

GOAL S-1 EMERGENCY PREPAREDNESS, RESPONSE, AND RECOVERY

A prepared Redondo Beach that can effectively plan for, respond to, and recover from emergencies and hazardous events.

Policy S-1.1 Emergency Operations Plan. Coordinate with federal, state, and local emergency response agencies to develop adopt, and maintain a City of Redondo Beach Emergency Operations Plan (EOP) and a Continuity of Operations Plan (COOP).

Policy S-1.2 Recovery and Rehabilitation. Facilitate the rapid recovery of persons and rehabilitation of buildings and infrastructure following a hazardous event.

Policy S-1.3 Public Awareness. Increase public awareness and knowledge of emergency response planning, procedures, and opportunities for public engagement, participation, and support.

Policy S-1.4 Emergency Operations Center Readiness. Provide the resources, funding, and tools to ensure the local Emergency Operations Center (EOC) is prepared for any disaster that may affect the City.

Policy S-1.5 Local Hazard Mitigation Plan. Incorporate the current Local Hazard Mitigation Plan, most recently adopted by FEMA in July 2020, into this Safety Element by reference, as permitted by California Government Code Section 65302.6 to ensure that emergency response and evacuation routes are accessible throughout the city.

Policy S-1.6 Responsiveness to Large-Scale Disasters. Improve the City's ability to prepare for and respond to large-scale disasters through coordination and sharing data, experience, and strategies with other emergency management agencies in state or regional efforts on disaster planning.

Policy S-1.7 Early-warning Notification Systems. Provide alerts about potential, developing, and ongoing emergency situations through extensive early-warning and notification systems that convey information to all residents, in multiple languages and formats to ensure it is widely accessible.

Policy S-1.8 Coordination with National, State and Local Emergency Management Agencies. Continue to coordinate with local and State Emergency Management agencies using the Standardized Emergency Management System (S.E.M.S.) and National Incident Management System (N.I.M.S.) to facilitate multi-agency emergency response.

GOAL S-2 CRITICAL FACILITIES

Redondo Beach's essential facilities retain functionality and structural integrity following natural and human-caused disasters.

Policy S-2.1 Site Design of Critical Facilities. Site, design, and construct new City-owned critical facilities to ensure continued operations following geologic, seismic, or other hazard events, including prohibiting critical facilities within 100 feet of an active fault system, within a FEMA flood hazard zone, or within a sea level rise hazard area.



Resilience Hubs

Resilience hubs consist of well-used, existing community-serving facilities that are upgraded to provide local communities with shelter, water, and electricity during these events or disasters.

Policy S-2.2 Siting of Critical and Sensitive Structures. Locate Critical and Sensitive structures in areas of the City with continuous road access, and areas where utility services can be easily maintained and/or quickly reinstated after a hazardous event.

Policy S-2.3 Upgrading Vulnerable Critical and Sensitive Facilities. Require that existing Critical and Sensitive Facilities with significant seismic or other hazard vulnerabilities be upgraded, relocated, or phased out as appropriate or possible.

Policy S-2.4 Emergency Response Plans for Critical, Sensitive and High-Occupancy Facilities. Require Critical, Sensitive, and High-Occupancy Facilities located in areas of potential hazards, such as seismic, flooding, or sea level rise, to maintain site-specific emergency response plans, with contingencies for all appropriate hazards.

Policy S-2.5 Citywide Network of Resilience Hubs. Establish a network of equitably located resilience hubs throughout Redondo Beach and ensure that resilience hubs are situated outside of areas at risk from hazard impacts to the extent possible, offer refuge from extreme heat and poor air quality due to regional wildfire smoke, and are equipped with renewable energy generation and backup power supplies. Such facilities should be in easily accessible locations and be available to all community members.

Policy S-2.6 Backup Power Sources. Coordinate with emergency management services to establish backup power, preferably renewable energy sources, and water resources at emergency shelters, resilience hubs, and cooling centers in case of power outages.

GOAL S-3 HAZARD AND EMERGENCY DATA

Up-to-date hazard and emergency data to ensure effective planning and response to natural and human-caused hazardous events.

Policy S-3.1 Maintain Current Geologic Hazards Databases. Maintain a current information and GIS database with the best available science on local and regional seismic and geologic hazards and ensure this information is available to the community.

Policy S-3.2 Ongoing Fault Location Data Collection. Continue collecting relevant data on fault locations and history of fault displacement activity, as a basis for future refinement of seismic-related policies.

Policy S-3.3 Resources to Update the Climate Vulnerability Assessment. Use the reported data and findings of applicable local, regional, or state documents or plans pertaining to climate-related hazards that could impact the City of Redondo Beach, including the California Climate Change Assessment, the California Adaptation Planning Guide, and the Safeguarding California Plan, to update the Climate Vulnerability Assessment during each update to the Safety Element.

heavy precipitation events due to climate change could lead to an increase in moisture-induced landslides and mudflows.

GOAL S-4 SEISMIC AND GEOLOGIC HAZARDS

Reduce death, injury, property damage, economic and social dislocation, and disruption of vital services resulting from seismic and geologic related events.

- Policy S-4.1 Compliance with State, Regional and Local Regulations.** Require new development to comply with current state, regional, and local regulations for seismic safety. Encourage retrofitting of existing development during building permit review to comply with current state, regional, and local requirements relative to seismic safety.
- Policy S-4.2 Keep Local Ordinances and Regulations Current.** Update local ordinances and regulations after each update to the Local Hazard Mitigation Plan and/or Safety Element to incorporate relevant geologic and seismic hazard information.
- Policy S-4.3 Evacuation and Access.** Ensure that new development, especially high-occupancy facilities, allow for evacuation of occupants through stabilized corridors and access points if buildings are damaged by seismic activity.
- Policy S-4.4 Property Owner Notification of New Faults.** Formally notify all property owners within a 500 linear foot radius of any and all boundaries of a newly discovered fault and/or existence of a fault if previously unidentified or unexposed fault is identified within the City of Redondo Beach municipal boundaries.
- Policy S-4.5 Development in Liquefaction Zones.** Require new development located in Liquefaction Zones, identified in Figure 4.4, to implement specific measures in the California Building Code Chapter 18 to reduce damage in an earthquake event.
- Policy S-4.6 Police, Fire and Public Works Coordination.** Coordinate with fire, police, and public works departments to ensure effective preparation, response, and recovery services are available throughout the community before, during, and after a seismic event.
- Policy S-4.7 Upgrade of Major Roadway Corridors in Liquefaction-Prone Areas.** Require new development to upgrade major roadway corridors in liquefaction-prone areas, identified in Figure 4.4, to reduce damage and disruptions from potential damage to transportation and evacuation routes.
- Policy S-4.8 Monitor and Upgrade Unreinforced Masonry Buildings.** Continue to monitor and enforce the upgrading of unreinforced masonry buildings in accordance with Ordinance 2576 and Section 8875 of the California Government Code.
- Policy S-4.9 Agency Coordination to Minimize and Mitigate Geologic and Seismic Hazards.** Coordinate and cooperate with local and state agencies within the County to avoid, minimize, and mitigate geologic and seismic hazards.
- Policy S-4.10 Automatic Natural Gas Shutoff Earthquake Sensors.** Require automatic natural gas shutoff earthquake sensors in high-occupancy industrial and commercial facilities, as well as new homes, and encourage them for all existing residences.

Policy S-4.11 Mapping of Areas Prone to Landslides and/or Mudflows. Coordinate with California Geologic Survey and United States Geologic Survey to map areas prone to potential landslides and/or mudflows.

GOAL S-5 TSUNAMI HAZARDS

Protection of life, prevention of injury, and reduction in the potential for property damage from tsunami runup.

Policy S-5.1 Assess Tsunami Runup Potential on New Development. Require new development projects to determine tsunami runup potential at the project site, prior to development, and require specific measures to prevent tsunami related damage, including a site-specific evacuation and emergency response program for tsunamis.

Policy S-5.2 Tsunami Evacuation Notices to Community Members. Obtain information from the U.S. Tsunami Warning System and the Tsunami Ready Communities program to send evacuation notices to community members in the event of a tsunami.

4.4 Flooding and Sea Level Rise

4.4.1 FLOOD HAZARDS

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide, causing substantial damage to structures, landscapes, and utilities, as well as life-safety issues. Flooding can be extremely dangerous, and even six inches of moving water can knock a person over given a strong current. Other hazards created by flooding include ground saturation that leads to instability or collapse of buildings and infrastructure; standing water that can damage foundations and electrical circuits; as well as erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Floodwaters can damage buildings, carry large debris, and wash away soil that can weaken structures built on top, leading to collapse of building foundations. Flood can both pose a drowning hazard and cause mold and mildew to grow in buildings, creating poor indoor air quality. Flash floods are especially dangerous because they can happen suddenly and prevent effective evacuations.

Floods are usually caused by large amounts of precipitation, either from a period of very intense precipitation or a long period of steady precipitation. Historically, Redondo Beach has been at risk of flooding primarily during the winter and spring months when atmospheric river systems swell with heavy rainfall. Prolonged, heavy rainfall causes high peak flows of moderate duration and a large volume of runoff. When the ground is saturated by previous rainfall, flooding can be more severe. In impervious areas, such as areas covered in asphalt or cement, stormwater cannot absorb into the ground and flows faster over the surface. This can cause more extensive flooding in low lying areas. Flooding susceptibility in Redondo Beach is primarily associated with low-lying areas and coastal flooding along the shoreline.

GOAL S-6 FLOOD HAZARDS

Protection of life, prevention of injury, and reduction in the potential for property damage from flooding.

- Policy S-6.1 Agency Coordination.** Cooperate with local, regional, State, and federal flood control agencies to reduce the potential for flood damage in Redondo Beach.
- Policy S-6.2 Public Awareness of Flood Hazards and Flood Control Measures.** Increase public awareness of flood hazards and promote flood-control measures, such as increasing permeable surfaces, to avoid and reduce potential impacts from flooding.
- Policy S-6.3 Protect City-Owned Buildings from Flooding Impacts.** Ensure city-owned buildings and infrastructure are protected from the impacts generated by flooding.
- Policy S-6.4 Assessment and Maintenance of Storm Drainage Systems.** Coordinate with the Los Angeles County Flood Control District to increase green infrastructure and ensure that flood channels and storm drainage systems are regularly assessed, cleaned, maintained, and upgraded to minimize flood risks to existing development.
- Policy S-6.5 Development in the 100-Year or 500 Year Floodplain.** Require new development within the 100-year or 500-year floodplain, identified in Figure 4.6, to comply with the Redondo Beach Flood Damage Prevention Ordinance, to minimize flood risk.

GOAL S-7 SEA LEVEL RISE

A resilient and thriving community, safeguarded and adaptively managing for rising sea levels.

- Policy S-7.1 Habitable Areas and Sea Level Rise.** Require new development to locate habitable areas and essential buildings above the highest water level expected during the life of the project, based on Figure 4.7 and Figure 4.8.
- Policy S-7.2 Agency Coordination.** Coordinate with regional agencies, cities, utilities, property owners, community groups, and other stakeholders to conduct regional sea level rise adaptation planning.
- Policy S-7.3 Availability of Flood Information.** Provide information to property owners, business owners/operators, and the public in areas subject to increased flooding due to sea level rise by working with neighborhood associations, realtors, business associations/groups, and community-based organizations to disclose potential property risks and mitigation options.
- Policy S-7.4 Nature-based Solutions.** Integrate nature-based solutions into sea level rise adaptation strategies, including the construction of living shorelines, which are made of plants, sand, or rock that can grow over time to provide both wildlife habitat and natural resilience, rather than artificial structures.
- Policy S-7.5 Planning for Sea Level Rise.** Integrate sea level rise projections and analyses into City development and environmental review processes.

Related Policies

Open Space and Conservation Element
COASTAL RESOURCES

See policies: OS-5.2, OS-5.3, OS-5.5

WATER RESOURCES

See policies: OS-6.2, OS-6.3



Nature-Based Solutions to Sea Level Rise

There are several case studies of natural coastal infrastructure solutions. They give coastal managers a sense of the breadth of approaches to coastal adaptation and what it takes to plan, permit, implement, and monitor them. Examples that span the California coast include:

- Seal Beach National Wildlife Refuge Thin-layer Salt Marsh Sediment Augmentation Pilot Project
- San Francisco Bay Living Shorelines: Nearshore Linkages Project
- Santa Monica Beach Restoration Pilot Project

Policy S-7.6 Sea Level Rise Projections. Update sea level rise projections based on best available science during each update to the Safety Element.

Policy S-7.7 Wave Action from Storm Surge. Require structures, including City-owned structures, along the coast to be built or upgraded to withstand strong wave action from storm surge.

4.5 Hazardous Materials

Hazardous materials are materials that pose a significant risk to public safety or human or environmental health. These include toxic chemicals, flammable or corrosive materials, petroleum products, and unstable or dangerously reactive materials. They can be released through human error, malfunctioning or broken equipment, or as an indirect consequence of other emergencies (e.g., if a flood damages a hazardous material storage tank). Hazardous materials can also be released accidentally during transportation, as a consequence of vehicle accidents. In areas with oil extraction, malfunctioning piping can cause methane to leak into soil and groundwater layers, which is a highly flammable gas that can also cause ailments such as headaches, vomiting, and rashes.

A release or spill of bulk hazardous materials could result in fire, explosion, toxic cloud, or direct contamination of water, soil, and air. The effects may involve a small site or several square miles. Health problems may be immediate, such as corrosive effects on skin and lungs, or gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material.

Two types of hazardous materials sites exist in and near Redondo Beach: Superfund sites and Department of Toxic Substances and Control (DTSC) sites. Superfund is the Environmental Protection Agency's program to clean up hazardous waste sites. While there are no hazardous waste sites (superfund sites) in Redondo Beach, nearby sites are in Torrance and Palos Verdes, including Del Amo Superfund site located 7 miles to the east, Montrose Chemical Corporation Superfund site located 6 miles to the east, and the Palos Verdes Shelf Superfund site located off the coast to the southwest of Redondo Beach.

Potential and known contamination sites are monitored and documented by the Regional Water Quality Control Board (RWQCB) and DTSC. A search of the DTSC and the California State Water Resources Control Board (SWRCB) databases in 2023, shows 14 hazardous materials sites as active, undergoing closure, referring to a local agency, or open, nine of which are Leaking Underground Storage Tanks. Table 4.2 lists the sites identified by the SWRCB and DTSC and the type of remediation at each location.

California Accidental Release Prevention Program (Cal-ARP), the Aboveground Storage Tank Program and the Underground Storage Tank Program.

If a hazardous material spill poses an imminent public health threat, the City will support local regulating agencies in notifying the public. The transport of hazardous materials/wastes and explosives through the city is regulated by the California Department of Transportation (Caltrans). I-405 is open to vehicles carrying hazardous materials/wastes. Transporters of hazardous wastes are required to be certified by the United States Department of Transportation (DOT) and manifests are required to track the hazardous waste during transport. The danger of hazardous materials/waste spills during transport does exist and will potentially increase as transportation of these materials increase on I-405. The Redondo Beach Fire Department and Los Angeles County Fire Department are responsible for hazardous materials accidents at all locations within the city.

4.5.1 POTENTIAL CHANGES TO HAZARDOUS MATERIALS IN FUTURE YEARS

Due to the number of hazardous materials sites in Redondo Beach, mechanical failures or natural hazards could pose future risk of hazardous material releases. Seismic shaking can disturb soils and plugged or abandoned oil wells, causing hazardous materials to move further into the soil potentially contaminating groundwater. Future risk of methane release from soils is possible but considered rare due to the limited presence of active or inactive oil fields in Redondo Beach.

4.5.2 CLIMATE CHANGE AND HAZARDOUS MATERIALS

Climate change may indirectly increase the risk of hazardous materials release. For example, flooding events could cause the transport of hazardous materials to become more dangerous and increase the potential of an accident. These events could become more frequent and intense in the future due to climate change. Methane released from soils in Redondo Beach would likely contribute to climate change, since methane traps more heat radiation than carbon dioxide.

GOAL S-8 HAZARDOUS MATERIALS

The adequate management, transportation, storage, and disposal of hazardous materials in Redondo Beach.

Policy S-8.1 Agency Coordination to Manage Hazardous Waste Facilities. Coordinate with Los Angeles County to effectively manage hazardous waste facilities and materials, including household hazardous waste, through the enforcement of federal, state, and local regulations, to ensure safe handling, transport, use, and disposal of toxic and hazardous materials.

Policy S-8.2 Enforce Toxic and Hazardous Waste Facility Regulations. Continue to cooperate with state, regional, and county agencies to enforce regulations for the safe operation of toxic and hazardous waste facilities.

- Policy S-8.3 Coordinate with Businesses to Minimize Hazardous Waste.** Identify and coordinate with local businesses to minimize hazardous waste produced by businesses that must use, store, or transport hazardous materials.
- Policy S-8.4 Responses to Toxic and Hazardous Waste and Materials Emergencies.** Coordinate with state and regional agencies to facilitate coordinated and effective responses to toxic and hazardous waste and materials emergencies in the City to minimize health, property, and environmental risks, damage, and consequences.
- Policy S-8.5 Toxic and Hazardous Waste Contamination Prevention of Local Water Supply.** Integrate inter-agency and interdepartmental review and participation in water resource evaluation and mitigation programs to protect against toxic and hazardous waste contamination of the local water supply.
- Policy S-8.6 Eliminate and/or Clean Water Supply Contaminants.** Eliminate and/or clean existing sources of water supply contaminants due to toxic or hazardous materials and uses. Regularly monitor the state’s hazardous sites list and work with identified locations on eliminating and/or cleaning identified water supply contamination.
- Policy S-8.7 Hazardous Materials Disposal.** Ensure that the use and disposal of hazardous materials in the city complies with local, regional, state, and federal safety standards.
- Policy S-8.8 Siting of New Facilities Using, Storing or Producing Hazardous Materials.** Prohibit any new facilities using, storing, or producing hazardous materials from being located directly adjacent to existing residential or school uses.
- Policy S-8.9 Hardening of Hazardous Waste Storage Containers.** Encourage hardening of hazardous waste storage containers to minimize increased risks from hazards such as floods, earthquakes, sea level rise, and severe weather.

4.6 Fire Hazards

Fire hazards include both wildfires and urban fires. California is recognized as one of the most fire-prone and consequently fire-adapted landscapes in the world. The combination of complex terrain, Mediterranean climate, and productive natural plant communities, along with ample natural ignition sources, has created conditions for extensive wildfires. Wildfire is a low concern for the City of Redondo Beach, as the majority of the city is urban and not surrounded by fire-prone vegetation communities. Generally, the California fire season extends from early spring through late fall of each year during the hotter, dryer months. Fire conditions arise from a combination of high temperatures, low-moisture content in the air and plant matter, an accumulation of vegetation, and high winds.

Areas at risk of wildfire are designated as Fire Hazard Severity Zones (FHSZs) by the California Department of Forestry and Fire Protection (CAL FIRE). In unincorporated areas where state agencies provide fire protection services (known as State Responsibility Areas or SRAs), the state has identified Moderate, High, and Very High FHSZs. In areas where local agencies provide fire protection services (Local Responsibility Areas or LRAs), the state has identified Very High FHSZs. There are no Very High Fire Hazard Severity Zones in Redondo Beach or adjacent communities, as the city is in an urban environment and surrounded by communities that are built out.

coordination between all entities. The City of Redondo Beach is signatory to the California Mutual Aid Fire Protection System. This agreement was established to aid with major emergency incidents anywhere in the state.

The Redondo Beach Fire Department provides fire protection, emergency medical services, and disaster preparedness and response. Redondo Beach has three fire stations located at 401 South Broadway (Fire Station #1), 2400 Grant Avenue (Fire Station #2), and 280 Marina Way (Fire Station #3). In 2021, the Fire Department responded to 7,598 incidents, including 5,125 medical incidents and 2,473 fire related incidents.

4.6.4 POTENTIAL CHANGE TO FIRE RISK IN FUTURE YEARS

Likelihood of Future Occurrence

Structural fires are the primary risk for Redondo Beach given the city’s built-up environment and distance of less than a mile to a FHSZ. However, the likelihood of structural fires occurring in the city is low since these fires are usually the result of human accidents or mechanical issues in buildings. Wildfires will also continue to be a low-risk hazard for property damage in Redondo Beach, although smoke impacts from regional wildfires are likely to increase. As the fire season continues to occur later into the year, it is more likely to match up with the Santa Ana winds, which typically occur from October to April. This can generate smoke from regional wildfires that can inundate Redondo Beach.

Climate Change and Wildfire

Changing climate conditions are expected to increase the fire risk in and around Redondo Beach. Warmer temperatures brought on by climate change can exacerbate drought conditions. Droughts can kill or dry out plants, creating more fuel for wildfires. Warmer temperatures are also expected to increase the number of pest outbreaks, such as the shot hole borer, creating more dead trees and increasing the fuel load. Warmer temperatures are expected to occur later in the year, extending the wildfire season, which is likely to begin earlier in the year and extend later than it has historically. Wildfires occurring later or earlier in the year are more likely to occur during Santa Ana wind events, which can cause wildfires to move more quickly and increase the likelihood of burning into the wildland-urban interface areas. According to the California Fourth Climate Change Assessment, overall burned area may increase by as much as 60 percent during Santa Ana wind events (typically October to April), and 75 percent during periods without Santa Ana winds (typically April to September).



Fire Hazard Reduction Programs

Examples of these programs include weed and brush removal, maintenance of fire-resistant landscaping, and installation of fire sprinklers.

GOAL S-9 FIRE HAZARDS

Minimal risk of injuries, property damage, and economic loss due to fire emergencies.

Policy S-9.1 Fire Services to Protect from Fire and Fire-Related Emergencies. Provide fire prevention, protection, and emergency preparedness services that adequately protect residents, employees, visitors, and structures from fire and fire-related emergencies.

- Policy S-9.2 Fire Protection Staffing and Equipment.** Maintain staffing and equipment for fire protection services throughout the City to quickly respond to emergencies.
- Policy S-9.3 Agency Coordination to Implement Regional Fire Protection Agreement.** Continue to cooperate with fire, paramedic, and emergency operations personnel in adjacent municipalities and the County of Los Angeles to assist each other in carrying out the existing regional fire protection agreement.
- Policy S-9.4 New Development Standards to Reduce Fire Hazard Risk.** Continue to enforce and, as necessary, adopt new development standards to reduce fire hazard risks for new and existing development to minimize property damage and loss of life.
- Policy S-9.5 Programs to Reduce Potential of Urban Fires.** Continue to support public and private programs assisting in the further reduction of potential urban fires and associated prevention or protection efforts.
- Policy S-9.6 Local Water System and Supply and Facilities.** Continue to monitor, maintain, and upgrade the condition and operation of the local water system and supply, the distribution and operation of local fire hydrants, fire alarm boxes, and fire hose cabinets on the Municipal Pier.
- Policy S-9.7 Outreach Programs for Fire Hazard Preparedness.** Support community outreach programs for adults and children that educate community members about fire hazard preparedness and protection, and train volunteers to assist fire personnel to perform effectively during and after a local disaster.
- Policy S-9.8 Enforcement of Codes to Minimize Risk of Structural Failure During a Fire.** Minimize risk of structural failure during a fire or emergency situation, especially in critical facilities, by enforcing the California Building Standards Code and applicable California Fire Code provisions.



Snowpack

Snowpack levels in the Sierra Nevada dropped by **25 percent** during the **2011 to 2016** drought, and average springtime snowpack is expected to drop **64 percent by 2100**. In **2021 water year** (October 1, 2020 to September 30, 2021), the snowpack in the Northern Sierra was **70 percent** of the average, but the rain was less than **50 percent** of the annual average, making it the third driest year on record.

4.7 Additional Climate Change Hazards

Climate change hazards include coastal flooding, drought, extreme heat, flooding, sea level rise, and extreme storms and wind. This section provides background information, goals, and policies

4.7.1 DROUGHT

A drought is a long period when precipitation levels are well below normal. Similar to other regions of California, the City of Redondo Beach chronically experiences drought cycles. Drought impacts the city's water supply, derived from the State Water Project and the Colorado River, which ultimately makes less water available for people, businesses, and natural systems. Droughts can also indirectly lead to more wildfires and smoke in Redondo Beach and the region, and the stress caused by water shortages can weaken plants, making them more susceptible to pests and diseases.

The U.S. Drought Monitor recognizes a five-point scale for drought events: D0 (abnormally dry), D1 (moderate drought), D2 (severe drought), D3 (extreme drought), and D4 (exceptional drought). According to the U.S. Drought Monitor, the most intensive drought conditions in recent years occurred during most of 2007, when all of Los Angeles County was classified as being in "extreme"

blown by the wind can create breathing problems. The winds can blow roofs off buildings and cause tree limbs to fall on structures. High winds also increase the threat of wildfires. Winds may dry out brush and forest areas, increasing the fuel load in fire-prone areas. Winds may spark wildfires by knocking down power lines or causing them to arc. If wildfires do start, high winds can push smoke and ash further into urbanized areas, such as Redondo Beach, affecting the air quality and potentially disrupting regional infrastructure networks.

Potential Change to Severe Weather in Future Years

LIKELIHOOD OF FUTURE OCCURRENCE

According to historical hazard data, severe weather is an annual occurrence in Redondo Beach. Damage and disaster declarations related to severe weather have occurred and will continue to occur in the future. Heavy rain and thunderstorms are the most frequent type of severe weather occurrences in the region. Wind and lightning often accompany these storms and have caused damage in the past. However, actual damage associated with the primary effects of severe weather have been limited. It is the secondary hazards caused by severe weather, such as floods and fire, that have had the greatest impact in the region. Thunderstorms, high winds, and lightning can each have localized impacts on infrastructure, properties, and public safety.

CLIMATE CHANGE AND SEVERE WEATHER

Climate change is expected to cause an increase in intense rainfall and strong storm systems. This means that Redondo Beach could see more intense weather resulting from these storms in the coming years and decades, although such an increase may not affect all forms of severe weather. While average annual rainfall may increase only slightly, climate change is expected to cause an increase in the number of years with intense levels of precipitation. Heavy rainfall can increase the frequency and severity of other hazards, including flooding. There is no evidence of a direct link between climate change and Santa Ana wind events.

GOAL S-10 ADDITIONAL CLIMATE CHANGE HAZARDS

A resilient community able to adapt to climate change hazards.

Policy S-10.1 Financing Energy Efficient Programs for Economically Disadvantaged Households and Businesses. Extend the City's funding and financing programs to support energy efficiency and renewable energy improvements for economically disadvantaged households and businesses.

Policy S-10.2 Climate Change Data. Use the reported data and findings of applicable local, regional, state, and federal documents and plans pertaining to climate-related hazards that could impact the City of Redondo Beach, including the California Climate Change Assessment, the California Adaptation Planning Guide, and the Safeguarding California Plan.

Policy S-10.3 Drought Preparation with Regional Water Providers. Prepare for more frequent and severe drought events by working with regional water providers to implement extensive water conservation measures and ensure sustainable water supplies.

- Policy S-10.4 Energy Efficient City-owned Facilities.** Pursue that City-owned facilities and operations are energy efficient, and rely on renewable and resilient energy sources, including battery storage systems.
- Policy S-10.5 Shading and Heat-Mitigating Materials.** Coordinate with local governments and transit agencies to increase shading and heat-mitigating materials on pedestrian walkways and transit stops.
- Policy S-10.6 Integration of Sustainability Features in New Development and Existing Properties.** Encourage new developments and existing property owners to incorporate sustainable, energy-efficient, and environmentally regenerative features into their facilities, landscapes, and structures to reduce energy demands and improve on-site resilience. Support financing efforts to increase the communities funding of these features.
- Policy S-10.7 Drought-Tolerant Green Infrastructure.** Promote and expand the use of drought-tolerant green infrastructure, including street trees and landscaped areas, as part of cooling strategies and stormwater runoff reduction in public and private spaces.
- Policy S-10.8 Use of Natural Resources and Green Infrastructure.** Use natural resources and green infrastructure to absorb the impacts of climate-related hazards and associated natural hazards, as feasible, such as biorientation areas in new development that collect and filter stormwater before being discharged into the City's storm drain system.
- Policy S-10.9 Regional Collaboration.** Collaborate with surrounding cities, Los Angeles County, and the Los Angeles Regional Collaborative to develop and implement regional climate change adaptation and resilience initiatives.
- Policy S-10.10 Accessibility of Information to Low Income Households.** Ensure that low-income households have access to information about low-cost programs (e.g., subsidies for the National Flood Insurance Program, air-conditioning, low-cost weatherization, etc.) to protect their homes and wellbeing from climate change hazards, including flooding, extreme heat, and severe wind and weather.
- Policy S-10.11 Use of Existing Natural Features.** Where feasible, encourage the use of existing natural features and ecosystem processes, or the restoration of, when considering alternatives and adaptation projects through the conservation, preservation, or sustainable management of open space. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as parks, rain gardens, and urban tree canopies. It also includes systems and practices that use or mimic natural processes, such as permeable pavements, bioswales, and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.