

Climate Adaptation Model Policies for General Plans

Overview

This document provides a large selection of model policies for cities and counties in the Southern California Association of Governments (SCAG) region seeking to update their General Plans to address climate adaptation. Model policies are organized according to the following elements: housing, circulation, environmental justice, land use, and safety. Although the majority of the policies address multiple climate hazards, there are also model policies for specific climate hazards related to extreme heat, air quality and vector borne disease, drought, severe storm/wind, inland flood, landslide, and wildfire. Please see the companion document with local coastal program model policies addressing sea-level rise at this [link](#). The model policies in this document are meant to be used as a starting point and should be refined to suit the unique context of each local community.

This document is prepared as part of the Southern California Regional Climate Adaptation Framework, a project led by SCAG that provides a step-by-step guide on how to assess climate risk and develop strategies to reduce those risks, along with a suite of tools to assist cities and counties in the climate adaptation process. Policy development is part of Phase 4, Step 4.1 of the Southern California Climate Adaptation Guide (SoCal APG) which is available at this [link](#).

The SoCal APG also includes sample goals and objectives (see Phase 1), a sample set of metrics for each objective (see Phase 4), and a matrix of adaptation strategies and actions (see Phase 3). Depending on how the general plan is organized and structured, a community can utilize some or all of these materials as a starting point from which to refine and adapt these materials to their local circumstances. For example, the goals and objectives can be combined with the general plan model policies located in this document to inform a safety element update and the adaptation actions from the matrix can serve as the implementation strategies. If a community prefers to have more detailed and actionable objectives and policies, the adaptation strategies and actions can be used instead of, or in addition to, the general plan model policies. The sample metrics (once refined by the local community) can be integrated into the general plan to facilitate monitoring and tracking of progress towards climate adaptation goals.



Southern California Adaptation Planning Guide's Four Phases of Adaptation Planning

Circulation Element

Multiple Hazards

- **Install Roundabouts.** Where feasible, and where pedestrian movement is less prevalent, consider design and installation of roundabouts in new construction and intersection upgrades. Mini-roundabouts can be utilized in place of four-way stops in lower traffic areas. Roundabouts and mini-roundabouts can improve air quality by reducing the stop/start and idling that reduces fuel efficiency and increases vehicle emissions.
- **Assess Vulnerability of Circulation Infrastructure.** Assess all local circulation infrastructure that may be currently, or in the future, vulnerable to climate change impacts, such as increased flooding, to develop long-term plans for infrastructure hardening, relocation, or development of alternate routes to ensure connectivity and maintaining safe routes for evacuation.
- **Assess Vulnerability of Transit Infrastructure.** Work with the community's local transit agency(s), based upon best climate vulnerability assessment data available, to identify critical transit infrastructure. This infrastructure should include fixed-rail, bus-rapid transit and dedicated lanes, fixed-bus routes, stations and stops. The assessment should determine the potential impacts of climate change hazards such as flooding, increased high heat days, and other climate change hazards to determine potential vulnerable infrastructure and routes. Based on the vulnerability assessment, contingency plans should be developed along with coordination between the community's capital improvements plan and general plan circulation element to ensure continuity of services.
- **Consider Climate Change Vulnerability in Capital Improvements Program.** Based upon best climate vulnerability assessment data available, ensure that the community's capital improvements program and long-term circulation and infrastructure plans incorporate not only current, but future infrastructure vulnerable to climate change hazards. The plans should incorporate funding and projects for hardening, relocation or retrofitting to provide for resilient infrastructure and plan for infrastructure projects and costs related to climate change hazards. The plans should ensure harmonization with the general plan, capital improvements program, fiscal plan, local hazard mitigation plan and other plans related to infrastructure needs.
- **Modify Landscaping and Stormwater Runoff Standards in Public Realm.** Modify public realm construction standards, and/or the community's Municipal Stormwater Program Stormwater Management Plan/Program to incorporate drought-tolerant vegetation and Low-Impact Development (LID) Stormwater Best Management Practice (BMPs) (i.e., rain gardens and pervious pavers/pavement) to provide for aquifer recharge and allow more potable and recycled water to be utilized for other needs.

Extreme Heat

- **Require Light Pigmentation in Pavement.** Modify public construction standards to require light pigmentation in pavement materials in areas where local micro-climates show high negative impacts from radiant heat. Heat reflective colors can reduce heat absorption, diminish the heat island impact and mitigate the built environment's contribution to high heat days.
- **Require Tree Canopy in the Public Realm.** Modify public construction standards to require the installation of tree canopies consisting of drought-resistant native cultivars that increase overall

shade in the public realm to provide areas of respite from high heat, reduce the heat island effect, and mitigate the built environment's contribution to high heat days.

- **Coordinate with Demand-response/Paratransit Services.** Coordinate with demand-response/paratransit transit services prior to expected high-heat days to ensure adequate capacity for customer demand for transporting to cooling centers. Ensure that demand-response transit services know the location of these centers.
- **Shade Structures and Air Movement at Bus Stops.** Coordinate with local transit agencies to ensure all identified bus stops include shade structures and the adequate movement of air to safeguard the health and comfort of transit users due to the potential increase in high heat days.

Air Quality and Vector Borne Diseases

- **Retrofit Existing Diesel Buses.** Partner with the community's local transit agency(s) and school district(s) to retrofit existing diesel buses with cleaner fuel technologies. Low emission vehicles help to reduce particulate emissions and improve both in-cabin and outdoor air quality to improve the safety and health of riders and mitigate decreases in regional air quality.
- **Retrofit Bus Cabin Filtration Systems.** Partner with the community's local transit agency(s) and school district(s) to encourage retrofitting of high-efficiency bus cabin filtration systems to reduce particulates and improve air quality to reduce health impacts of bus cabin ambient air quality. Cabin filtration can reduce the exposure of transit riders to particulates and improve overall health and safety.
- **Install Signal Priority Technology.** Install signal priority technology in agency transit systems (such as buses) to reduce the number of start/stops and idling to reduce air quality impacts.
- **Utilize the Life-Cycle Assessment Framework.** Monitor the work of the US. Federal Highway Administration's (FHWA) Sustainable Pavements Program and consider utilizing the Life-Cycle Assessment Framework, as it matures, to help determine trade-offs in materials and climate impacts.
- **Coordinate with Local Transit Agency to Consider Outbreaks, Pandemics, and Epidemics.** Coordinate with the local transit agency(s) to develop protocols, best practices and retrofits to transit vehicles for potential future outbreaks, epidemics or pandemics that may occur more frequently due to climate change impacts, including, but not limited to cleaning and sanitation and retrofits for air filtration.

Environmental Justice Element

Multiple Hazards

- **Address Mental Health with Siting of Recreational Facilities.** Ensure the siting of parks, recreation opportunities, bicycle and pedestrian routes, increased tree canopy and natural spaces, are equitably distributed throughout a community, to reduce stress, anxiety, depression and other mental health issues that may arise due to climate change stressors.
- **Identify Spatial Distribution of Vulnerable Populations.** Develop and update local community maps that identify vulnerable populations. Ensure the spatial distribution of these vulnerable populations is a considered metric and indicator in planning and policy development related to climate change and climate adaptation.

- **Involve Vulnerable Populations in Climate Adaptation Plan Process.** Ensure that vulnerable populations and agencies and non-governmental organizations that work with these populations are represented in the development of a community's climate adaptation plan(s).
- **Support Displaced Workers.** Work in partnership with the community's local workforce investment board to establish education and training partnerships for workers displaced or negatively impacted by climate change or climate adaptation policies.
- **Encourage Local Utilities to Retain Lifeline Programs.** Encourage local utilities to retain and enhance lifeline programs for life sustaining services such as water and electricity for vulnerable populations, especially due to hazards such as an increase in high heat days and the potential for related power disruptions. Partner with utilities to provide education to program participants and property owners to encourage retrofitting of appliances, lighting, plumbing fixtures and landscaping to reduce energy and water demand and backup power for life-dependent in-home medical equipment and devices.
- **Ensure Equitable Distribution of Parks.** When planning for open space and parks and recreation opportunities, identify and ensure that parks, open space, and recreational facilities are equitably distributed and accessible, by walking, for vulnerable populations to provide for respite from high heat days and buffering to improve air quality and protect against climate change hazards.
- **Partner with Local Health Department.** Coordinate local planning efforts with the community's local health department to ensure that public health issues are considered in climate adaptation plans, General Plan updates, community health assessments, and local health plans. Public health knowledge, perspective and agency resources will be important to address climate change hazards such as heat related illness due to increased high heat days, injuries due to increased wind, storm and flood events, decreased air quality and related health impacts, and a growing risk of increased vector-borne diseases.
- **Establish Partnerships to Develop a Resilient Economy.** The jurisdiction should ensure a resilient and sustainable economy to ensure wealth generation for all, including vulnerable populations. The jurisdiction should partner with the community's economic development officials, local economic development organizations, business organizations (such as local chambers of commerce) and the local workforce investment board, to develop more integrated strategies for protection of jobs (including related physical infrastructure), economic sustenance, and for the protection of vulnerable populations more at-risk for temporary or permanent job dislocation due to climate change hazards.

Land Use Element

Multiple Hazards

- **Develop a Community Forests Management Plan.** Develop a Community Forests Management Plan to improve and create a more sustainable and resilient tree canopy within the community to reduce the impacts of climate change through increased carbon sequestration, reducing heat impacts, decreasing wildfire risk and their destructive properties, improved air quality, and reduced mental stress and illness exacerbated by climate change stressors. A community forest management plan should include, but not be limited to:
 - policies for appropriate public and private realm trees that are drought resistant and native-cultivars, encourage diversification of species to reduce risks for widespread loss due to pests and other ecological hazards;

- adequate canopy to reduce heat island and provide shade for high heat days;
- management strategies to ensure proper pruning and spacing for urban forest longevity;
- and protection of property and local facilities.
- **Develop a Guidance Project Checklist.** Develop a guidance project checklist for building and site adaptation measures. The checklist, included with permit applications, should serve to provide education to permit applicants on modifications to site plans and structures that can improve a project's resiliency to existing and potential future climate change hazards.
- **Incorporate Climate Hazard Overlay Zones.** Incorporate climate hazard overlay zone(s) within the community's zoning ordinance to identify areas that are at risk for future flooding, erosion, landslides, increased wildfire risk, or severe storms/high wind events, based upon best-science forecasting. Overlay zones should include development standards for appropriate risk mitigation measures such as hardening of structures, fireproofing, resilient landscaping, flood-proofing, and/or other measures to reduce future property damage and/or potential loss of life.
- **Encourage Small-scale Energy Generation.** Streamline permitting and/or provide for incentives for small-wind generation and non-residential small-solar generation. Streamlining can include ministerial approval of these ancillary uses, density bonuses, parking bonuses, and/or fee reductions in order to encourage the use of renewable energy, especially in commercial uses. These systems can offset potential increased on-site demand due to high heat days, reducing reliance on non-renewable energy and providing local resilience within the energy grid.
- **Encourage Neighborhood-scale Solar Farms.** Develop overlay zones and standards for neighborhood-scale solar farms to pool resources, reduce costs for individual property installations, or allow for solar production in areas where individual property installation may not be feasible due to shade or incompatible roof designs.
- **Encourage Wind and Solar Farms.** Amend the local zoning map and ordinance to allow for wind and solar farms, where feasible and appropriate, to improve access to renewable energy generation and provide additional resiliency within the electric grid through distribution of generation facilities.
- **Protect Natural Areas.** Identify, map and establish land use designations and development standards that protect areas of significant habitat, biodiversity, carbon-sequestration, ecological integrity and those areas with high natural resilience to climate change to reduce loss of critical habitat, increase bio-diversity, mitigate climate change effects and protect ecological resources.
- **Reduce Barriers to Use Williamson Act.** Streamline provisions within the Community's zoning ordinance, including fees and internal routing for application approvals, to reduce barriers to use of the Williamson Act for preservation of agricultural lands and/or open space.
- **Improve Access to Local Food Supplies.** Allow for urban agriculture and community gardening in the community's General Plan and local zoning ordinance to improve access to local food supplies as climate change stresses may potentially disrupt global and regional food supplies.
- **Implement Urban Agriculture Incentive Zones Act.** Develop a local ordinance to implement the Urban Agriculture Incentive Zones Act (AB551) to increase available land for urban agriculture opportunities. Allowing for urban farming opportunities can improve food security and increase open and recreational space. The associated open space and activities, which could include community-gardens, can reduce mental stressors associated with climate change, impermeable surfaces that retain heat, and increase permeable surface for stormwater absorption and heat reduction.
- **Support Alternative Revenue Sources for Farm Operators.** Allow for compatible land uses for agricultural operations (such as agritourism, wind and solar farm installations, hospitality, restaurants

and parking facilities) to develop alternative revenue sources for farm operators as climate change stresses may potentially alter crop and/or livestock types, reduce annual yields, and increase costs for farm operators.

- **Protect and Maintain Prime Productive Agricultural Land.** Protect and maintain the community's prime productive agricultural land to help reduce sprawl and its climate impacts, ensure security of the food supply, and ensure the availability of land required to account for variances in crop yields, livestock and/or crop types and growing season due to climate change impacts.
- **Identify Alternative Land Uses for Agricultural Land.** Identify and develop alternative land use scenarios for at-risk agricultural land that may no longer be viable for agriculture in the future due to climate change. Consider factors such as lack of water resources or extreme heat.
- **Allow Urban Apiaries.** Amend local zoning ordinances to allow for urban apiaries, with appropriate protections for safety of the general public, to increase habitat and care for bees which are necessary for local agriculture, food production and native plant propagation, as these important pollinators are negatively impacted by habitat loss, shifting temperatures and disease due to climate change stress.
- **Amend Land Use Plans and Zoning to Address Intensification of Agricultural Operations.** Amend land use plans and zoning to factor in the intensification of agricultural operations to offset climate impacts. Impacts of climate change on agricultural operations can include change in crop yields, crop loss, and change in growing seasons. Potential solutions include buffering of agricultural operations and incompatible uses, buffering agricultural operations with open space, and measures to protect sensitive habitats and natural resources to increased noise and non-point source pollution from runoff. Protective measures can reduce additional pressures on agricultural operations that, if unchecked, could decrease the viability of land for these purposes.
- **Develop a Transfer of Development Rights or Purchase of Development Rights Program.** Develop a Transfer of Development Rights (TDR) program or Purchase of Development Rights (PDR) program to secure permanent easements and/or fee simple purchases of properties in climate vulnerable areas for protection of open space and sensitive habitats, habitat restoration, and reduction of property exposure to climate change hazards. These programs can provide compensation to property owners in areas at higher risk of climate change hazards to relocate potential development to areas of decreased risk.
- **Prioritize Low-Impact Stormwater Best Practice.** Develop or amend the community's stormwater ordinance to prioritize low-impact stormwater best practices for private realm properties. Such best practices can encourage stormwater capture and aquifer recharge and reduce site and regional runoff, improving water availability during drought periods, and reduce flooding during high precipitation events.
- **Assess the Vulnerability of Cultural Resources to Climate Change.** Assess the vulnerability of archaeological and historic sites and cultural resources to flooding exacerbated by climate change.

Drought

- **Adopt a Water-neutral Zoning Ordinance.** Due to future potential stress and reductions in current water supply sources due to increased droughts and changes in long-term precipitation patterns, adopt a water-neutral zoning ordinance. The ordinance should require new development and remodeling/renovation to significantly decrease or eliminate additional local water demand through reduction best-practices in order to conserve potable water and preserve overall water resources.

These water savings can be used to accommodate future changes in population and economic development. The policy should consider offsets for multi-family, affordable housing, and accessory dwelling units.

- **Encourage the Use of Drought Tolerant Landscaping.** Develop design guidelines and related education programs to encourage the use of drought tolerant landscaping in private realm development to reduce reliance on potable and recycled water resources. Water savings should be diverted to other uses including aquifer recharge, regional agricultural needs and accommodating future growth and economic development.
- **Allow for Low-impact Development Regional Management for Multiple Properties.** Amend provisions of the community's stormwater ordinance, and/or the community's Municipal Stormwater Program Stormwater Management Plan/Program, to allow for low-impact development (LID) regional management for multiple properties to allow for more creative development, best citing of facilities, potential for reduced individual development costs and ensuring aquifer recharge.
- **Adopt Groundwater Protection Overlay Zone.** Due to the increased vulnerability of groundwater resources for potable water and agriculture to salt-water intrusion and contamination, especially as overall water resources continue to be stressed by changes to the regional climate, protect groundwater supplies through adoption of a groundwater protection overlay zone.
- **Monitor Local Agricultural Water Rights.** Monitor local agricultural water rights to continually assess the viability of agriculture within the local community. Increasing costs and availability of water may reduce or eliminate the viability of some or all agricultural uses as regional water resources become increasingly stressed due to climate change.
- **Phase Out Traditional Irrigation Techniques.** Develop a program to phase out traditional irrigation techniques in favor of drip irrigation and other emerging irrigation technologies. Drip irrigation and new irrigation innovations can reduce water waste and overall water requirements for agricultural operations as water supplies become increasingly stressed due to climate change.
- **Restrict the Development of New Ponds and Lakes.** Restrict the development of new ponds and lakes that are built for aesthetic and/or recreational use in areas where these water bodies are not naturally occurring or will negatively impact water supplies.

Extreme Heat

- **Require Green or White Roofs.** Require green or white roofs, depending upon sub-regional locations and water requirements, to reduce solar gain and heat island effects.
- **Encourage Landscaping to Reduce Heat.** Develop landscaping standards and guidelines to encourage or require native-cultivar drought tolerant landscaping with enough coverage to provide shade and reduce heat absorption.
- **Encourage Building Design Features that Create Shade.** Modify the community's zoning ordinance and/or design guidelines to allow and encourage awnings, canopies, arcades and/or colonnades that can encroach into the public sidewalk area to create shade for pedestrians.
- **Allow Ancillary Shade Structures for Livestock.** Amend local zoning ordinances to allow ancillary shade structures for vulnerable livestock populations.
- **Provide Additional Parks Space.** Identify existing publically owned property that could be converted to parks space, including pocket parks, to provide areas of respite from high heat.

Severe Storms/Wind

- **Adopt an Urban Canopy Ordinance.** Adopt an urban canopy ordinance that includes guidance and standards for proper tree pruning to preserve the structural integrity of trees, including the prohibition of tree-topping which weakens tree structures and increases their susceptibility to limb loss during high wind events.

Inland Flood

- **Ensure No-net-loss of Floodplain Storage.** Ensure no-net-loss of floodplain storage through development restrictions and/or mitigation through adoption or modification of the community's floodplain management ordinance. Floodplains have the ability to mitigate downstream damage due to the potential risks of increased inland flooding and more intense storm/precipitation events.

Landslide

- **Adopt Zoning Standards or a Zoning overlay for Areas at Risk of Landslides.** Adopt zoning standards and/or a zoning overlay(s) for hillsides, bluffs and other areas currently subject to subsidence, or projected to see increased subsidence and/or erosion due to storm/wind events, changes in precipitation patterns and/or increased wildfire activity, to address engineering requirements for securing structures, restricting development in subsidence prone areas, and protecting sensitive habitats.

Wildfire

- **Use Open-Space Zoning or Low-Density Large-Lot Zoning in the Wildland-Urban-Interface.** Use open-space zoning and/or low-density large-lot zoning to reduce exposure and risk of development within the Wildland-Urban-Interface.

Air Quality and Vector Borne Diseases

- **Encourage Use of Innovative Exterior Building Materials.** Modify the community's zoning ordinance and/or design guidelines to encourage the use of innovative exterior building materials that have low-carbon footprints and/or have a positive impact on reducing air pollution and/or greenhouse gas emissions, reduce solar gain, and are better hardened against climate change hazards including increased heat days and wind/storm events.

Safety Element

Multiple Hazards

- **Identify Local Transit Agency's Role in Providing Evacuation Assistance.** Incorporate in the Local Hazard Mitigation Plan and any local emergency response plans, the role of the local transit agency(s)

in providing evacuation assistance based upon the duration and severity of events related to climate change impacts.

- **Consider Vulnerability of Agricultural Operations as part of Climate Change Planning Process.** If the community includes agricultural uses, include vulnerability of agricultural operations as part of the climate change and/or adaptation planning process including assessments of climate, physical environment, farm-level factors and socio-economic forces.
- **Engage Stakeholders from the Agriculture Sector in Climate Change Planning Process.** If the community includes agricultural uses, ensure that all stakeholders, including industry specialists, farm operators, and other community groups are identified and engaged in all planning and policy development related to climate change and/or adaptation.
- **Encourage the Use of Williamson Act in the Zoning Ordinance.** Adopt provisions within the Community's zoning ordinance to encourage the use of the Williamson Act for preservation of agricultural lands and/or open space. The Williamson Act encourages the preservation of land for open space, forestry and agricultural operations through an easement and reassessment of the property. This can aid in carbon sequestration, protection of food supply, inland floodplain protection, or sensitive habitats to offset costs and provide additional land to mitigate climate change impacts.
- **Implement a Policy of Retreat.** Implement a policy of retreat for areas at-risk for repeated damage due to climate change hazards, such as areas of high subsidence, extreme wildfire risk, and floodplains to allow for natural modification of the landscape and reduction in risk to property and life.
- **Develop an Inclusive Public Outreach and Engagement Strategy.** As climate change and its associated hazards have a disproportionate impact on vulnerable populations, the community shall develop a public outreach and engagement strategy that identifies all stakeholders, utilizes methods to engage the entire community, and includes education components in all planning and policy-making processes for climate change and adaptation.
- **Retrofit Existing Critical Buildings and Related Infrastructure.** Ensure that all existing critical buildings, facilities and related infrastructure are properly retrofitted for existing and future climate change hazards including temporary inundation due to inland flooding, increased wind/storm events, an increase in high heat days, and/or wildfire depending upon location and risk factors.
- **Amend Local Building Codes to Account for Climate Change Stressors.** Amend local building codes to take into account additional stressors on buildings including, but not limited to, increased storm events and intensity, flood proofing for intermittent inundation, slope/soils, subsidence risk and erosion potential in securing foundations, building materials to reduce the impacts of high heat days, and fireproofing in areas of increasing wildfire risk.
- **Require the Retrofitting of Private Structures Most Prone to Climate Change Hazards.** Require hardening of private structures that are identified as extremely prone to climate change hazards. (i.e. increased fireproofing and expansion of defensible space, flood-proofing, insulation, etc.)
- **Prepare for Additional Climate Induced Emergencies at Designated Facilities.** Ensure designated emergency shelters/resiliency hubs, community facilities and schools are properly outfitted with infrastructure, resources and supplies such as additional water, air conditioning and fans, backup power generation, food and basic medical supplies necessary to account for additional climate induced emergencies including high heat days, inland flooding, wind/storm events and extended loss of power.

- **Encourage the Adoption of Battery Systems for Solar Installations.** Encourage the adoption of battery systems for solar installations and require installation as battery systems become more sustainable and cost effective to reduce carbon emissions from non-renewable energy sources and ensure for resiliency in case of power outages during non-solar-generating periods.
- **Explore Formation of a Community Choice Aggregation Program.** Explore the formation of a Community Choice Aggregation program to allow for local control in purchasing power from renewable sources to encourage increased investment in renewable energy options and reduce reliance on traditional energy sources that may also be more prone to disruptions and climate change hazards such as coastal or inland flooding. In addition, the use of renewables will reduce the use of fossil fuels and help mitigate regional air quality issues and reduce overall carbon emissions.
- **Establish a Chief Resiliency Officer Position.** Develop the position of Chief Resiliency Officer, or an equivalent senior position in the community's government structure, responsible for coordination for local hazard, climate action and/or adaptation plans and/or plan implementation across multiple departments and external agencies.
- **Harmonize Capital Improvement Plan and Annual Fiscal Budget with Climate Action and Adaptation Policies.** Require that, in addition to the General Plan, the community's capital improvements plan and annual fiscal budget are harmonized with existing climate action and/or adaptation plan(s) policies.
- **Adopt a Multi-Jurisdictional Climate Adaptation Plan.** Adopt a multi-jurisdictional climate adaptation plan(s) that can address issues at a sub-regional level and/or or issues in which coordination and pooling of resources is a benefit to all participating communities.
- **Designate an Inter-Departmental/Inter-Agency Working Group.** Designate an inter-departmental/inter-agency working group to coordinate the implementation and monitoring of the community's climate action and/or adaptation strategies.
- **Designate a Department or Staff to Facilitate Implementation.** Designate a department, or staff position within an existing department, with responsibility for monitoring, reporting and progress towards implementation of a climate action and/or adaptation strategy.
- **Avoid Conflicts between Climate Mitigation Policies and Climate Adaptation Policies.** The community should review and compare climate mitigation policies and climate adaptation policies for inconsistencies, incompatibilities or conflicts to reduce confusion and contradictions in implementation.
- **Require Economic Impact Analysis.** Require economic impact analyses that takes into account forecasted changes to industries, jobs, earnings and economic growth to better understand potential impacts of climate change and/or adaptation policies on the local economy, jobs, and wages.
- **Engage Surrounding Jurisdictions.** Ensure the community's engagement strategy for climate adaptation planning includes surrounding jurisdictions to identify synergies and harmonization of policies.
- **Improve Water Infrastructure.** Assess all current water infrastructure, based upon age and performance. Develop a strategy for retrofitting, redundancy and replacement of aging infrastructure to reduce water loss, improve water use efficiency, and improve resiliency of water infrastructure during climate change hazard events such as inland flooding and high demand days due to high heat events.
- **Identify and Properly Equip Resiliency Hubs.** Identify facilities suitable to serve as resiliency hubs including community centers, schools and other distributed facilities and ensure those facilities are

equipped properly to serve as shelters for potential hazard events including access to transit, proximity to populations of concern, adequate power, power backup, air conditioning, medical supplies, food and water. Develop partnerships with other local agencies for joint-use agreements for potential facilities where feasible.

- **Identify Evacuation and Shelter Strategies for Humans and Animals During Extreme Weather Events.** Incorporate short-term evacuation policies to ensure that residents in areas of temporary inundation, heat and or wildfire have ready shelters for both humans and related animals (domestic and livestock).
- **Incorporate Climate Hazard Overlay Zones.** Develop overlay designations to address potential future at-risk areas such as areas prone to wildfire (that may not currently be within a State Responsibility Area or High-Risk Fire Hazard Severity Zone), subsidence, future floodplain or area of temporary inundation, or area at risk for high wind/storm events, due to future climate change impact models. Incorporate these designations into the Safety Element, Local Hazard Mitigation Plan and other planning for disaster response and emergency preparedness.
- **Incorporate Health Threats into Early Warning Systems.** Partner with the community's local vector control agency and local health department to develop and enhance disaster and emergency early warning systems to incorporate objective data and information for potential health threats such as heat-illness, illnesses complicated by low air quality, inundation and precipitation events, and vector borne diseases due to climate change hazards. These systems can provide timely and objective information to the public including measures to improve personal safety.
- **Review the Early Warning System.** Develop a local inter-agency taskforce to review the community's current early warning system (EWS) capabilities. The EWS capabilities should be examined to determine its effectiveness to reach all community population segments, retooled to gather appropriate information in a community-centric manner, and adjusted so that it reduces harm or loss from climate change hazard events in a manner that is applicable to the community's safety element, local hazard mitigation plan, climate adaptation plans and other emergency management plans.
- **Coordinate Public Health and Economic Development Planning into Other Plans and Strategies.** Partner with the community's local health department to ensure coordination in local planning efforts so that public health and economic development planning are coordinated in adaptation plans, General Plan updates, community health assessments, economic development strategic plans and local health plans and strategies. The partnership should identify synergies to minimize economic disruption during climate change hazard events, create a more resilient economy to speed recovery after a disaster event, balance the protection of public health with the individual's need to maintain a steady income, and reduce the long-term public health consequences of economic downturns such as loss of health insurance, income, permanent housing, ability to afford care for chronic disease and increased incidents of mental illness and stress.
- **Educate Consumers on how to Reduce Emissions and Improve Air Quality.** Develop a local education program to educate consumers on how to reduce emissions and improve air quality through tips and tricks (i.e., routine automobile maintenance to reduce emissions and fuel consumption, cleaner commute options, use of local VOC home products, conserving electricity through ENERGY STAR appliances, retrofitting wood burning fireplaces, combustion engine lawn and garden equipment with electric models, composting, etc.)

Extreme Heat

- **Require Battery Backup for Cellular Towers.** In lieu of state regulations on cellular communications tower backup requirements, require a minimum of three days of battery backup for all new and/or modified cellular towers. Require applicants to ensure resiliency of the communications infrastructure due to potential power loss and blackouts due to climate change hazards such as wind/storm events, high heat days and/or wildfire.
- **Consider Extreme Heat Days in Park Design.** Ensure all park facilities, including recreational sports complexes, include a tree canopy, shade structures and materials with low solar gain to improve usability on high heat days and reduce heat retention.
- **Ensure Coordination between Providers to Address Heat-related Emergencies.** Ensure coordination between a community's emergency management personnel and local hospitals, urgent care medical providers and area doctors to develop community-wide communications and response plans for high heat days exacerbated by climate change. These response plans should include alerts to medical professionals to ensure providers are equipped to handle increased patient load, allow local providers to check-in or notify their vulnerable patients, and first responders are properly staffed and equipped to transport vulnerable patients to community heat shelters or medical facilities, if experiencing emergent conditions.
- **Include Alerts for High-heat Days in Emergency Warning Systems.** Enhance local emergency warning systems to include alerts for high-heat days, including instructions for location of resiliency hubs, shelters and self-care steps.
- **Develop an Education Program on Hazard Notification Services.** Develop an education program to provide local health providers with information on how at-risk patients can opt-in to hazard notification services to be warned of events such as extreme heat days.
- **Ensure Access to Clean Drinking Water.** Ensure adequate access to clean drinking water in the public realm through requiring public facilities to install public hydration stations, incorporate hydration stations in all recreational and park facilities, where feasible, and work with homeless shelters and service centers to incorporate hydration stations for their clients.
- **Update Response Measures to Account for Increased Heat Days.** As part of the Local Hazard Mitigation Plan, and any emergency management plans, update response measures to account for an increased number of heat days and their impacts on current and future response mechanisms such as warning systems, emergency response and medical service coordination and shelters.
- **Provide Education on Heat Related Illness.** Incorporate links and references in system maps and incorporate interpretive signage at multi-use path trailheads providing education on heat related illness and personal care steps.
- **Require Air Conditioning Alternatives.** Require alternatives to air conditioning such as ceiling fans, air exchangers, increased insulation and low-solar-gain exterior materials to reduce peak electrical demands during high heat events to ensure reliability of the electrical grid.

Wildfire

- **Require Structure Hardening.** To harden structures in current or future high risk fire areas, incorporate the use of metal or tile roofing, ember-resistant mesh for chimneys and vents, minimum of dual-pane windows with a layer of tempered glass to reduce cracking and shattering due to heat,

ignition resistant building materials such as fiber cement siding, cement stucco and fire retardant materials for decks and fences to harden structures in local building codes.

- **Educate Homeowners and Landowners on How to Reduce Fire Risk.** Work with local fire officials to incorporate social media and education programs into the Community Wildfire Protection Plan that seek to educate homeowners and landlords on how to reduce fire risk to structures and landscaping as wildfire risk continues to increase due to climate change.
- **Designate New and Existing Properties as Fire Compliant.** In an effort to encourage compliance as wildfire risk continues to increase due to climate change, develop a local certification program to designate new and existing properties as “Fire Compliant” that have implemented best practices for siting structures outside of the wildland-urban-interface, incorporated fuel reduction in landscaping, and met building retrofitting and/or new construction standards to harden structures against fire.

Housing Element

Multiple Hazards

- **Ensure Consistency Across Multiple Plans.** Harmonize and coordinate updates to the community's General Plan Safety Element and climate action and/or adaptation plan(s) with the five-year update of the Local Hazard Mitigation Plan and the update to the Housing Element to ensure compliance with Senate Bill 1035 and synchronization between policies, strategies, and implementation measures.
- **Create a Loan or Grant Program to Improve Housing Safety.** Create a revolving loan or grant program to assist vulnerable populations, and owners of the properties that provide housing to these groups, with modifications to dwelling units, and associated facilities, to improve occupant health and energy efficiency.
- **Locate Housing Outside Climate Change Hazards.** Ensure future housing opportunities, especially those for low- and moderate-income individuals, are located within areas of the community that are less prone to future flooding, wildfire and other climate change hazards.
- **Develop Program to Support Housing Retrofits.** Develop a program to provide low or no-interest loans, grants or other financial incentives to encourage homeowners and property owners that serve low- and/or moderate-income households, to retrofit housing for climate change. These retrofits should include, but not be limited to, insulation, exterior materials that reduce solar gain, ceiling fans, air exchangers and whole house air filtration, and weatherization measures (i.e., sealing, weather-stripping, window-replacement, etc.). These retrofits can reduce heat gain, reliance on air conditioning, and improve indoor ambient air-quality. These measures can protect residents from high heat days and exacerbation of respiratory illness due to poor air quality. Furthermore, these measures can reduce peak electrical demand and greenhouse gas emissions from the use of fossil fuels to satisfy this demand.
- **Maintain Housing Affordability with Climate Change Adaptation Regulations.** Consider the costs of mandates and increased standards for climate change adaptation regulations and those standards and regulations on housing affordability. These standards and regulations may include building hardening, building materials standards, landscaping, and siting. Policies should balance the need for climate adaptation with the negative impact of decreasing housing affordability for vulnerable populations. The jurisdiction should provide incentives, reduced or waived fees, density bonuses, or

more inclusive zoning requirements to offset increased costs of climate change adaptation regulations.

- **Develop Transitional Housing for the Homeless.** Develop transitional housing for the homeless to provide secure housing, services and a pathway to permanent housing. Transitional housing and a pathway to permanent housing can reduce or eliminate the disproportionate impact of climate change hazards such as heat stress, vector-borne disease, storm/flood events, wildfire, air pollution and mental stressors that often lead to chronic illness and early mortality amongst this vulnerable population.
- **Identify and Mitigate Substandard Housing in Fire Hazard Zones.** Conduct an assessment that identifies housing units and neighborhoods in fire hazard severity zones that do not meet current fire safe building codes and develop retrofit programs that target highest risk areas, taking into consideration the increase in frequency and severity of wildfires due to climate change.