utilizing the fire engines and ladder trucks housed in NBFD's eight fire stations, along with the paramedics housed in three of those stations. While NBFD has the immediate capability of providing advanced life support service at three simultaneous incidents, there is an occasional need for additional advanced life support units. Additional advanced life support service is provided by nearby and adjoining public agencies by means of cooperative automatic aid agreements. Emergency transportation beyond the capability of the department is provided by private ambulance companies.

Mass casualty incidents, those incidents usually involving three or more critical patients, require the implementation of the Orange County Fire Services Operational Plan Annex "Multi-Casualty Incident Response Plan." This organizational plan aids in assigning treatment teams and quickly moving patients off scene to appropriate receiving centers in an expeditious and organized manner. The multi-casualty plan is intended to be implemented during any multi-casualty incident, such as multiple-vehicle accidents, aviation accidents, hazardous materials incidents, high-rise fires, and so forth. Although the system has been designed to be used with as few as three patients, it can be expanded as it becomes necessary.

Lastly, in the event of a disaster, the City's Emergency Operations Center (EOC) can be opened. The center has undergone a series of considerable upgrades and improvements. Training for the residents within the City continues through the CERT program. The continued development of the community's disaster preparedness efforts will aid the residents of Newport Beach in an areawide disaster by fostering a citywide culture of preparedness.

[57] Visit Newport Beach California. 2022. "Explore Newport Beach Farmer's Markets." June 13, 2022. https://www.visitnewportbeach.com/shopping-fashion/article/explore-newport-beach-farmers-markets/.

### 4.4.1 Notification System

Alert and warning systems inform government forces and the public, in a timely manner, of the threat of imminent danger. The City's local government is responsible for warning the population within the jurisdiction of such dangers, but there are also State-level emergency notification systems. Several alert and warning systems may be used for various types of emergencies and at different jurisdictional levels, including the Integrated Public Alert and Warning System (IPAWS), the Emergency Alert System (EAS), the Wireless Emergency Alert (WEA), the California State Warning Center (CSWC), the National Weather Service (NWS), the Alert Orange County (AlertOC) Notification Systems, Newport Beach Cable TV, and emergency warning sirens.[58] Telecommunication systems for times of emergency are described above in Section 5.2.4, Telecommunication Services.

Newport Notified is an alert system managed by the Newport Beach Police Department, designed to distribute both general and emergency information straight from the Police Department to the local community. Its primary function is to inform residents and subscribers about safety-related issues, including traffic updates, crime warnings, and community news. Additionally, it serves as a platform for emergency alerts concerning power failures, evacuations, tsunamis, and other potential dangers that could threaten public safety.

Integrated Public Alert and Warning System IPAWS includes a wide variety of communication technologies—radio, television, wireless devices, sirens, electronic road signs, and other emerging technologies—public safety officials use to send emergency alerts and warnings, increasing the likelihood that individuals will receive those alerts and warnings. Moreover, IPAWS unifies the EAS, WEA, and NOAA Weather Radio, among others. IPAWS is particularly effective for ensuring life-saving alerts reach the whole community, including those with disabilities and those with limited English proficiency.

The Emergency Alert System enables the President and Federal, State, and local governments to disseminate emergency public information and communicate with the general public through commercial broadcast stations. As such, the broadcast industry voluntarily operates the EAS and follows approved EAS plans, standards of practice, and Federal Communications Commission rules and regulations. Those allowed to request an EAS message on the City's behalf are limited to the City Manager, Police Chief, or Fire Chief, who to do so reach out to the Countywide Coordinated Communications Center (County Control One).

The California Emergency Alert Plan establishes message priorities for the EAS:

- Priority 1: Presidential Messages (carried live)
- Priority 2: EAS Operational (Local) Area Programming
- Priority 3: State Programming
- Priority 4: National Programming and News

The Orange County Low Power-1 FM is KWVE, at 107.9 FM. The Orange County Low Power-2 FM is Control One, using a County very-high frequency system. Low power stations transmit emergency information first; voluntarily participating broadcast stations then re-transmit the same emergency message.

[58] City of Newport Beach. 2022. *Emergency Operations Plan*. https://www.newportbeachca.gov/how-do-i/find/disaster-preparedness-information.

The Wireless Emergency Alert system alerts owners of wireless phones or other such mobile devices, who opt into the service, of geographically targeted text alerts of imminent safety threats. Government officials can use WEA to target emergency alerts to specific geographic areas. For example, authorized national, State, and local government authorities may send alerts regarding public safety emergencies, such as evacuation orders or shelter-in-place orders due to severe weather, terrorist threats, or chemical spills. WEA was established in 2008 to comply with the Warning, Alert, and Response Network Act and became operational in 2012.

### California State Warning Center

CSWC is a central information hub for Statewide emergency communications and notifications, staffed with Emergency Notification Controllers, Emergency Services Coordinators, and Program Managers. Thus, CSWC is a comprehensive resources center for emergency management, law enforcement, and key decision-making throughout California. It is responsible for receiving coordinating, verifying, and disseminating information. CSWC coordinates with Cal OES to ensure information is timely and accurate. Example responsibilities include AMBER alerts, critical incident notifications, hazardous materials notifications, and natural disaster monitoring, among several others.

### National Weather Service

NWS works alongside CSWC to provide weather, hydrologic, and climate forecasts and warnings. These warnings are intended to protect life and property and the national economy. NWS warns of events such as flooding, high winds or tornados, extreme heat, rain, and snowstorms, among other events. Through the Common Alert Protocol, NWS shares emergency information with local, State, tribal, national, and non-government emergency services providers.

### AlertOC Notification Systems

AlertOC is a county-wide program, in which the City participates, that provides emergency alerts services to community members, including shelter-in-place instructions, evacuation, and other emergency alerts. Individuals and businesses may subscribe to the service to receive emergency alerts or notifications. The Sheriff's Department uses AlertOC to contact the public in cases of emergency or disaster in the community.

### Newport Beach Cable TV

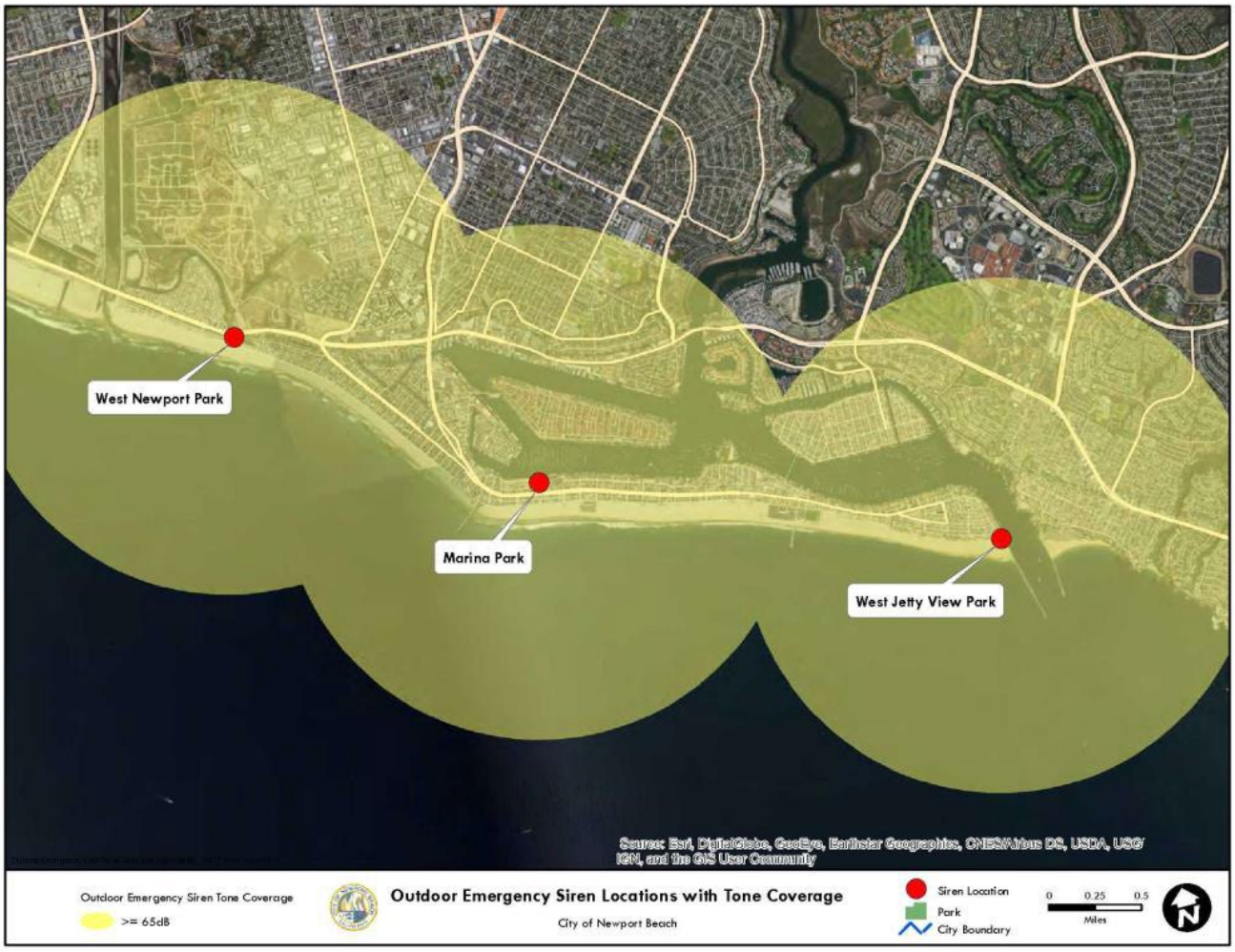
The City maintains its own cable television channel (channel 3) through which it disseminates community emergency information.

### Outdoor Emergency Warning Sirens

The City also has three emergency notification sirens installed at strategic locations (Figure 13).[59] The sirens are located at West Jetty View Park/Wedge, Marina Park on Balboa Boulevard, and West Newport Park, near 60th Street and Seashore Drive. Sirens may be activated for any impending emergency. They are intended to alert and signal the public to check channel 3 and the radio station, 107.9 FM KWVE, for further instructions.

[59] City of Newport Beach. 2023. "Emergency Notification Systems." https://newportbeachca.gov/how-do-i/find/disaster-preparedness-information/emergency-notification-systems#:~:text=The%20sirens%20may%20be%20activated%20for%20ANY%20impending,to%20%28107.9%20FM%2C%20KWVE%29%20and%20await%20further%20instructions.

**Figure 13.** Outdoor Emergency Siren Locations

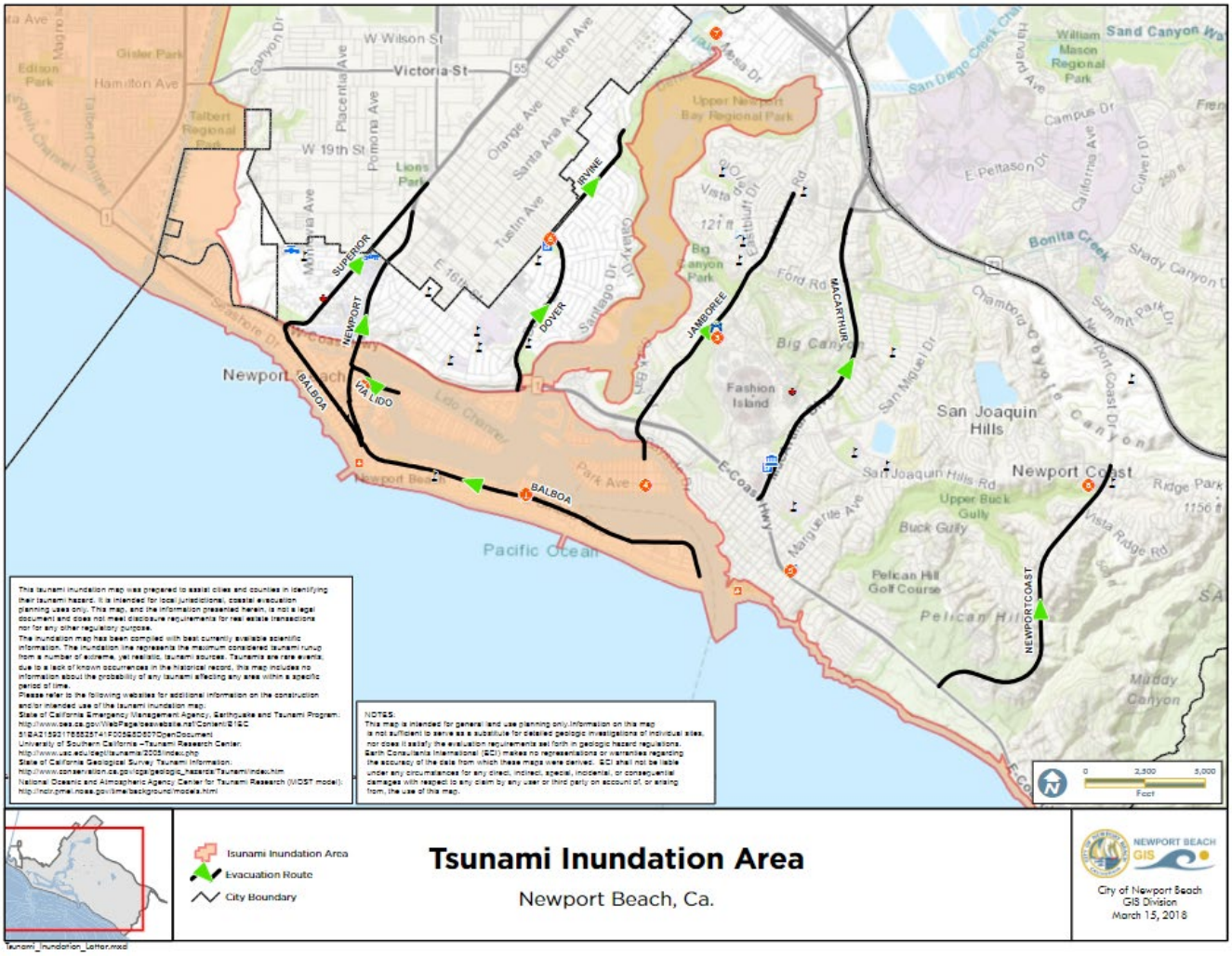



## 4.4.2 Evacuation

For many of the hazards identified in the EOP—seismic hazards, wildfires and urban fires, flooding/dam failure/storm surge, coastal hazards (specifically tsunami), and hazardous materials events—the City designates evacuation as an important response consideration.

The City has developed and implemented a response plan for evacuation of low-lying areas in the case of a tsunami warning. This effort includes the installation of warning sirens, signs identifying evacuation routes, and public education training. **Figure 14** indicates evacuation routes in case of a tsunami.

**Figure 14.** Tsunami Evacuation Routes




Among essential facilities, the 2016 LHMP notes that certain facilities (including preschools and schools, rehabilitation centers, prisons, group care homes, and nursing homes) house populations with special evacuation considerations. These populations may be slower to evacuate during emergencies and therefore may need additional attention and/or resources from Emergency Services. Further, members of the GPAC have noted that the sirens may not be in enough locations to be heard citywide. Additional sirens as well as additional use of sirens should be considered to notify residents of additional hazard events.

## 4.4.3 Mutual Aid

The California emergency resource management system is based on a Statewide mutual aid organization, which ensures that additional resources are provided to local governments when their resources are inadequate or overwhelmed. Local governments may enter into the California Disaster and Civil Defense Master Mutual Aid Agreement, through which political subdivisions, municipal corporations, and public agencies within the State can provide mutual assistance and resources during emergencies.

The City is a signatory of the California Disaster and Civil Defense Master Mutual Aid Agreement, under which the Incident Commander is tasked with requesting additional resources and assistance through the Orange County Operational Area (within Mutual Aid Region 1) at the Operational Area EOC, which supports command-and-control functions of on-scene incident response.[60] NBFD is part of the California Fire and Rescue Mutual Aid System, operating under the California Fire Service and Rescue Emergency Mutual Aid Plan. Likewise, the City Police Department is part of the California Law Enforcement Mutual Aid System, operating under the California Law Enforcement Mutual Aid Plan.[61]

Additionally, the City has a mutual aid agreement with the neighboring Cities of Irvine and Laguna Beach. This mutual aid agreement establishes cooperation to share emergency management personnel, facilities, operational functions, and technology.

### 4.4.4 Shelters and Cooling Centers

Two cooling centers are located in Newport Beach: the OASIS Senior Center and the Civic Center Community Room, each of which are Americans with Disabilities Act accessible. Several additional cooling centers are accessible by Newport Beach residents in the adjacent cities of Costa Mesa and Irvine, all of which are ADA accessible except the Mesa Verde Library in Costa Mesa, where not all areas are accessible by wheelchair.

## 4.5 Recovery Programs

### 4.5.1 City Post-Disaster Procedures

Chapter 15.12 within the NBMC establishes standard City procedures when residents or businesses are making repairs to reoccupy structures damaged in a natural or human-made hazard. This system uses visual inspections and clear and concise placards placed on building entrances to ensure safety for all involved. Recovery efforts within Newport Beach are able to occur more efficiently by having this type of standard established ahead of a disaster.

### 4.5.2 Insurance Requirements

The National Flood Insurance Program (NFIP), managed by FEMA, enables property owners in participating communities to purchase flood insurance. In return, participating communities agree to adopt and implement local floodplain management regulations that contribute to protecting lives and reducing the risk of new construction and substantial improvements from future flooding. The City is a participating community in the NFIP.

When FEMA updates flood risk products, including Flood Insurance Rate Maps (FIRMs), communities participating in the NFIP are required to also update their regulations to incorporate adoption of the new products for regulatory purposes. As of March 2019, the FEMA FIRM for Newport Beach was made effective, indicating locations of high-risk, moderate-to-low risk, and undetermined-risk of flooding.

60 City of Newport Beach. 2022. *Emergency Operations Plan*." https://www.newportbeachca.gov/how-do-i/find/disaster-preparedness-information.

61 Cal OES (California Office of Emergency Services). 2023. "Response Operations." https://www.caloes.ca.gov/office-of-the-director/operations/response-operations/.

Title 44 of the Code of Federal Regulations, Section 60.3, establishes NFIP building performance requirements according to various designated areas of special flood hazards or zones. Chapter 15.50 of the NBMC promulgates measures for reducing flood damage through zoning, building, and public works requirements and special purpose floodplain ordinances.

Due to widespread concerns about rising flood insurance premiums, Congress passed the Homeowner Flood Insurance Affordability Act of 2014, which rolled back some of the changes implemented under the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) and recognized additional affordability challenges associated with increased premiums required by BW-12 implementation.

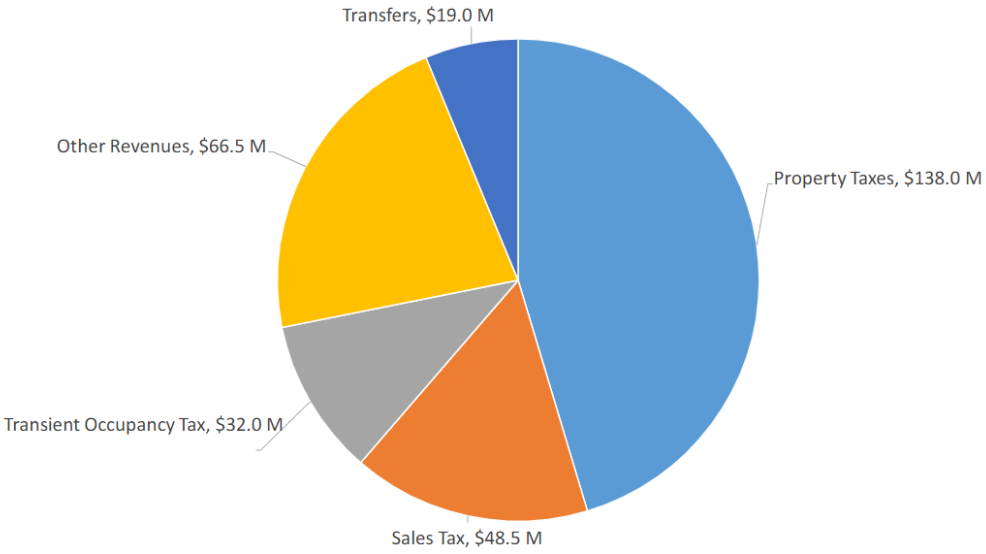
# 5 Issues and Opportunities

## 5.1 Funding

With safety elements, many components of the policy or long-term projects are funding-dependent. This can be both an opportunity and an issue. There are several funding possibilities spanning the general fund, grants, insurance, fees, financing districts, or bonds (detailed below).

### 5.1.1 General Fund

For fiscal year 2023/2024, the City has a revenue budget of $304,058,704, consisting of revenues from property taxes, sales tax, transient occupancy tax, transfers, and other sources (comprising about a quarter of all revenues).[62]




The City recently adopted its fiscal year 2023/2024 through 2028/2029 CIP budget. The adopted CIP includes public facilities improvements, streets and drainage improvement projects, transportation projects, parks maintenance and improvement, harbor projects, beach sand management, water and wastewater infrastructure maintenance and improvements, and utilities undergrounding. Although the City has identified specific projects, the CIP budget is a living document that evolves to reflect community goals and needs. The budget totals approximately $29.4 million in new appropriations and $45.9 million budgeted funds carried over from fiscal year 2022/2023—a grand total of $75.28 million.

It is essential that local government general funds maintain an adequate unrestricted fund balance, which is composed of committed fund balance, assigned fund balance, and unassigned fund balance. The unrestricted fund balance helps to mitigate current and future risks, such as revenue shortfalls and unanticipated expenditures, to

[62] City of Newport Beach. 2023. "City Budget & Salary Information." https://www.newportbeachca.gov/government/departments/finance/city-budget-salary.

ensure stable tax rates.[63] This is of particular interest when it comes to safety. The high degree of uncertainty from year to year around certain natural hazards with the potential to damage infrastructure, such as earthquakes, rogue waves, and extreme precipitation events, necessitates that the City have the budgetary capacity to respond to and repair potential impacts. There are emergency funding opportunities that stem from the State or Federal governments, but these commonly only apply to especially large hazards and may not be available for the City depending on the hazard or emergency.

## 5.1.2 Insurance

Insurance can alleviate the immediate financial shocks that hazards can cause. In some instances, like with FEMA Flood Insurance, home or property insurance can be required, but in many cases it is optional. Insurance can also vary depending on if it is parametric or not. Parametric insurance insures a policyholder against the occurrence of an event and pays a set amount based on the magnitude of the event, while traditional insurance pays out based on the magnitude of the losses. This is an important distinction because parametric insurance can be paid out much quicker, making it better to assist with short-term expenses, while traditional insurance is more useful for long-term rebuilding but can lag behind and cause financial issues in the short-term.

Due to the high cost of covering damages from increasingly frequent and severe wildfires in California, several large home insurance companies have stopped offering home insurance coverage in California altogether, including State Farm, the State's largest home insurance provider. Many other insurance providers continue to offer insurance coverage but refuse to offer coverage to homes in high-risk areas and often refuse to renew insurance policies in areas with increased risk.

Beyond personal insurance, there are instances of Community-Based Insurance which can provide coverage to specific small areas and can be parametric and offer speedy payouts for food, shelter, and quick recovery and do not conform to the same constraints that personal insurance might. Unfortunately, these are generally only in practice as pilot projects funded by large state or federal grants or backstopped through philanthropic entities. Special district fees, state grants, or some combination of funding assistance alongside property owner payments are likely the only pathways to Community-Based Insurance, and it would require strong community support.

## 5.1.3 Grants

### State Funding

The **Climate Ready Program** is administered by CCC and provides grants for projects that use natural systems to help coastal communities adapt to climate change. Through this program, CCC has supported local governments in planning and redesigning their communities in preparation for sea-level rise and has allocated a significant portion of funding to projects that demonstrate benefits to disadvantaged communities.

The **California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act**, or Proposition 68, was passed by California voters in 2018. It funds various grant programs that are administered by several State agencies, including CCC. The grants are intended to fund a variety of natural resource improvement and climate resilience projects,

[63] Government Finance Officers Association. 2023. "Fund Balance Guidelines for the General Fund." https://www.gfoa.org/materials/fund-balance-guidelines-for-the-general-fund.

including coastal climate adaptation efforts. They may be awarded to coastal city governments, such as the City of Newport Beach, to complete projects promoting lower-cost coastal accommodations and climate resilience.

OPC administers several grant programs established through ballot propositions. The **Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act**, or Proposition 84, was passed by California voters in 2006. It led to the creation of the OPC Proposition 84 Grant Program, which is intended to fund a variety of resilience and coastal resource-related projects, including sea-level rise adaptation projects. Similarly, the **Water Quality, Supply, and Infrastructure Improvement Act**, or Proposition 1, was approved by voters in 2014. This led to the establishment of the OPC Proposition 1 Grant Program, which aims to provide funding for multi-benefit coastal restoration and resilience projects.

The **Hazard Mitigation Grant Program** (HMGP) funds plans and projects that reduce the effects of future natural disasters. Cal OES administers these funds through the HMGP Unit. The HMGP accepts Notices of Interest (NOIs) on an ongoing basis; the NOI provides an opportunity for subapplicants, such as State agencies, local governments, special districts, and tribes, to propose mitigation actions to mitigate the risk of future natural hazards. Single-jurisdiction plans are limited to a maximum of $150,000 in funding; multiple-jurisdiction plans may be awarded up to $250,000. The City has a FEMA-approved and locally adopted LHMP, so it is eligible to apply as a subapplicant for this grant.

The **Statewide Flood Emergency Response Grant Program**, provided by DWR, provides funding for public agencies that have primary responsibility for flood emergency response and coordination to improve their capacity to respond to flood emergencies. Grant funds may be used for planning, mapping, training, exercises, emergency management tools development, communications equipment, flood fighting materials and equipment, and development or improvement of emergency response facilities, among others. Application deadlines are ongoing; award amounts vary, but the available funding totals $1,400,000. The grant as no matching funding requirements.

The Coastal Conservancy provides funding through its **Coastal Conservancy Grant program**, awarding between $200,000 and $5,000,000 for projects along the coast and in coastal watersheds to increase availability of beaches, parks, and trails; protect and restore natural lands and habitat; preserve working lands; and increase resilience to climate change impacts. Funds may be used towards feasibility studies, property acquisition, and project planning, including community involvement, design, environmental review, permitting, construction, and project monitoring. No matching funding is required.

The State Water Resources Control Board issues **general fund grants for water resilience infrastructure** to provide technical and financial assistance to local agencies to plan and construct water recycling projects to augment fresh water supplies. Eligible projects include recycled water treatment, storage, distribution, and pumping; indirect potable reuse; and surface water augmentation. The planning grant may be used for costs to determine the feasibility of such projects; construction funding may only be used for construction costs. Awards may total up to $15,000,000, and no matching funds are required. Applications are due June 30, 2025.

## Federal Funding

FEMA's **Building Resilient Infrastructure and Communities** (BRIC) grant program provides funding for hazard mitigation projects that reduce the risk of disasters and natural hazards to public agencies, nonprofits, and tribal governments. The **Flood Mitigation Assistance** (FMA) Program funds projects that reduce the risk of flood damage to buildings insured by the NFIP. Priority projects for funding include risk reduction for acute events and chronic stressors caused by climate change, including infrastructure projects, projects that benefit disadvantaged

communities, projects that incorporate nature-based solutions, climate adaptation and resilience projects, and projects proposed by applicants who adopted and enforce the Statewide Building Code. As the City has adopted the California Building Code, it may be prioritized for funding of project types listed above. The Notice of Funding Opportunity has been delayed until further notice; however, FEMA announced nearly $2 billion dollars will be available for the BRIC grant program and Flood Mitigation Assistance (FMA) program.

NOAA's **National Coastal Resilience Fund** (NCRF) provides funding for projects to increase and strengthen natural infrastructure to protect coastal communities while enhancing habitats for fish and wildlife. NCRF funds projects that restore or expand coastal marshes and wetlands, dune and beach systems, oyster and coral reefs, forests, coastal rivers and floodplains, and barrier islands that minimize the impact of coastal storms and other coastal hazards. Planning and design awards typically range from $100,000 to $1,000,000, and restoration implementation projects range from $1,000,000 to $10,000,000. Non-federal matching funds are not required, but matching contributions are part of the application review process.

The **Community Development Block Grant Program** is administered by the U.S. Department of Housing and Urban Development. It is intended to provide funding to states and local governments to improve communities, especially those of low and moderate incomes. Over a 1-, 2-, or 3-year period, as selected by the grantee, no less than 70% of Community Development Block Grant funds must be used for activities that benefit low- and moderate-income individuals. The City has received funds from the Community Development Block Grant Program for a range of activities relating to economic development, housing and homelessness, and special needs programs. Funds may also be used for construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes, and for activities related to energy conservation and renewable energy resources.

### Private Funding

There are also potential grants or opportunities for private funding through philanthropic organizations, individual community members, or community groups.

## 5.1.4 Assessment Districts

### Climate Resilience Financing Districts

Cities, counties, or special districts can establish climate resilience financing districts as an innovative financing mechanism to fund projects and programs to address climate change, as allowed under SB 852. Districts raise revenue through tax increment funding, voter-approved supplemental property taxes, property benefit assessments, or fees, similar to an enhanced infrastructure financing district (EIFD). Revenues can then be used to fund projects and operating expenses that address climate mitigation, adaptation, or resilience, including sea-level rise, extreme heat and cold, drought, wildfire risk, and flooding risk. Importantly, resilience districts offer a way to sustainably finance resilience projects: in addition to capital costs, funds can be used for maintenance of projects. This enables local governments to secure a long-term funding source and avoid issues with lapses in funding.

Tax increment financing works as follows:

1. The government sets a baseline year for property tax revenue within the identified area.

2. As property values in the area increase due to redevelopment, the tax revenue generated by the increased property values is "incremental"—that is, it is above the baseline year property tax revenue.
3. The incremental tax revenue is then captured by the government and placed into a special fund called the EIFD fund.
4. The government can then use the money in the EIFD fund to finance redevelopment projects within the district.
5. The financing is usually provided through the sale of bonds, which are paid off over a period of years using the incremental tax revenue generated by the district.

Most (95% or more) tax increment funds must go towards capital projects; funding from other sources can be allocated towards other expenses related to projects.

To establish a climate resilience district, cities may adopt a resolution stating their intention to establish a district and define the district's boundaries, project types, needs, and proposed goals. Cities then create a governing board (a public financing authority), like those for EIFDs. A public hearing is required during this process. To finalize the establishment of the resilience district, cities may adopt a resolution providing for the division of taxes.[64]

### Enhanced Infrastructure Financing Districts

EIFDs are special districts that can collect additional tax revenue from any agency or organization in the district with the ability to be taxed (except for county offices of education, school districts, and community college districts). This is known as tax increment financing and involves "freezing" tax revenues in a particular tax year and collecting any additional revenue generated from tax increases that year. This additional revenue can then be shared with the EIFD and used to fund any of the following infrastructure improvements:

- Highways, interchanges, ramps and bridges, arterial streets, parking facilities, and transit facilities
- Sewage treatment and water reclamation plants and interceptor pipes
- Facilities for the collection and treatment of water for urban uses
- Flood control levees and dams, retention basins, and drainage channels
- Childcare facilities
- Libraries
- Parks, recreational facilities, and open space
- Facilities for the transfer and disposal of solid waste, including transfer stations and vehicles
- Brownfield restoration and other environmental mitigation
- Development of projects on a former military base
- Acquisition, construction, and rehabilitation of housing for people of very low, low, and moderate income, as defined in Sections 50105 and 50093 of the Health and Safety Code, for rent or purchase
- Acquisition, construction, and repair of industrial structures for private use
- Transit priority projects, as defined in Section 21155 of the Public Resources Code, that are within a transit-priority area
- Projects that implement a sustainable communities strategy

[64] Civic Well. 2022. "SB 852 – DODD: Climate Resilience Financing Districts." https://civicwell.org/wp-content/uploads/2022/02/SB-852-fact-sheet.pdf.

- Port or harbor infrastructure, as defined by Section 1698 of the Harbors and Navigation Code Community Revitalization and Investment Authorities

### Landscape Maintenance Assessment Districts

This fund accounts for the activities of landscape maintenance assessment districts. A landscape maintenance assessment district collects assessments to pay for landscape maintenance in the assessment area.

## 5.1.5 Fees

**Development impact fees** are a common way to generate revenue to provide infrastructure improvements and public services. They involve collecting a fee directly from developers during the local permitting process. The revenue is then used to finance improvements and services that are usually directly related to the type of fee collected. For example, a water impact fee may be used to improve water infrastructure or support the additional public resources needed to serve new development. The City already collects several impact fees, including a fire impact fee, water impact fee, and sewer impact fee. In addition, the City often requires public benefit fees as part of negotiated development agreements.

Local governments are authorized to implement development impact fees per the Fee Mitigation Act. To do so, they must first complete a nexus study. A nexus study helps to determine what share of impact costs the developer should cover (via the impact fee) based on the level of impact the development will have on public infrastructure and services. By law, a city cannot require developers to pay an impact fee greater than what is determined to be fair by the nexus study, nor can a city require developers to pay an impact fee for something their project will not have an impact on.

Development impact fees can help finance improvements in an area, and they can also deter developers from building there. Therefore, both the costs and benefits of implementing new impact fees should be considered when deciding whether or not to use them to help finance improvements and services. Cities may also consider reducing development impact fees within a specific plan area to attract more development.

**User fees** can be imposed by cities, counties, or special districts to charge fees for facilities and services it provides. These fees intend to cover the cost on the local government of providing those services or facilities, including overhead, capital improvements, and debt service. For example, a city might charge a fee for checking plans for new construction. However, to prevent misuse of fees, the fee cannot exceed the cost of providing the service or for granting a benefit or privilege.

**Regulatory fees** are those paid for the cost of issuing licenses and permits; performing investigations, inspections, and audits; and the administrative enforcement of such activities. An example may be charging a fee to pay for the cost of post-construction stormwater compliance inspections.

## 5.1.6 Bonds

General obligation bonds are issued by public entities to finance large projects. These bonds are backed by property tax revenue, which is used to repay the bond over a 20-to-30-year period. Property tax may be increased to repay the bond, if said increase is used to acquire or improve real property; however, this action requires two-third voter approval.

## 5.2 Regional Climate Collaborative

The Orange County Climate Coalition (OCCC) advocates for a county-wide full transition to renewable energy use and infrastructure, advancing environmental justice and equitable access to renewable energy, and meaningful participation from communities, especially communities of concern. To achieve these goals, OCCC uses education, advocacy, and community organizing to promote the adoption of cities' climate action and adaptation plans and lobbies for all-electric reach codes for new construction and retrofits. OCCC also aims to organize community organizations in communities of concern to lobby and advocate for policies to promote environmental justice. The organization also has two working groups focused on energy and environmental justice, which participating members can join to enhance collaboration on those issues. Associated organizations involved in OCCC include the Citizen's Climate Lobby, Climate Action Campaign, OC Justice Project, OC Young Greens, Orange County 350, Portola Animal and Environmental Protection Club, Reform and Sustain, Santa Ana College Environmental Club, Stand.earth, Sunrise Movement Orange County, and Women for American Values and Ethics. Several organizations partner with OCCC, including the Newport Bay Conservancy, which was established to protect and preserve the Upper Newport Bay. Climate collaboratives offer opportunities for cross-jurisdictional cooperation, knowledge sharing, and can provide pathways to better access grant funding.

## 5.3 Community Buy-In

Community buy-in is essential for safety efforts, as many projects can require large up-front costs or continued maintenance, while programs can often be optional and stretch City staff thin. Community buy-in can come in the form of local organizations leading programs or volunteer citizens assisting with City-led programs to ease the burden placed on the City for optional tasks. Buy-in can also help to supply council members with the political will to commit the City and necessary budget or resources to a certain project. This buy-in is commonly an opportunity for safety-related projects or programs that provide tangible and important health and wellness benefits.

## 5.4 Contradicting Actions

### 5.4.1 Building Housing vs. Avoiding Building in a Hazard Zone

Meeting the demand for additional housing development and mitigating the risk of natural hazard impacts on property and life can come into conflict. Economic and regulatory pressures to rapidly develop new housing stock must be balanced with the need to comprehensively assess risk and implement safety measures, which can delay the housing development process. Developing in hazard-prone areas without necessary safety measures could not only expose development to undue risk, but could also create more demand for emergency response, straining limited City resources. There are also limitations of insurability: properties in risk-prone areas entail greater financial risk for insurance providers and could even be deemed uninsurable.

These constraints might imply that new housing development should avoid risk-prone areas altogether, yet limited land availability and zoning regulations can restrict new housing development. Additionally, demand for housing may be high in risk-prone areas as they can be scenic or in desirable locations, such as hillside areas and places close to the coast.

### 5.4.2 Planting Shade Trees vs. Additional Water Use, Fire Risk, and Maintenance

Shade trees can help reduce the urban heat island effect to enhance comfort and safety on hot days. However, shade trees, especially in arid regions, can require substantial amounts of water for growth and maintenance. Under drought or water shortage conditions, planting additional shade trees or even maintaining existing trees may come into conflict with the need to conserve water resources. One way to decrease trees' water use while increasing tree canopy is to plant low-water-use or drought-tolerant species. Nonetheless, water use may still be an issue.

Shade trees may also exacerbate the spread of wildfire in urban areas. When embers blow from wildlands into developed areas, more fuel available for embers to ignite may lead to a more destructive fire scenario. Alternatively, trees that have grown too close to electrical wires pose a risk of igniting in the event of a short-circuit or another electrical malfunction. Some risk can be mitigated with proper maintenance of trees to ensure adequate space between leaves and branches and electrical wires.

### 5.4.3 Promoting a Lively Waterfront vs. Avoiding Flood Risk, Costs, and Legal and Environmental Implications

Waterfront and harbor areas represent a significant asset for local economic development, drawing tourists, supporting water-based recreation, and being a prime area for other kinds of development, including restaurants and shops. However, coastal flooding, rogue waves, and tsunamis risk damaging or destroying structures and infrastructure supporting waterfront economic activities, potentially resulting in millions of dollars in property damage and costly repairs to infrastructure. Furthermore, the higher the intensity of development in the waterfront area, the greater the cost of repair or rebuilding in the event of a coastal hazard impact.

Waterfront development can also impact fragile coastal habitats, resulting in loss of biodiversity, disruption of natural water flow patterns, and increased vulnerability to storm surges and rising sea levels. Waterfront development must strike a delicate balance between economic interests and environmental preservation. The legal dimensions of these potential conflicts are myriad. Coastal and waterfront development permits require compliance with the California Coastal Act and the local government's Local Coastal Program (LCP). Additionally, CCC requires that LCPs are updated to address preparation and mitigation of impacts of sea-level rise on coastal resources. The Endangered Species Act (ESA) may also be triggered if endangered species are identified in planned waterfront development areas. Developers must meet Federal ESA requirements to mitigate potential impacts upon endangered species, which could restrict development.

### 5.4.4 Retrofitting Homes for Safety vs. Retaining Affordable Housing Stock

Retrofitting homes to withstand natural hazards, such as earthquakes, floods, or hurricanes, is crucial for safeguarding lives and property. However, the costs associated with retrofitting can be substantial, potentially leading to increased housing expenses. This conflict is more pronounced when it comes to affordable housing, as the financial burden of retrofitting homes can be a disproportionate burden on low-income homeowners. Renters could also face increased rents if the home they are renting is retrofitted as the owner attempts to recoup the costs of retrofitting. Balancing the imperative for safety enhancements with the need to maintain affordable housing

stock requires financial incentives and policy interventions, such as subsidies to provide financial assistance for retrofitting homes.

## 5.5 Variable Timeframes

Each of the hazards discussed will change over time in frequency, severity, and risk level. In many cases, atmospheric GHG emissions will increase the risk of more severe impacts from coastal storms, sea-level rise, inland flooding, wildfire, and extreme heat. Given the uncertainty associated with how fast impacts will accelerate and the timing of potential impacts, it is challenging to plan appropriately. Additionally, seismic hazards such as earthquakes are difficult to predict and may cause cascading hazardous impacts from other hazards, including fire and tsunamis, as well as impair emergency response capacity.

Potential human-caused hazards, including hazardous materials and aviation, do not vary as natural hazards do. Rather, their risk-level is a matter of proper maintenance and operation and compliance with Federal and State regulations.

# 6 Recommendations

As a result of the Safety Element update, the City's policies should provide residents and assets better protection from hazards over time. There are many State or Federally required or heavily incentivized plans, policies, and programs described earlier that the City already follows and will continue to follow to protect residents and mitigate hazards. The following recommendations focus on items that would entail new or additional attention to bring the City's safety efforts to a new level.

## 6.1 Responsible Party

In a safety element, there are programs and projects that are implemented by various local departments spanning community development, public works, fire, and police, among others. So, while implementation is occurring, there may be programs or projects that are left behind or are not communicating with each other in a way that maximizes resources and efficiency. Having a responsible party for the Safety Element will help to bring coordination and accountability to the policies and actions contained within it. This does not mean that programs currently run by a certain department would shift hands, but it would add an extra layer of monitoring to the process. By understanding the implementation progress of the Safety Element at any given time, this responsible party would also have the insight to pursue funding opportunities or coordinate across multiple programs to enhance their reach or resources provided. Given the strong connection between resilience and adaptability with a safety element, this recommendation is linked to the recommendation within the Resilience Existing Conditions and Background Analysis to identify a resilience lead to coordinate implementation of resilience and adaptation actions, especially in a manner that implements the updated Safety Element.

Members of the GPAC have noted that adaptation pathways can be used related to safety to assist in policy implementation. Adaptation pathways are a concept that can be applied to how policies are developed and implemented. They allow jurisdictions to base their priorities and actions off of real-world instances of hazards. This means that funding allocations, planning efforts, and implementation next steps can adjust over time. This is valuable because projections vary based on uncertainties within models.

One common example of how pathways can be beneficial are for actions related to sea-level rise, which has a wide variety of potential projected outcomes and uncertainties. There may be policies like beach nourishment that work in certain locations for lower rates of sea-level rise, but over time if sea-level rise occurs at higher rates other alternatives may be necessary. To further this concept and implementation, there may be opportunities to utilize Artificial Intelligence (AI) to help track implementation progress.

## 6.2 Local and Regional Partnerships

Hazards do not respect jurisdictional boundaries, which means that in some cases the actions of neighboring local governments can impact the safety of residents locally. This can look like two cities handling vegetation maintenance differently due to various constraints, leading to additional fire risk in a certain area. It could also mean that a hazard is completely ignored because neither local government feels compelled to take the lead on addressing something. Working with regional entities and/or forging specific Memoranda of Understanding with neighboring cities can be a path toward unified and more effective action.

Partnerships also provide a way to spread responsibilities out, increasing the capacity and potential effectiveness of a program. Mutual aid agreements can help to add capacity without raising costs substantially. There is also a history of

local partnerships between the City and certain organizations, and potential for more in the future depending on the desires of community members. Tree plantings, vegetation maintenance, and other neighbor-to-neighbor programs are great ways to involve engaged local organizations in either long-term programs or one-time events.

## 6.3 Consistent Two-Way Communication

Strong communication pathways are important when working on programs that actively interact with the public. These types of programs can include community engagement, neighbor-to-neighbor or volunteer programming, hazard preparedness educational resources, or incentive program marketing. Regardless, consistent and standard messaging through established City platforms is integral to ensure highly involved residents receive notifications and newly interested community members are able to find information easily. Trusted community voices will help to ensure successful outcomes. The City's website and various social media platforms provide notifications and access to resources, but these can be consolidated or more regularly updated to achieve more successful outcomes.

It is also important to have a method for receiving feedback from community members so that issues within the City can be responded to in the moment, tracked, and more comprehensively addressed over time. This not only applies to engagement programs, but also can be for more general feedback. Dedicated 3-1-1 lines are useful tools for timely response, but may not have organized tracking capabilities. Engagement programs can help to define or prioritize issues, but may not offer historic data on repeat problem locations. More advanced programs and platforms are becoming available for this type of response tracking that can benefit residents in real time and implementing staff over the long-term.

## 6.4 Incentive Programs

Incentives are a powerful tool that can be the reason a resident or business finally decides to make a safety improvement. These programs can take many shapes and forms, providing funding, rebates, technical assistance or even volunteers for building retrofits, tree plantings, vegetation maintenance, or other improvements.

These programs can fill gaps that are often not addressed by city building standards that only apply to new development or renovations. They also have potential to be structured in a way to target benefits toward the most vulnerable people such as older adults and low-income or housing-burdened homeowners or renters. Funding is commonly the limiting factor for this type of program, but even if funding is only available for a single cycle, the benefits of many incentive programs can last for years. There is also potential to emphasize co-benefits with this type of program and combine it with other efforts. For example, a program that incentivizes rooftop solar might also include other energy-efficiency solutions such as double-paned windows that also reduce extreme heat exposure and limit black outs or brown outs.

## 6.5 Pursuit of Funding

There are a number of implementation methods that cities commonly use to meet State requirements for safety elements, but oftentimes actions that are not required or well established can be left out as a result of limited funding. Ensuring that the City has dedicated staff time toward tracking and pursuing funding would help to enhance the types of programs that the City can offer or projects the City can develop.

Projects that often require funding assistance or special funding pathways include large infrastructure projects, projects that provide resilience for only a certain subset of the City (i.e., coastal armoring benefitting one specific part of town), or optional programs that offer incentives. Large infrastructure projects may be best pursued in

conjunction with neighboring local governments and likely require assistance with hefty capital costs. State and Federal grants, as well as bonds, are good options. When considering projects that only provide resilience to a small subset of the City, there are potential options for manipulating funding frameworks so that cost is not placed upon residents and businesses removed from the given hazard, such as Climate Resilience Financing Districts or Community-Based Insurance. Finally, incentive programs are limited by the funding that is available, and without funding pursuits these programs are not able to exist.

Pursuing funding ties together the above recommendations because each plays a role in making the City more competitive for grant funding opportunities that arise or more politically viable for the local actions necessary. By having a responsible party, the City can show the funding entity that they have the capacity needed to implement the work pursuant to the funding. Similarly, partnerships with neighboring local governments or with local organizations or businesses mean that capacity is further enhanced, and benefits transcend jurisdictional boundaries and cover multiple interests. Involvement and proven support from community members further bolsters opportunities.

# 7 Conclusions

When considering how to mitigate, prepare, respond, and recover from hazards, cities can prioritize hazards based on their potential severity and projected frequency of the hazard. Due to the location of the City and its built environment, coastal hazards are the most pressing hazard and should continue to be prioritized in mitigation efforts. Fire, seismic and geologic hazards, and inland flooding are each significant hazards with potential to impact large groups of residents or infrastructure within Newport Beach. Each of these hazards vary in their severity and likelihood, with seismic hazards offering the worst potential damage, but the least predictability. Flooding and fires each are likely to get worse in their intensity and frequency, so that must also be taken into account, while seismic hazards are not anticipated to increase. Extreme heat, hazardous materials, and aviation hazards are each low in their potential impact to the City. While extreme heat is going to occur annually, it is heavily mitigated by Newport Beach's proximity to the beach. Hazardous materials and aviation hazards are also both limited in Newport Beach and are stringently regulated to protect residents from potential emergency situations.

In developing policy and actions, it is also important to consider what people and assets are most at-risk of severe impacts resulting from hazards. In Newport Beach, older adults are by far the most common vulnerable population, but there are also higher than average rates of severely cost-burdened renters and homeowners. Each of these populations is impacted during the recovery stage of hazards, while older adults may also require additional assistance during the response stage. Regarding infrastructure, the City's tsunami risk areas warrant attention to the roadway network in the at-risk area and warning systems. Other infrastructure decisions such as water and the grid must be carefully balanced between providing public services and causing hazards to occur or worsen, as public safety power shutoffs are at times required to reduce fire risk and water conservation measures may be required during times of drought. These conflicting interests mean that the infrastructure system's redundancies and efficiencies are especially important to retain functionality.

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