

Memo



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To: David Morrison, Brian Bordona, Jamison Crosby, Ryan Melendez (County of Napa); and Deborah Elliott (City of Napa)

From: Adam Qian, Erik de Kok, Honey Walters (Ascent, Inc.)

Subject: Napa County Regional Climate Action and Adaptation Plan: Draft Climate Adaptation Strategies, Measures and Actions

1 INTRODUCTION

This memorandum (memo) identifies proposed draft climate adaptation strategies, measures, and actions that the County of Napa (County) and the incorporated jurisdictions can consider for inclusion in the countywide Regional Climate Action and Adaptation Plan (RCAAP). The draft climate adaptation strategies, measures, and actions identified in this memo are designed to complement and expand upon existing regional and local efforts to address climate-related hazards.

Ascent first conducted a review of the hazard mitigation and general plan safety element actions and measures already outlined in the [County's 2020 Multi-Jurisdictional Hazard Mitigation Plan](#) (MJHMP), the [City of Napa's 2021 Local Hazard Mitigation Plan](#) (LHMP), and the safety elements included in the County and local jurisdictions' general plans, to understand existing policies and measures already in place and identify any potential gaps in addressing climate vulnerabilities. As shown in the matrix in Attachment 1, existing policies and measures were categorized by hazard types and corresponding jurisdictions. This comprehensive compilation of existing hazard mitigation and general plan safety element policies and actions serves as the foundation for developing adaptation strategies, measures, and actions in this memo.

The primary objective of the proposed climate adaptation strategies, measures, and actions is to enhance the capacity of the County, local jurisdictions, and other regional or local agencies to adapt to climate stressors and bolster regional climate resilience. Adaptation measures may also have important co-benefits, such as reducing GHG emissions, and some of these co-benefits are identified; however, further identification of co-benefits will be completed as part of the RCAAP process. In this memo, "County" refers to the County of Napa as a local government agency, while "county" refers to the entire geographic area known as Napa County.

This memo includes the following:

- ▶ A framework for climate adaptation strategies, measures, and actions;
- ▶ A set of six climate adaptation strategies, with corresponding measures and actions to be considered for inclusion in the countywide RCAAP;
- ▶ An implementation matrix with example adaptation strategies, measures, and actions; and
- ▶ A summary of existing policies and implementation measures already in place in adopted local hazard mitigation plans, general plan safety elements, or other related plans (Attachment 1).

2 FRAMEWORK FOR CLIMATE ADAPTATION STRATEGIES, MEASURES, AND ACTIONS

Ascent proposes a three-pronged adaptation framework that is comprised of high-level, overarching adaptation strategies and a suite of measures and actions associated with each strategy. The definitions of strategies, measures, and actions are explained below:

- ▶ Strategies are overarching goals and guidelines for adapting to changing climate conditions and climate hazards.
- ▶ Measures refer to more specific policies or categories of action intended to achieve the strategies and overarching goals.
- ▶ Actions are more detailed implementation steps that various actors will take to realize the measures. Actions help break down measures into specific actionable steps, such as programs, projects, etc. Note that action(s) may not be necessary if the corresponding measure is already sufficiently specific for implementation.

3 CLIMATE ADAPTATION STRATEGIES, MEASURES, AND ACTIONS

Ascent proposes six adaptation strategies, employing a streamlined approach to address various climate stressors. The first strategy aims to enhance regional climate resilience, irrespective of specific climate impacts. The remaining five strategies directly align with the climate change effects identified in the Climate Vulnerability Assessment: increased wildfire risk; increased temperatures and extreme heat; extreme precipitation, sea level rise, and flooding; drought and water supply; and energy grid resiliency. The measures and actions within each strategy define the programs, policies, and regulations that the County, its jurisdictions, and other regional or local agencies will need to implement to prepare for and adapt to the challenges created by climate stressors.

During the development of these adaptation strategies, measures, and actions, particular emphasis was placed on addressing climate change effects deemed to pose the most significant threats to the county, as identified in the Climate Vulnerability Assessment. Specifically, heightened attention is directed towards increased temperatures and extreme heat, as well as drought and water supply.

Below are the six adaptation strategies proposed for the RCAAP, with specific measures and actions included under each strategy:

- ▶ Strategy 1: Improve the Overall Climate Resilience of Napa County.
- ▶ Strategy 2: Prepare for and Adapt to Increased Wildfire Risk.
- ▶ Strategy 3: Prepare for Increased Temperatures and More Frequent Extreme Heat Events.
- ▶ Strategy 4: Prepare for More Frequent Extreme Precipitation and Flooding Events, Combined with Sea Level Rise Threat.
- ▶ Strategy 5: Prepare for More Frequent Drought Events and Enhance the Region's Overall Water Supply Resilience.
- ▶ Strategy 6: Improve the Region's Energy Grid Resilience.

STRATEGY 1: IMPROVE THE COUNTY AND ITS JURISDICTIONS' OVERALL CLIMATE RESILIENCE

Measures identified under this strategy focus on preparing the County and its jurisdictions for impacts from more than one climate stressor. Ascent assessed the County and its jurisdictions' existing hazard mitigation actions and general plan safety element measures that target multiple hazards. The County and its jurisdictions already have 50+ existing hazard mitigation actions and safety element measures that target multiple hazards. Therefore, the adaptation measures proposed here serve as additional measures to supplement the existing measures by addressing gaps or further enhancing the County and its jurisdictions' climate resilience without creating redundancy.

Measures and actions proposed for Strategy 1 start with "Measure/Action All", followed by measure and action numbers.

Measure All-1: Implement and monitor the effectiveness of existing policies, actions, and measures identified in existing planning mechanisms, including, but not limited to, the hazard mitigation plan(s) and the 2023 Safety Element.

- ▶ Action All-1.1: Collaborate among departments and jurisdictions to ensure progress on actions and measures already proposed in existing planning mechanisms.
- ▶ Action All-1.2: Adhere to the monitoring, evaluating, and updating process proposed in the County's MJHMP and the City of Napa's LHMP to ensure progress is being made on proposed hazard mitigation actions, especially those rated to have extreme and high priorities during the hazard mitigation planning processes. Make changes and updates to these actions if necessary.

Measure All-2: Promote the implementation of measures and actions that are applicable throughout the region.

- ▶ Action All-2.1: Advocate for measures and actions that are applicable countywide, regardless of whether they have been identified in the existing planning mechanisms of individual jurisdictions. Such measures and actions include initiatives such as extensive outreach to vulnerable communities and the development and implementation of public campaigns aimed at raising awareness about climate change adaptation.

Measure All-3: Increase the climate resilience of existing and new residential and commercial development through structural strengthening and hardening to adapt to multiple climate stressors.

- ▶ Action All-3.1: Prepare existing and new residential and commercial developments in FEMA 100-year and 500-year floodplains for flooding events by waterproofing structures and foundations, using flood-resistant materials, retrofitting existing structures with flood-resistant features, or other appropriate flooding mitigation measures.
- ▶ Action All-3.2: Reduce wildfire risk in existing and new residential and commercial developments by creating and maintaining defensible spaces and fire breaks, hardening structures with fire-resistant materials, or other appropriate wildfire risk reduction measures. The Napa County Fire Department should also conduct annual inspections to ensure the maintenance of these measures.
- ▶ Action All-3.3: Encourage and incentivize the use of pervious paving and climate-smart landscaped surfaces in new and existing developments to prepare for more frequent extreme heat, drought, and flooding events.

Measure All-4: Incorporate considerations of climate change and health equity into all governmental initiatives and fundamental operations.

- ▶ Action All-4.1: Adopt a "Health in All Policies" approach through a resolution adopted by all jurisdictions, establishing a structural framework that integrates health considerations, including climate change and health equity, into regional policies, considerations, and practices. Multiple sectors must collaborate to address global issues that transcend geographical, political, and jurisdictional boundaries, such as climate change. This approach aims to improve regional health while simultaneously advancing other goals.
- ▶ Action All-4.2: Ensure that public health initiatives serving vulnerable communities address the disproportional impacts of climate stressors on these communities. Such public health initiatives may include the Community Organizations Active in Disaster and those initiated by Live Healthy Napa County (e.g., Community Health Improvement Plan, Community Health Assessment).
- ▶ Action All-4.3: Work with local medical providers and hospitals to ensure that medical facilities are prepared to meet increased demand because of more frequent hazardous events.

Measure All-5: Improve the resilience of the region's transportation infrastructure against climate stressors.

- ▶ Action All-5.1: Revise maintenance protocols for transportation systems to integrate considerations of climate vulnerabilities, such as reducing fuel load regularly for wildfire events and inspecting stormwater collection systems regularly for flooding events. Ensure sufficient funding and capacity to routinely conduct maintenance measures at the best possible scale.
- ▶ Action All-5.2: Collaborate with community members, transportation agencies, and private entities to identify vulnerable local and regional transportation, transit, and active transportation corridors in the face of climate change impacts; utilize the latest scientific insights and resilient design elements such as green streets in transportation infrastructure to enhance the resilience of these corridors against extreme climate events.
- ▶ Action All-5.3: Collaborate with regional transportation agencies to establish redundancy for vital transportation routes, ensuring continuous access and mobility during emergencies; identify alternative routes and stops to mitigate disruptions in case of damage or closure of primary infrastructure due to extreme events.

Measure All-6: Improve the resilience of the region's agricultural industry against climate stressors.

- ▶ Action All-6.1: Conduct a review of existing land use plans, including general plan land use elements, zoning codes, and development standards, to ensure that they are not creating unintended barriers to the continued viability of agricultural areas as climate conditions change. For example, this may involve consideration of permitting certain types of agricultural activities in areas where they were previously deemed unsuitable.
- ▶ Action All-6.2: Construct solar shade structures and/or plant trees to protect livestock and agricultural workforce from the impacts of extreme heat.

Measure All-7: Guard the region's biodiversity and ecologic habitats from the impacts of various climate stressors.

- ▶ Action All-7.1: Promote biodiversity and enhance species' climate resilience by implementing nature-based solutions, green infrastructure (e.g., bioswales in parking lots), and best management practices to reduce runoff, enhance infiltration, and increase recharge, as well as wetland and riparian corridor restoration.
- ▶ Action All-7.2: Coordinate with the Napa County Groundwater Sustainability Agency (NCGSA) to fully implement the [Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan: Napa Valley Subbasin](#) (ISW/GDE Workplan).

- ▶ Action All-7.3: Consider expanding the geographic scope of the ISW/GDE Workplan to areas outside the Napa Valley Subbasin and potentially the entire County.
- ▶ Action All-7.4: Encourage carbon farming and other sustainable land management activities that improve soil health and water quality, improve habitat quality, reduce invasive species, and restore the health and diversity of species native to Napa County and other adjacent regions that may be more adaptable to warming temperatures (Note: carbon farming and other measures are also included in the GHG reduction measures and actions, which will have adaptation and resilience co-benefits in connection with this action).

Measure All-8: Incorporate climate change considerations into the County and its jurisdictions' emergency management planning and response processes.

- ▶ Action All-8.1: Incorporate insights from the Climate Vulnerability Assessment across all stages of emergency management planning, encompassing mitigation, preparedness, response, and recovery endeavors.
- ▶ Action All-8.2: Ensure that emergency management activities are executed equitably by prioritizing the safety of identified vulnerable communities within the county; continuously implement existing emergency management policies and initiatives to address the needs of vulnerable communities (see Section 2.2.1 of the Climate Vulnerability Assessment for a discussion of how vulnerable communities are defined).
- ▶ Action All-8.3: Identify potential locations throughout the county for siting new community resilience centers or “resilience hubs”, either through new construction or repurposing of existing facilities. Resilience hubs provide places of refuge for vulnerable community members during power outages, extreme weather events, wildfires, or other disasters. They can also provide important functions that benefit the community during steady-state periods, such as providing a location for job training, after-school programs, skills development, resource sharing, and other community-building and empowerment functions. For facilities already identified as resilience hubs, create a timeline to upgrade essential equipment and improve building shells to enhance their overall resilience.

STRATEGY 2: PREPARE FOR AND ADAPT TO INCREASED WILDFIRE RISK

The measures proposed under this strategy focus on preparing the County and participating jurisdictions for more frequent and severe wildfire events, while also reducing risk and recognizing the role that beneficial fire plays in the county's ecosystems. Ascent assessed the County and its jurisdictions' existing hazard mitigation actions and general plan safety element measures that target increased wildfire risk. The County and its jurisdictions already have around one hundred existing wildfire-focused hazard mitigation actions and safety element measures. Therefore, the adaptation measures proposed here serve as additional measures to supplement the existing hazard mitigation actions and safety element measures by addressing gaps or further enhancing the County and its jurisdictions' climate resilience against increased wildfire risk without creating redundancy.

Wildfire risk reduction measures, especially those focused on vegetation management, fuel modification, fuel breaks, prescribed burns, and similar activities, help to reduce the spread and severity of wildfires. These types of hazard mitigation measures and their implementing actions may have important GHG emissions reduction co-benefits, including the reduction of black carbon which, although non-anthropogenic, is considered a short-lived climate pollutant.

Measures and actions proposed for Strategy 2 start with “Measure/Action Fire”, followed by measure and action numbers.

Measure Fire-1: Map and identify locations that are newly at risk, or at higher risk for fire hazards because of climate change.

- ▶ Action Fire-1.1: Work with the California Department of Forestry and Fire Protection (CAL FIRE), Napa County Fire Marshall, Napa Communities Firewise Foundation (NCFE), and fire departments operating within the county to map and identify locations that are newly at risk, or at higher risk, for wildfire hazards as a result of climate change and its impacts; implement wildfire mitigation best practices such as the ones mentioned in Action All-3.2 in these mapped and identified locations.

Measure Fire-2: Coordinate with State and local agencies to establish post-fire ecological recovery programs.

- ▶ Action Fire-2.1: Coordinate with CAL FIRE, NCFE, and other similar agencies to establish post-fire ecological recovery programs to support ecological restoration efforts. Such ecological restoration endeavors could include the reintroduction and establishment of native species, and ecologically-beneficial vegetation management techniques (e.g., prescribed burns, invasive species removal) that would reduce the potential for high-intensity wildfires and improve the resilience of the County's wildlands.

Measure Fire-3: Ensure that best practices for wildfire mitigation that apply to the region are implemented consistently throughout the county.

- ▶ Action Fire-3.1: Ensure that wildfire mitigation best practices, such as creating defensible space and fuel reduction projects, are planned and implemented regularly and consistently in all jurisdictions in the region. This may require developing regionally consistent local plans, codes, or programs that help to address gaps in local planning, code compliance, or project development, or providing regional access to funding sources to ensure local needs are met. Meanwhile, wildfire mitigation best practices should be implemented with caution to prevent exacerbating erosion and runoff problems, especially during rainy seasons.

Measure Fire-4: Plan new development strategically in High or Very High Fire Hazard Severity Zones

- ▶ Action Fire-4.1: Plan new development strategically to minimize risk in High or Very High Fire Hazard Severity Zones throughout the county, according to the most recent and available CAL FIRE hazard severity zones maps, and consider projections of future climate change when planning future land uses. For example, the City of St. Helena already has an existing action to limit development in High or Very High Fire Hazard Severity Zones.

Measure Fire-5: Enhance forest resilience, reduce tree mortality, and manage beetle infestations

- ▶ Action Fire-5.1: Set up a network of monitoring stations to detect beetle infestations early. Utilize satellite imagery and drone technology to monitor large forest areas for signs of beetle activity and tree health.
- ▶ Action Fire-5.2: Implement selective thinning and pruning to reduce tree density and remove infested or weakened trees, making forests less susceptible to beetle outbreaks. Promote biodiversity by planting a variety of tree species that are less susceptible to beetle infestations.

Measure Fire-6: Improve public awareness and community resilience against wildfire smoke

- ▶ Action Fire-6.1: Partner with the California Division of Occupational Safety and Health and other regional agencies to promote educational campaigns on the health effects of wildfire smoke and preventative measures.
- ▶ Action Fire-6.2: Implement and promote an early warning system that alerts county residents to upcoming smoke events via multiple media forms (e.g., radio, text messaging, ALERT Napa County). Provide real-time updates on air quality.

- ▶ Action Fire-6.3: Protect outdoor workers from wildfire smoke. Establish policies that limit outdoor work during periods of poor air quality. Provide training on how to use personal protective equipment and recognize symptoms of smoke-related health issues, such as respiratory problems and irritations. Ensure that work sites are equipped with shaded areas and adequate ventilation to reduce exposure to smoke. Whenever possible, modify work processes to allow tasks to be performed indoors or in controlled environments.

STRATEGY 3: PREPARE FOR INCREASED TEMPERATURES AND MORE FREQUENT EXTREME HEAT EVENTS

The measures proposed here focus on preparing the County and participating jurisdictions for increased temperatures and more frequent extreme heat events. The County and its jurisdictions already have around six existing hazard mitigation actions and safety element measures that address increased temperatures and extreme heat. Ascent proposes the following measures in addition to these existing measures.

Measures and actions proposed for Strategy 3 start with “Measure/Action Temp,” followed by measure and action numbers.

Measure Temp-1: Work with the California Division of Occupational Safety and Health and employers to provide outdoor workers with sufficient protection from extreme heat conditions, ensuring the maintenance of healthy and safe working environments.

- ▶ Action Temp-1.1: Establish and implement standardized protocols, consistent with existing heat-related illness prevention regulations (CA Code of Regulations, Title 8), to regulate outdoor workers’ activities working outside during extreme heat events, such as a threshold of maximum temperature allowed or mandatory breaks after a certain period.
- ▶ Action Temp-1.2: Expand employer and worker training in industries with outdoor work, including assurance of adequate water, shade, protection from poor air quality, training of heat impacts, and vector-borne diseases.

Measure Temp-2: Create or enhance programs focused on urban greening and urban agriculture and engage community-based organizations to develop and implement these programs.

- ▶ Action Temp-2.1: Develop policies and management strategies to foster the growth and preservation of urban forests, encourage the adoption of best practices for removing unhealthy, dangerous, or destructive trees, and plant and long-term maintain site-appropriate trees.
- ▶ Action Temp-2.2: Identify communities lacking access to parks and prioritize the establishment of new urban parks and trail systems within walking distance of underserved populations.
- ▶ Action Temp-2.3: Ensure newly established urban parks and trail systems are connected to high-density residential areas, workplaces, and offices.
- ▶ Action Temp-2.4: Increase parking lot shading by revising parking lot shading standards in local codes to provide larger minimum sizes for tree planters to improve tree health, and prioritize tree species that maximize carbon sequestration potential. Consult the California Urban Forests Council for guidance and standards and the best available technologies and practices for selecting planting media for urban trees in challenging environments. Meanwhile, consider incorporating solar panel structures and/or other renewable energy capture technologies to provide shading without removing existing trees.
- ▶ Action Temp-2.5: Enhance shading for active commuters by increasing greenery along bike paths and streets.

Measure Temp-3: Alleviate the effects of extreme heat on populations dependent on walking and/or public transportation.

- ▶ Action Temp-3.1: Partner with public works departments and regional transit providers to provide site-appropriate shade trees and/or shade structures to enhance shading and incorporate heat-mitigating materials on pedestrian walkways and transit stops.
- ▶ Action Temp-3.2: Collaborate with regional partners to obtain guidance, explore pilot projects, or obtain other technical support to identify and determine cool pavement technologies best suited for different applications in the county.
- ▶ Action Temp-3.3: Install water fountains at transit stops if possible.

Action Temp-5.4: Explore the use of vine canopies or vegetable awnings/sails over walkways and streets to improve shading in urbanized areas such as downtown Napa.

Measure Temp-4: Protect critical infrastructure vulnerable to extreme heat events.

- ▶ Action Temp-4.1: In cases where existing communication, energy, public service, and transportation facilities and infrastructure are found to be vulnerable to extreme heat, bolster and/or upgrade associated infrastructure to be more resilient to periods of high heat (e.g., use of heat-tolerant materials).

Measure Temp-5: Encourage or require the installation or use of cool-roof technologies, passive solar home design, green roofs, and rooftop gardens.

- ▶ Action Temp-5.1: Consider adopting a mandatory green building code that requires installation of cool roof technologies for new development consistent with the 2022 or the upcoming 2025 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Building Code, Title 24, Part 6). Cool roofs are designed to maintain a lower roof temperature than traditional roofs that are heated through sun exposure and contribute to the urban heat island effect.
- ▶ Action Temp-5.2: Develop incentive programs such as permit streamlining, permit fee reductions, or tax rebates for developers and landowners to apply passive solar home design to future residential buildings. A home that employs passive solar home design has windows oriented toward the south, is composed of materials of high heat absorption, and is built to distribute heat and cold air throughout the home. The use of these design elements provides natural cooling and heating and reduces energy demand.
- ▶ Action Temp-5.3: Develop incentive programs such as permit streamlining, permit fee reductions, or tax rebates to encourage the use of rooftop gardens and green roofs in residential and commercial buildings. Rooftop gardens are gardens on rooftops, and green roofs (or living roofs) are rooftops that are partially or completely covered by vegetation. These forms of roofing lower the amount of heat absorbed by a building and reduce the energy demand associated with air conditioning.

STRATEGY 4: PREPARE FOR MORE FREQUENT EXTREME PRECIPITATION AND FLOODING EVENTS, COMBINED WITH SEA LEVEL RISE THREAT

The measures proposed under this strategy focus on improving the County and jurisdictions' resilience against more frequent and extreme precipitation and flooding events, as well as the threat posed by sea level rise. Ascent assessed the existing hazard mitigation actions and general plan safety element measures that target more frequent extreme precipitation and flooding events, combined with sea level rise. The County and its jurisdictions already have around 90 existing hazard mitigation actions and safety element measures targeting these climate stressors. Therefore, the adaptation measures proposed here serve as additional measures to supplement the existing hazard mitigation

actions and safety element measures by addressing gaps or further enhancing climate resilience against more frequent extreme precipitation and flooding events, as well as sea level rise without creating redundancy.

Measures and actions proposed for Strategy 4 start with “Measure/Action Flood,” followed by measure and action numbers.

Measure Flood-1: Consider the implementation of low-impact development (LID) to reduce local flooding.

- ▶ Action Flood-1.1: Continue to implement the Phase II Small MS4 Permit which requires green infrastructure on all new and redevelopment projects creating or replacing >5,000 sq ft of impervious surface to capture, infiltrate, and treat stormwater close to its source, such as rain gardens, bioswales, permeable pavement, green roofs, and constructed wetlands.
- ▶ Action Flood-1.2: Jurisdictions may consider implementing a “reach code” for LID by requiring LID to be installed on all new and redevelopment projects creating or replacing <5,000 SF of impervious surface.

Measure Flood-2: Evaluate and improve the capacity of stormwater infrastructure for high-intensity rainfall events.

- ▶ Action Flood-2.1: Invest in green infrastructure, such as rain gardens, bioswales, stormwater tree trenches, green roofs, detention basins, and rain barrels, to reduce peak runoff, filter stormwater, and increase groundwater recharge where needed.
- ▶ Action Flood-2.2: Increase maintenance and cleaning of gutters, drainage ditches, and culverts to maximize drainage capacity. The County and most jurisdictions already have similar actions included in their existing planning mechanisms.
- ▶ Action Flood-2.3: Invest in and enhance the capacity of stormwater infrastructure to manage high-intensity rainfall events. Continue implementing the Phase II Small MS4 Permit, with a focus on meeting its enhanced requirements for stormwater asset maintenance and improvement planning.

Measure Flood-3: Improve sewage and solid-waste management infrastructure.

- ▶ Action Flood-3.1: Coordinate with sanitation districts and waste management agencies in the region to improve sewage and solid-waste management infrastructure. The evaluation and improvement of existing undersized or inadequate sewage and solid-waste management infrastructure could lessen the occurrences of floodwater contamination, thereby reducing the spread of pollution and degraded water quality.

Measure Flood-4: Identify new locations for flood control, prioritizing green infrastructure solutions.

- ▶ Action Flood-4.1: Identify new locations suitable for multi-benefit flood control (e.g., underused agricultural areas, small streams) that encourage groundwater recharge, and habitat restoration (e.g., wetlands); identify priority projects in coordination with Napa County Flood Control and Water Conservation District, the Napa County Resource Conservation District, the NCGSA, Napa Green, and other agricultural and environmental organizations.

Measure Flood-5: Upgrade and/or relocate infrastructure and critical facilities exposed to flooding identified via GIS-based spatial analysis.

- ▶ Action Flood-5.1: Upgrade and/or relocate infrastructure and critical facilities exposed to flooding hazards to make them more resilient to flooding, based on GIS-based spatial analyses already identified in local hazard mitigation planning efforts.

Measure Flood-6: Replant bare or disturbed areas.

- ▶ Action Flood-6.1: Assess and map areas with bare soil or significant disturbance due to natural hazards such as wildfire events and/or anthropogenic changes to prioritize restoration effort. Analyze the potential for runoff, erosion, and sedimentation in identified sites. Implement targeted restoration activities where feasible by selecting appropriate vegetation, applying erosion control measures, and following best management practices.

Measure Flood-7: Safeguard freshwater supply against contamination, degradation, or loss.

- ▶ Action Flood-7.1: Support investments in new and/or upgraded existing infrastructure to ensure that freshwater supplies are not contaminated, degraded, or lost during flood or fire events. Safeguarding freshwater supply sources through infrastructure improvements and watershed protections would improve the County and its jurisdictions' ability to provide drinking water to its residents during flood events.

Measure Flood-8: Improve flood warning and information dissemination implementation.

- ▶ Action Flood-8.1: Partner with the Napa County Flood Control and Water Conservation District and National Weather Service to deliver robust multi-lingual education and outreach materials accessible across multiple media forms (e.g., radio, text messaging) to publicize information regarding potential day-to-day flood risk, how to sign up for the ALERT Napa County and access Napa County's real-time rainfall and river-stream level monitoring website (napa.onerain.com), emergency supplies, pet protection, key terminology, electrical safety, and evacuation routes in the case of flooding.
- ▶ Action Flood-8.2: Invest resources and personnel to regularly update the Ready Napa County webpage (<https://readynapacounty.org/>) to include current information.

Measure Flood-9: Address and adapt to the long-term impacts of sea level rise.

- ▶ Action Flood-9.1: Prepare a detailed asset-level assessment of local vulnerability against sea level rise, including at-risk critical facilities, infrastructure, and properties such as roads, bridges, airport facilities, and water reclamation facilities, as well as buildings and properties in inundation areas.
- ▶ Action Flood-9.2: Develop a regional adaptive management plan to address the long-term impacts of sea level rise based on the asset-level vulnerability assessment. Collaborate with regional partners in addressing sea level rise, such as the San Francisco Bay Conservation and Development Commission and the Metropolitan Transportation Commission.

Measure Flood-10: Support ongoing analysis of sea level rise data and guide future development out of areas vulnerable to sea level rise.

- ▶ Action Flood-10.1: The County's current planning mechanisms already include supporting the ongoing analysis of sea level rise data as an existing action. The County and the City of American Canyon should further collaborate on the effort, and guide future development out of exposed areas based on the analysis.
- ▶ Action Flood-10.2: Coordinate with the NCGSA regarding the evaluation of sea level rise. The NCGSA's Groundwater Sustainability Plan (GSP) Section 12 recommends installing two additional monitoring wells to enhance the region's seawater intrusion monitoring network. This will improve the spatial and temporal resolution of groundwater salinity monitoring, helping to track the saline/freshwater interface more accurately.

Measure Flood-11: Consider the implications of sea level rise when planning future capital improvement projects and new development projects.

- ▶ Action Flood-11.1: Update capital improvement plans for critical infrastructure to address the effects of future sea level rise and associated hazards in potentially affected areas, including the southwestern portion of the county, the western portion of the City of American Canyon, and certain low-lying areas along the Napa River in the City of Napa, where tidal influence extends to Third Street.

- ▶ Action Flood-11.2: Design and locate future critical infrastructure projects accordingly and away from potential inundation areas such as those mentioned in Action Flood-12.1, using sea level rise data.
- ▶ Action Flood-11.3: Require that all new development applications consider projected sea level rise and implement sufficient protective measures such as installing flood barriers, retrofitting stormwater drainage systems, and implementing green infrastructure as mentioned in Measure Flood-1; and avoid siting new development projects in areas subject to permanent inundation.

Measure Flood-12: Preserve undeveloped land to support ecosystem adaptation to sea level rise impacts.

- ▶ Action Flood-12.1: Conserve undeveloped land to facilitate ecosystem adaptation in regions where sea level rise could lead to the inland migration of species and habitats, such regions include the southwestern portion of the county and the western portion of the City of American Canyon.

STRATEGY 5: PREPARE FOR MORE FREQUENT DROUGHT EVENTS AND ENHANCE THE REGION’S OVERALL WATER SUPPLY RESILIENCE

As discussed in the Climate Vulnerability Assessment, although periods of precipitation are projected to be wetter and winter storms are predicted to be more intense and damaging, on an annual basis, there will likely be fewer total days with precipitation. Furthermore, climate projections show a likely increase in extreme dry events, which may result in severe and prolonged drought in the county. Therefore, the measures proposed here focus on preparing the County and participating jurisdictions for more frequent drought events, and enhancing the region’s overall water supply resilience. The County and its jurisdictions have around 23 existing hazard mitigation actions and safety element measures that address drought events and water supply resilience. Ascent proposes the following measures in addition to these existing measures.

Measures and actions proposed for Strategy 5 start with “Measure/Action Drought”, followed by measure and action numbers.

Measure Drought-1: Ensure the implementation of the region’s water conservation endeavors and explore options for the use of recycled water.

- ▶ Action Drought-1.1: Raise the region’s public awareness of water conservation and expand conservation incentives such as cash for grass and rebates for low-flow devices. Further, incentivize water conservation infrastructure upgrade projects such as Cash for Grass and leak detection programs.
- ▶ Action Drought-1.2: Ensure the implementation of regional and local water conservation opportunities. For water conservation in the building sector, consider adopting California Plumbing Code Appendix M. This code supports the use of smaller diameter pipes and fittings, valves, pumps, and other equipment, as well as smaller inside diameter pipe insulation. Additionally, it advocates for a smaller water service entrance size, leading to a reduced water meter size and lower connection fees.
- ▶ Action Drought-1.3: Increase on-site greywater and rainwater reuse, stormwater reuse, managed aquifer recharge, and expand the use of recycled water.
- ▶ Action Drought-1.4: Determine the feasibility of incentive programs that promote the deployment of on-site rainwater catchment systems, such as rain barrels, rain gardens, cisterns, and other mechanisms, to capture and store rainwater for use during the dry season for water customers.

Measure Drought-2: Support the region’s agricultural industry to adapt to more frequent and severe drought events.

- ▶ Action Drought-2.1: Promote and incentivize industry adoption of state-of-the-art water conservation practices in the cultivation of varietal grapes and other crops and breeding of livestock animals that are better suited to thrive in warmer temperatures and increased precipitation variability. Incentivize growers to perform regular (e.g., at least every 5 years) irrigation distribution uniformity testing and implement upgrades to their irrigation systems as indicated by uniformity testing results. Expand the use of drip irrigation or other efficient irrigation practices countywide and consider implementing regulations for night-only outdoor urban watering practices to minimize evaporation during the daytime.
- ▶ Action Drought-2.2: Incentivize broad-scale groundwater recharge by promoting soil health through best management practices. Implement cover crops, apply organic compost, and adopt measures that enhance water infiltration into vineyard soils.
- ▶ Action Drought-2.3: Napa County GSA should collaborate with representatives of the agricultural community to develop incentives for grape growers, winemakers and other users to adopt water conservation practices beyond drip irrigation. Comprehensively implement the NCGSA’s [Napa County Water Conservation Workplan: A Guide for Vineyards, Wineries and Other Water Users](#) (WC Workplan) and [Groundwater Pumping Reduction Workplan: Napa Valley Subbasin](#) (GPR Workplan).
- ▶ Action Drought-2.4: The Napa County Board of Supervisors could consider expanding the geographic scope of the aforementioned Napa County WC Workplan and GPR Workplan to areas outside the Napa Valley Subbasin and potentially the entire county.

Measure Drought-3: Support efforts to evaluate vulnerabilities of water supply systems and networks and develop strategies to improve water supply resilience.

- ▶ Action Drought-3.1: The Cities of American Canyon, St. Helena, and the Town of Yountville should evaluate the vulnerability of the local water supply systems and networks to climate impacts and develop strategies to add resilience to these systems. Resilient water supply systems must be able to deliver services during disruptive events (e.g., storms, drought).
- ▶ Action Drought-3.2: Work with local water providers to adopt municipal codes to enforce resiliency standards for water-related infrastructure for all future development. Municipal codes may include but are not limited to, standards related to the elevation of electrical generators and/or tanks and containers of hazardous materials, increased capacity of water storage tanks, and improved deployment of backflow preventers to impede contamination of drinking water following an extreme weather event (e.g., storms).
- ▶ Action Drought-3.3: Encourage and support local water agencies' efforts to conduct ongoing maintenance of existing water supply-related infrastructure to identify potential weaknesses and deterioration.
- ▶ Action Drought-3.4: Implement the drought mitigation measures proposed in the 2022 Napa Valley Drought Contingency Plan and the Drought Resilience Plan currently under development in response to SB 552.

Measure Drought-4: Expand upon existing water conservation education outreach programs for residents and businesses.

- ▶ Action Drought-4.1: Expand communication of water conservation-related education and tips through multiple media platforms (e.g., radio, television, social media) to increase awareness of indoor and outdoor conservation methods. Take steps to ensure that “Water Conservation as a Napa Way of Life” becomes deeply ingrained in the community.
- ▶ Action Drought-4.2: Expand educational materials available to water users through websites and customer bills and expand the audience to include self-supplied users of groundwater, especially in the Napa Valley Subbasin.

Measure Drought-5: Collaborate with federal, State, and local agencies and organizations to identify future water supplies, explore alternative supply sources, and improve capacity.

- ▶ Action Drought-5.1: Pursue grant funding opportunities from the State Water Resources Control Board (SWRCB), the California Department of Water Resources (DWR), the Bureau of Reclamation (Reclamation), the U.S. Army Corps of Engineers (USACE) and other State and federal agencies related to water recycling projects, and/or other water resource planning projects.
- ▶ Action Drought-5.2: Explore water supply options for the future and collaborate on water conservation strategies to improve regional water supply capacity; engage with SWRCB, DWR, Reclamation, USACE, groundwater sustainability agencies, flood control agencies, and other local, State, and federal agencies to identify new sources of water supply and groundwater recharge. Support ongoing efforts by entities, including the Abuelitos Foundation, to replenish the Napa River Watershed.

STRATEGY 6: IMPROVE THE REGION’S ENERGY GRID RESILIENCE

The measures proposed here focus on improving the County and its jurisdictions’ energy grid resilience. Some of the measures are also related to other strategies. Wildfire, extreme heat, and flooding hazards can impact energy grids. There are already 10 existing hazard mitigation actions and safety element measures for energy grid resilience. Ascent proposes the following measures in addition to these existing measures.

Measures and actions proposed for Strategy 6 start with “Measure/Action Energy”, followed by measure and action numbers.

Measure Energy-1: Consider transitioning to climate-smart sources of energy.

- ▶ Action Energy-1.1: Encourage the County and its jurisdictions to evaluate opportunities to transition energy sources to renewable and decentralized options, reducing reliance on centralized generation sources and long-range transmission (e.g., see MCE’s Virtual Power Plant Pilot Program).

Measure Energy-2: Enhance the resilience of energy infrastructure systems against climate-related impacts and collaborate with PG&E and MCE to bolster redundancy in the energy network.

- ▶ Action Energy-2.1: Harden energy infrastructure against various climate stressors, such as undergrounding transmission lines for wildfire events and installing barriers and floodgates for flooding hazards.

Measure Energy-3: Minimize stress on the region’s energy grids during extreme heat events.

- ▶ Action Energy-3.1: Reduce stress on the electrical grid by educating the public on behavior changes such as time-of-use awareness, or reducing electric usage during statewide or regional “Flex Your Power” alerts. Partner with PG&E and MCE to promote educational campaigns that encourage such behavior changes.
- ▶ Action Energy-3.2: Expand the use of home batteries, vehicle-to-grid integration technology, and other energy storage technologies in residential and non-residential buildings to improve backup power supply availability while also improving the viability of on-site renewable energy (Note: see also GHG reduction measures that encourage installation of battery storage or energy storage as integrated clean energy and GHG-reducing solutions, which can provide co-benefit of providing grid resilience).

Measure Energy-4: Install backup batteries, generators, or microgrids at critical facilities (e.g., fire stations, hospitals, campuses), community resilience centers, or similar sheltering locations

- ▶ Action Energy-4.1: Identify existing facilities that can serve as emergency shelters and ensure they have sufficient backup power using batteries or generators. Secure additional funding to conduct building improvements and enhance the resiliency of these facilities.
- ▶ Action Energy-4.2: Partner with MCE and explore the feasibility of microgrid installations and/or virtual power plant opportunities at local government agency-owned facilities, school or college campuses, hospital campuses, or other types of facilities where the use of microgrids or similar systems would be cost-effective and appropriate for supporting both energy grid and community resilience.

4 IMPLEMENTATION MATRIX FOR CLIMATE ADAPTATION STRATEGIES, MEASURES, AND ACTIONS

The following table serves as a preliminary implementation matrix demonstrating the various components and implementation details to implement climate adaptation strategies, measures, and actions. Measure All-1 is used as an example. Once the County team provides comments and direction on the content and format of this table, Ascent will provide implementation details on all the adaptation strategies, measures, and actions. Some details (e.g., cost and funding) will be based on analyses prepared by our subconsultants later in the planning process.

The components and implementation details that Ascent proposes for the implementation matrix include:

- ▶ Strategy No. & Description: numbers and descriptions of adaptation strategies;
- ▶ Measure No. & Description: numbers and descriptions of adaptation measures;
- ▶ Action No. & Description: numbers and descriptions of adaptation actions;
- ▶ Primary Responsible Jurisdictions & Agencies: jurisdictions and agencies identified to implement a certain adaptation action/measure;
- ▶ Estimated Cost: estimated cost for a certain adaptation action/measure, which can be broad ranges such as "<\$10,000", "\$10,000 - \$100,000" and ">100,000";
- ▶ Time Frame: estimated time frame for a certain adaptation action/measure, which can be a specific time frame such as "3-5 years", or "ongoing" for ongoing actions/measures, or "annual implementation" for actions and measures that are implemented on an annual basis;
- ▶ Potential Funding Sources: potential funding sources identified for a certain adaptation action/measure, such as federal grants and/or general funds; and
- ▶ Priority: the priority of a certain adaptation action/measure in terms of importance, which can be "high," "medium," or "low." Prioritizing adaptation actions/measures helps the County and incorporated jurisdictions decide which to implement in the near term, given their benefits and importance.

Table 1 Preliminary Implementation Matrix for Climate Adaptation Strategies, Measures, and Actions

Strategy No. & Description	Measure No. & Description	Action No. & Description	Primary Responsible Jurisdictions & Agencies	Time Frame	Estimated Cost	Potential Funding Sources	Priority
Strategy 1: Improve the County and Its Jurisdictions' Overall Climate Resilience.	Measure All-1: Implement and monitor the effectiveness of existing policies, actions, and measures identified in existing planning mechanisms, including but not limited to hazard mitigation plan(s), and general plan safety elements.	Action All-1.1: Collaborate among departments and jurisdictions to ensure progress is being made on actions and measures already proposed in existing planning mechanisms.	County & All Jurisdictions	Ongoing	<i>[Jacobs Engineering will provide cost estimates for up to 10 adaptation measures. Cost analysis will begin following completion of draft measures.]</i>	FEMA & Other Federal Grants & Funding Sources	High
		Action All-1.2: Adhere to the monitoring, evaluating, and updating process proposed in the County's MJHMP and the City of Napa's LHMP to ensure progress is being made on proposed hazard mitigation actions, especially those rated to have extreme and high priorities during the hazard mitigation planning processes. Make changes and updates to these actions if necessary.	County & All Jurisdictions	Ongoing		General Fund	High

Source: Ascent 2024.

Attachment 1

Matrix of existing regional hazard mitigation and general plan safety element actions and measures

This spreadsheet compiles the existing hazard mitigation actions and general plan safety element policies of Napa County and the five incorporated jurisdictions. These actions and policies are categorized by hazard under each tab. For hazard mitigation actions, the spreadsheet includes detailed information such as the responsible party, time frame, estimated capital cost, estimated maintenance cost, potential funding sources, and priority. This detailed information is required during the hazard mitigation planning process.

In contrast, safety element policies typically do not contain such detailed information, so it is not included for those policies in the spreadsheet.

This comprehensive compilation of existing hazard mitigation and climate adaptation policies and actions lays the foundation for development adaptation strategies, measures, and actions for the RCAAP.

The sources of the existing hazard mitigation actions and safety element policies are as follows:

Napa County Operational Area Hazard Mitigation Plan (2020)

City of Napa Hazard Mitigation Plan Update (2022)

Napa County General Plan Safety Element (2023)

City of American Canyon Flood Hazards Element (2019)

City of Calistoga General Plan Public Safety Element (2014)

City of Napa 2040 General Plan Safety and Noise Element (2022)

St. Helena General Plan Update 2040 Public Health, Safety, and Noise Element (2019)

Yountville General Plan Safety + Hazards Element (2019)

		County of Napa	City of American Canyon	City of Calistoga	City of Napa	City of St. Helena	Town of Yountville	Total
Number of existing policies	Wildfire	30	1	24	16	15	9	95
	Extreme Heat	5	-	-	1	-	-	6
	SLR+Flooding	29	3	6	13	19	18	88
	Drought+Water Supply	13	1	1	3	4	1	23
	Energy Grid	3	-	3	2	2	-	10
	Emergency Preparedness	39	-	5	17	5	10	76

Wildfire

Description	Responsible Party	Time Frame	Estimated Capital Costs	Estimated Maintenance Costs	Potential Funding Sources	Priority
During Drought conditions increase fuel reduction in parks and open space areas.	County	Annually	Unknown	Unknown	Geneal Funds/Grants	High
Map and identify locations and implement fuel reduction projects in high risk areas in the City such as the areas west of Highway 128.	Calistoga	Ongoing	Unknown	Unknown	Existing department budgets	High
Maintain and Further Develop the Fuel Reduction Program to include provisions for Legacy High School fuel breaks.	American Canyon	Ongoing	Unknown	N/A	ACFPD General Fund, Fire Prevention Grant Programs, Cost Recovery Fees	Extreme
Retrofit Critical Public Safety Infrastructure.	Calistoga	5-10 Years	Unknown	Unknown	General Fund/Grants	Extreme
Revise the General Plan Safety Element with lessons learned from to include new information from HMP and Fire-wise programs and analysis.	Calistoga	1-3 Years	50,000	Unknown	General Fund	Extreme
Focus on human causes of ignition and address the problem through education and enforcement actions. Develop "mitigation" resources for residents in high hazard areas including incentives for fuel reduction and building material retrofits.	Calistoga	Ongoing	Unknown	Unknown	General Fund	Extreme
Fund / augment chipper program equipment and resources.	County	1-3 Years	50,000	10,000 Annually	CalFire Community Fire Prevention Grants/Fire Mitigation Grants/California Fire Safe Council	Medium
Continue technical and financial assistance to private property owners to implement fuel reduction projects.	County	Annually	50,000	10,000 Annually	CalFire Community Fire Prevention Grants/Fire Mitigation Grants/California Fire Safe Council	High
Develop & conduct a Defensible Space community education program.	County	Annually	25,000	5,000 Annually	Napa County Fire Department/Fire Mitigation Grants	High
Draft & promulgate Defensible Space Ordinance.	County	Annually	N/A	Staff work as necessary	N/A	High
Foster & form neighborhood based Firewise Councils through grant writing.	County	Annually	25,000	N/A	Grants	High
Retrofit critical public safety infrastructure with fire resistant materials and or create defensible space around structures.	County	5-10 Years	200,000	20,000	General Funds/Grants	High

Focus on human causes of ignition and address the problem through education and enforcement actions, to include vigorous investigation and prosecution of arson.	County	3-5 Years	50,000	10,000 Annually	General Fund	High
Conduct prescribed burns as part of wildfire mitigation strategy.	County	3-5 Years	100,000	20,000 Annually	Napa County Fire Department/Fire Mitigation Grants	Medium
Retrofit care facilities (adult care, child care) with fire-resistant materials and or create defensible space around structures.	County	3-5 Years	50,000	10,000 Annually	Fire Mitigation Grants	High
Complete vegetation management projects as prescribed in CWPPs.	County	Annually	200,000	50,000 Annually	CalFire Community Fire Prevention Grants/Fire Mitigation Grants/California Fire Safe Council/ Cal. Conserv. Corps/ General Fund	High
Construct shaded fuel breaks and complete roadside treatment projects as prescribed in CWPPs.	County	Annually	750,000	50,000 Annually	CAL FIRE/ California Fire Safe Council/ California Conservation Corps/ Napa County General Fund	High
Install proper addressing in rural areas to assist in wildfire emergencies.	County	1-3 Years	25,000	5,000 Annually	Existing County Funds/Grants	Medium
Work with utility providers to move above ground lines underground.	PG&E	5-10 Years	1,500,000	250,000 Annually	Fire Mitigation Grants	High
Construct or improve egress for wildfire emergencies in wildland urban interface (WUI) areas.	County	5-10 Years	50,000	10,000 Annually	CalFire/Napa Firewise/California Fire Safe Council	High
Provide smoke/air quality mitigation measures for Critical Facility Air Intakes.	St. Helena	1-3 Years	Unknown	Unknown	Bonds, grants, fee increases	Extreme
Implement fuel reduction projects to reduce impacts to homes and businesses.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	Extreme
Retrofit At-Risk Structures with Ignition-Resistant Materials or Require or Encourage Fire-Resistant Construction Techniques.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	Extreme
Develop and or share outreach material on air quality mitigation measures for residents before wildfire season.	St. Helena	Annually	10,000	2,500	Existing budget, grants	Extreme
Implement fuel reduction/building retrofit projects to limit combustibility to school facilities.	St. Helena	Ongoing	Unknown	Unknown	Bonds, grants, fee increases	Extreme
Develop Public awareness information for wildfire season related to flame/sparking equipment.	St. Helena	Ongoing	10,000	2,500	Existing budget, grants	Extreme

Work with local agencies to develop evacuation plans and provide education and outreach to populations vulnerable to wildfire.	Yountville	Annually	25,000	25,000	Town General Fund and grant funding	High
Develop Structural Protection Plans for Wildland Urban Interface Areas.	City of Napa	1-3 Years	Medium	Unknown	HMGP/BRIC, AFG	High
Continue to support the Napa Communities Firewise Foundation in the development of Fire Safe Councils and implementation of the 2021 Community Wildfire Protection Plan.	City of Napa	Ongoing	High	Unknown	HMGP/BRIC, Internal Funding	High
Continue to upgrade existing water utility infrastructure to increase redundancy in high fire hazard areas especially at the rural and urban interface to minimize the risk of losing access to infrastructure during an event.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC, AFG	Medium
Ensure the Fire Department reviews all building plans in WUI areas for defensible space, emergency vehicle access, fire flow and ignition resistant construction requirements.	City of Napa	Ongoing	Medium	Unknown	HMGP/BRIC, AFG	Low
Provide an ongoing vegetation management program such as the City's Weed Abatement ordinance to prohibit the spread of wildfire in ground and aerial fuels and to assist homeowners in developing defensible space.	City of Napa	1-3 Years	Medium	Unknown	HMGP/BRIC, AFG	Low
Coordinate watershed protection efforts within the Lake Hennessey and Lake Milliken watersheds to protect drinking water supplies from water quality impacts.	City of Napa	Ongoing	High	Unknown	HMGP/BRIC, Internal Funding	High
Implement Lake Hennessy Intake Pump Station Defensible Space /Construction Upgrade.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC, EMPG, Internal Funding	High
Conduct Lake Hennessy Pipeline Protection Project.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC, Internal Funding	High

Implement demonstration fuels treatment and emergency access project at Timberhill Park.	City of Napa	3-5 Years	High	Unknown	CalFIRE , HMGP / BRIC	Extreme
Maintain Fire Access Roads and evacuation routes that have been identified throughout the City of Napa.	City of Napa	Ongoing	Medium	Unknown	Internal Funding, Cal FIRE	Extreme
Fund and implement the Milliken Raw Water Pipeline Hardening Project.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC	Extreme
Implement fuel reduction in high fire hazard severity zones.	County	Safety Element Policy/Action				
Collaborate with other agencies for implementation of wildfire and hazard plans.	County	Safety Element Policy/Action				
Maintain consistency with California codes.	County	Safety Element Policy/Action				
Coordinate with fire agencies to plan for fire prevention and suppression needs.	County	Safety Element Policy/Action				
Minimize hazards in very high fire hazard severity zones.	County	Safety Element Policy/Action				
Meet or exceed fire safety standards for Napa County buildings and roads.	County	Safety Element Policy/Action				
Support new technology in fire suppression and prevention.	County	Safety Element Policy/Action				
Ensure new development complies with fire safety standards.	County	Safety Element Policy/Action				
Preserve and maintain fire prevention techniques.	County	Safety Element Policy/Action				
Maintain fire breaks.	County	Safety Element Policy/Action				
Use guidance from the Community Wildfire Protection Plan.	County	Safety Element Policy/Action				
Continue county chipper program.	County	Safety Element Policy/Action				
Require proper addressing and signage.	County	Safety Element Policy/Action				
Coordinate implementation of farmworker wildfire education.	County	Safety Element Policy/Action				
Locate public facilities outside of high fire hazard severity zones.	County	Safety Element Policy/Action				
Implement fire safety and evacuation recommendations.	County	Safety Element Policy/Action				
Implement best practices to address wildfire prevention on open space land within and around the City.	City of Napa	Safety Element Policy/Action				
Facilitate communication and education to the community about fire safety, wildland fire protection measures, and evacuation/emergency response to wildland fires.	City of Napa	Safety Element Policy/Action				

Continue to educate property owners and the public about local fire hazard prevention programs, vegetation management strategies, and other disaster preparation activities in areas threatened by wildfire.	City of Napa	Safety Element Policy/Action
Ensure that future development plans provide adequate evacuation routes, vegetation management policies, and fire-reduction design measures, as appropriate.	City of Napa	Safety Element Policy/Action
Support efforts to improve the provision of emergency fire services for areas north of Fire Station 5.	City of Napa	Safety Element Policy/Action
Limit development in areas of High and Very High wildfire hazard as defined and mapped by the California Department of Forestry and Fire Prevention (CalFire) in order to prevent the loss of lives, injuries, and property damage due to wildfires.	St. Helena	Safety Element Policy/Action
Ensure that all streets and roads are adequate in terms of width, turning radius, and grade in order to facilitate access by City firefighting apparatus, and to provide alternative emergency routes of ingress and egress.	St. Helena	Safety Element Policy/Action
Designate areas in St. Helena that are prone to fire hazards and make this information available to the community.	St. Helena	Safety Element Policy/Action
Continue to require implementation of best practices in fire resistance for all new and remodeled structures in fire-prone areas, including fire fuel removal, creation of defensible space for firefighters, construction with fire-resistant building materials, and installation of automatic sprinkler systems. Study the need to designate a Wildland-Urban Interface Fire Area within St. Helena to provide protection in additional areas.	St. Helena	Safety Element Policy/Action
Require all structures in high wildfire hazard areas to maintain a clearance of flammable vegetation away from structures and to use fire-resistant ground covers. The minimum clearance distance should be 30 feet.	St. Helena	Safety Element Policy/Action
Require all new development to meet the minimum fire flow rates specified by the City's Fire Code.	St. Helena	Safety Element Policy/Action

Require all new development plans to be approved by the Fire Department prior to the issuance of building permits, grading permits, or final map approval.	St. Helena	Safety Element Policy/Action
Develop a program to inform and educate the community about potential risks, resources, and roles and responsibilities for addressing fire safety in St. Helena. Inform residents of homes adjacent to public lands of their responsibility to provide fire breaks adjacent to their homes.	St. Helena	Safety Element Policy/Action
Develop a program to inform and educate the community about potential risks, resources, and roles and responsibilities for addressing fire safety in St. Helena. Inform residents of homes adjacent to public lands of their responsibility to provide fire breaks adjacent to their homes.	St. Helena	Safety Element Policy/Action
Napa County Fire Department Agreement. Maintain agreement with Napa County Fire Department for fire protection and to maintain adequate level of service.	Yountville	Safety Element Policy/Action
Risk and Response Time. Coordinate with Napa County Fire Department to meet accepted levels of risk and response time.	Yountville	Safety Element Policy/Action
Inspections and Site Plan Review. Maintain programs with Napa County Fire Department for inspections and site plan review.	Yountville	Safety Element Policy/Action
Weed Abatement and Defensible Space. Develop weed abatement and defensible space programs which reduce risk of fire while maintaining native vegetation and wildlife habitat.	Yountville	Safety Element Policy/Action
Heather Street and Heritage Court Emergency Access. Maintain the existing one-lane emergency access connection at Heather Street and Heritage Court.	Yountville	Safety Element Policy/Action

<p>Fire Risk in New Development.</p> <ul style="list-style-type: none"> - Review all development proposals for fire risk and require mitigation measures to reduce the probability of fire. Encourage attractive native and drought tolerant, low-maintenance landscaping responsive to fire hazards. Require all new development to meet the adopted State and local fire codes. - Require adequate access for emergency vehicles, adequate street width and vertical clearance, driveway access and parking restrictions for new development. - Require sprinkler systems for new commercial and residential development and substantial remodels and additions. 	<p>Yountville</p>	<p>Safety Element Policy/Action</p>
<p>Water Supply for Fire Fighting. Maintain an adequate water supply, fire hydrant system, and water pressure to effectively suppress fires.</p>	<p>Yountville</p>	<p>Safety Element Policy/Action</p>
<p>Education and Code Enforcement. Increase fire prevention effectiveness through education and code enforcement, including requirements for defensible space around structures and removal of flammable vegetation near roadways.</p>	<p>Yountville</p>	<p>Safety Element Policy/Action</p>
<p>Plans for development in the Very High Fire Hazard Area shall be reviewed for their incorporation of design measures to reduce wildland fire risk.</p>	<p>Calistoga</p>	<p>Safety Element Policy/Action</p>
<p>New roadways and driveways in the Very High Fire Hazard Area shall be designed and constructed to be adequate in terms of width, radius and grade to facilitate access by fire-fighting apparatus.</p>	<p>Calistoga</p>	<p>Safety Element Policy/Action</p>
<p>Enforce wildland fire control measures required by the Fire Code.</p>	<p>Calistoga</p>	<p>Safety Element Policy/Action</p>
<p>The City shall be fully informed about potential wildfire risks and how wildfires are likely to behave.</p>	<p>Calistoga</p>	<p>Safety Element Policy/Action</p>

Prepare a community wildfire risk assessment that identifies likely severe-case wildfire characteristics; identifies sub-standard conditions, such as existing structures that do not conform to contemporary fire standards, inadequate access and insufficient water flow; and actions that could be taken to avoid wildfires and minimize wildfire damage.	Calistoga	Safety Element Policy/Action
Provide opportunities for residents within the Very High Fire Hazard Area to be informed about wildfire prevention and response.	Calistoga	Safety Element Policy/Action
Support efforts to organize residents within the Very High Fire Hazard Area to promote fire-wise practices.	Calistoga	Safety Element Policy/Action
As resources are available, educate residents about defensible space planning and construction, fire-safe landscaping, fire-wise construction, emergency supplies and evacuation, wildfire behavior and “fire hardening” their homes to survive an advancing wildland fire through workshops and providing information.	Calistoga	Safety Element Policy/Action
As resources are available, work to establish a Fire Safe Council and the preparation of a community action plan that prioritizes hazard mitigation actions and provides a sustained program of wildfire mitigation.	Calistoga	Safety Element Policy/Action
Support events that involve residents in vegetation clean-up.	Calistoga	Safety Element Policy/Action
Seek fire safety grants to fund wildfire mitigation activities such as vegetation management.	Calistoga	Safety Element Policy/Action
Maximize the use of outside resources in responding to wildfires.	Calistoga	Safety Element Policy/Action
Maintain effective communications during major mutual aid incidents.	Calistoga	Safety Element Policy/Action
Work with Cal Fire to develop a coordinated plan that effectively addresses wildfires in the city and its environs.	Calistoga	Safety Element Policy/Action
Participate in countywide local hazard mitigation planning efforts and the implementation of fire hazard mitigation actions.	Calistoga	Safety Element Policy/Action

Continue to implement state and federal communication and interoperability guidelines and maintain sufficient communication equipment.	Calistoga	Safety Element Policy/Action
Be prepared to minimize damage after a wildfire from erosion, landslides and mudflows.	Calistoga	Safety Element Policy/Action
Promote appropriate revegetation after a wildfire.	Calistoga	Safety Element Policy/Action
Seek funding for and prepare a burn area recovery plan that provides for revegetation; control of noxious weeds; restoration of native species and wildlife habitats; minimizes flooding, sediment flows and landslides; protects water quality and reduces other risks.	Calistoga	Safety Element Policy/Action
Plan for the disposal of debris and ash, building inspections, and building and grading permits post-wildfire.	Calistoga	Safety Element Policy/Action

Extreme Heat

Description	Responsible Party	Time Frame	Estimated Capital Costs	Estimated Maintenance Costs	Potential Funding Sources	Priority
Construct or identify existing locations for cooling centers near farmworker populations.	County	1-3 Years	25,000	10,000 per year	Mitigation Funds	Medium
Develop air conditioning replacement/reimbursement program for low income and elderly residents.	County	1-3 Years	250,000	10,000 annually	Grants/Bonds/Fee Increased	High
Support risk assessments in relation to warmer climate on the agriculture and wine industries.	County	1-3 Years	25,000	5,000 annually	Existing County Funding/Grants	Medium
Conduct public outreach regarding cooling center availability, especially targeting vulnerable populations; periodically review available cooling center usage, distribution and availability throughout the City.	City of Napa	Ongoing	Low	N/A	HMGP/BRIC	Medium
Construct cooling centers near farmworker populations.	County	Safety Element Policy/Action				
Assist vulnerable populations with acquisition of air conditioning systems.	County	Safety Element Policy/Action				

Flood & Sea Level Rise

Description	Responsible Party	Time Frame	Estimated Capital Costs	Estimated Maintenance Costs	Potential Funding Sources	Priority
Plan for and construct sea level rise protection for American Canyon Critical Infrastructure such as Public Works Yard, Sewer Treatment Plant, and Pump Station.	American Canyon	Ongoing	Unknown	Unknown	FEMA	Medium
Support ongoing analysis of sea-level rise data.	County	1-3 Years	50,000	10,000 Annually	Existing County Funds	Medium
Create a comprehensive outreach strategy that informs residents in potentially affected areas of County efforts to protect and increase community resiliency to sea-level rise.	County	1-3 Years	25,000	5,000 Annually	Existing County Funds/Grants	Medium
Elevate 100 of the most flood prone residential structures along areas not receiving direct protection from Measure "A" Flood Project. Provide flood mitigation resource (e.g. ways to reduce flood risk) to residents within the American Canyon Mobile Home Park (68 parcels).	American Canyon	5-10 Years	5,000,000	Unknown	City Capital Budget Grants; Federal Grants	High
Inform American Canyon residents and inhome Adult Care providers of possible flooding during "major" flood events.	American Canyon	Ongoing	Unknown	Unknown	Existing budget or grants	High
Implement localized flood reduction projects or flood-proof 100 of the most flood-prone residential structures along with areas "not" receiving direct protection from Measure "A" Flood Project in the City of Calistoga.	Calistoga	3-5 Years	5,000,000	Unknown	City Capital Budget Grants; Federal Grants	High
Routinely inspect and maintain storm water inlets and outfalls for debris and obstructions, sand & gravel build-up, and structural damage or vandalism.	Calistoga	Annually	30,000	100,000	Local Jurisdictions Annual Budget, General Fund, Local Funding	High
Develop a localized remap of the floodplain, flood projects, or flood-proofing for Critical Facilities within the City. Specifically north of Lincoln Avenue.	Calistoga	3-5 Years	Unknown	Unknown	General Fund/Grants	High
Mitigate flood risk for flood-prone residential structures along areas not receiving direct protection from Measure "A" Flood Project.	County	3-5 Years	5,000,000	Unknown	City Capital Budget Grants; Federal Grants	High
Develop a public outreach program that informs property owners located in the dam or levee inundation areas about voluntary flood insurance (preferred risk policies).	County	1-3 Years	40,000	Unknown	Existing budget or grants	High
Increase participation in the NFIP.	County	1-3 Years	25,000	Unknown	Existing budget or grants	High
Draft stream channel ordinance that would place responsibility for maintenance on the property owner and give Napa enforcement power.	County	5-10 Years	Unknown	Unknown	Bonds, grants, fee increases	Low
Construct, install and maintain warning gauges on local dams as the opportunity or need arises.	County	3-5 Years	1,500,000	Unknown	Bonds, grants, fee increases	Medium
Improve risk assessments for dams located within the county.	County	1-3 Years	20,000	5,000	Existing budget	Medium
Complete an inventory of all publicly-owned stormwater facilities.	County	1-3 Years	Unknown	Unknown	Existing Budget, grants, bonds, fee increases	Low
Create an inventory and establish a priority list for culvert replacement that takes into account fish passage, flood depth reduction, and future losses avoided.	County	3-5 Years	Unknown	Unknown	Existing Budget, grants, bonds, fee increases	Low
Relocate farmwork centers from flood risk areas.	County	3-5 Years	Unknown	Unknown	Bonds, grants, fee increases	Medium
Elevate and or retrofit bridges, culverts to allow proper stormwater / 100-YR flows.	County	5-10 Years	Unknown	Unknown	Bonds, grants, fee increases	Medium

Mitigate flood risk to NFIP repetitive loss properties.	County	Annually	Unknown	Unknown	Existing Budget, grants, bonds, fee increases	High
Construct / improve stormwater basins County-wide to accomplish 100-YR protection.	County	3-5 Years	Unknown	Unknown	Bonds, grants, fee increases	Medium
Adopt higher regulatory standards (including but not limited to freeboard, comp storage, lower substantial damage thresholds, setbacks and fill restrictions) as means to reduce future flood risk and support a no adverse-impact philosophy of floodplain management.	County	1-3 Years	Unknown	Unknown	Existing Budget, grants, bonds, fee increases	Medium
Maintain Countywide Storm Watch System.	County	Annually	80,000	30,000	Napa County Watershed Assessment	High
Completion of the Measure "A" Flood Control Project.	County	5-10 Years	100,000,000	100,000	County sales tax/federal funding	High
Routinely inspect storm water channels for vegetation build up or encroachment, trash and debris, silt and gravel build up, and erosion or bank failure and maintain said channels permitted by California Department of Fish and Wildlife.	County	Annually	N/A	200,000	Local watershed assessment/federal funding needed	High
Secure grant funding to develop and implement a river restoration program that would reduce flood damages and increase environmental quality on the river, maintain fish habitat, decrease impediment to drainage by preventing silt build-up and loss of stream bed capacity.	County	5-10 Years	23,000,000	200,000	State and Federal grants	High
Provide flood protection resources to residents on the Napa River to reduce flood losses. Resources could include technical, education and grant application assistance for floodproofing properties.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	High
Provide flood mitigation resources (e.g. ways to reduce flood risk) to residents within the Vineyard Valley Mobile Home Park.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	High
Improve stormwater drainage system capacity and maintenance for Pratt and Pope Street bridges in St. Helena.	St. Helena	5-10 Years	Unknown	Unknown	Bonds, grants, fee increases	High
Develop evacuation plans for communities and residents downstream from the Rector Creek Dam.	Yountville	Annually	25,000	25,000	General fund revenue and potential grant funding	High
Identify properties that are potential candidates for elevation, relocation or buyout based on an evaluation of flood risks, project feasibility, and planned flood risk reduction capital projects.	Yountville	Annually	12,000,000	25,000	General fund and grant funding	High
Secure grant funding to develop and implement river restoration program that would reduce flood damages and increase environmental quality on the river, maintain fish habitat, decrease impediment to drainage by preventing silt build up and loss of stream bed capacity.	Yountville	5-10 Years	Unknown	Unknown	General fund and potential grant funding	Medium

Invest in flood prediction and forecast modeling to support all facets of the Napa County floodplain management program, including, but not limited to, flood hazard identification, flood threat recognition in support of flood notification programs, climate change adaptation, and risk assessment.	Yountville	5-10 Years	Unknown	Unknown	General Fund and grant funding	Low
Enhance the existing flood notification program to achieve real-time flood threat recognition capability.	Yountville	3-5 Years	Unknown	Unknown	General Fund and grant funding	Medium
Complete approved Napa River Flood Protection Project by continuing to assist the U.S. Army Corps of Engineers, Napa County Flood Control and Water Conservation District, other responsible agencies, and the public to maintain funding for the development of the Flood Project.	City of Napa	Ongoing	High	Unknown	HMGP/BRIC, FMA	Extreme
Pursue funding for the design and construction of storm drainage projects to protect properties that will not be fully protected by the Flood Protection Project, including home elevations, property acquisitions, upstream storage such as detention basins, and channel widening with the associated right-of-way acquisitions, relocations and environmental mitigations.	City of Napa	Ongoing	High	Unknown	HMGP/BRIC, FMA	High
Coordinate with County to improve Countywide flood surveillance/early warning system.	City of Napa	Ongoing	Low	Unknown	Internal Funding	High
Continue to apply floodplain management regulations for development in the flood plain and floodway.	City of Napa	Ongoing	Medium	Unknown	HMGP/BRIC, FMA	High
Increase coverage of Storm Watch sensors to include small streams that, due to land use changes, have demonstrated an impact on existing streams and urban flooding.	City of Napa	1-3 Years	Medium	Unknown	HMGP/BRIC, FMA, Internal Funding	Medium
Distribute NOAA weather Radios to high risk, limited income families living in flood zones. Develop program of at cost NOAA radios for families in the various flood zones in Napa County. Provide weather radios to block captains.	City of Napa	1-3 Years	Medium	Unknown	N/A	Low
Periodically update the Flood Insurance Rate Maps to reflect the improvements that have been completed as part of the Flood Protection Project.	City of Napa	Ongoing	Low	Unknown	FMA	High
Implement various flood control projects after approved Flood Control Project. For example, additional pump stations are needed to increase the functionality and resilience of the flood wall along the west side of the Napa River.	City of Napa	5-10 Years	High	Unknown	HMGP/BRIC, FMA, Internal Funding	High
Implement the Trower Avenue Storm Drain Improvements, Phase II project, which consists of improvements to alleviate flooding from heavy rain events along Valencia Street, Yosemite Street, Diablo Street and Glacier Drive.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC, FMA	High
Encourage public utility agencies to analyze and prepare for impacts of sea level rise on facilities.	County	Safety Element Policy/Action				
Conduct sea level rise monitoring and public education.	County	Safety Element Policy/Action				
Implement safety and preparation measures from the MJHMP.	County	Safety Element Policy/Action				
Evaluate construction in new floodplains.	County	Safety Element Policy/Action				

Maintain areas subject to flooding in agricultural or open spaces.	County	Safety Element Policy/Action
Review potential flood impacts for newly proposed projects in a floodway.	County	Safety Element Policy/Action
Ensure proper maintenance and repairs for dams and levees.	County	Safety Element Policy/Action
Improve stormwater basins.	County	Safety Element Policy/Action
Elevate new structures above the 100-year flood level.	County	Safety Element Policy/Action
Update National Flood Insurance Program floodplain maps.	County	Safety Element Policy/Action
Seek opportunities to invest in flood prevention infrastructure, including extension of integrated flooding/open space solutions, to reduce impacts from flooding to Downtown Napa and other areas located along the Napa River.	City of Napa	Safety Element Policy/Action
Update the Storm Drain Master Plan focusing the City's effort on condition assessment and needed repairs, storm drain capacity improvements to reduce neighborhood flooding, and assure it is complementary with the Napa River-Napa Creek Flood Protection Project (including both constructed and planned future improvements).	City of Napa	Safety Element Policy/Action
Limit development in the 100-year floodplain to development which represents an acceptable use of the land in relation to the hazards involved and the costs of providing flood control facilities. Locate critical facilities, such as hospitals, fire stations, police stations, public administration buildings, and schools outside of flood hazard areas, to the extent feasible.	City of Napa	Safety Element Policy/Action
Require all projects in floodplains, to the extent feasible, adhere to strict design guidelines that ensure any proposed development will withstand a flooding event, and will not jeopardize the existing surrounding or downstream structures.	City of Napa	Safety Element Policy/Action
Minimize the risk to people, property and the environment caused by flooding hazards. Site new development to minimize potential damage from a 100-year flood. Continue to require that any new development is constructed FEMA standards. Prohibit the siting of uses within Flood Hazard Areas inconsistent with FEMA standards that could result in health and safety hazards, including those due to the release of chemicals or other substances as a result of inundation or erosion. Ensure that any new flood protection projects comply with federal and State standards.	St. Helena	Safety Element Policy/Action
Ensure that new development or existing lots of record within the 100-year floodplain are properly graded, sited, and constructed to mitigate flood effects and do not cause increases or expansion of the flood area that increase flood risk.	St. Helena	Safety Element Policy/Action
Within the 100-year floodplain, encourage open space uses, such as parks or natural areas.	St. Helena	Safety Element Policy/Action

Ensure that construction of flood barriers does not adversely affect natural floodplains, stream channels and natural barriers that help accommodate or channel flood waters.	St. Helena	Safety Element Policy/Action
Prohibit new development within areas designated as Floodway in the current FEMA Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM).	St. Helena	Safety Element Policy/Action
Coordinate with the Napa County Flood Control and Water Conservation District and other responsible agencies to maintain protocols and funding for the regular inspection and maintenance of flood control facilities in the city, including levees, floodwalls, floodplain terracing, stormwater detention ponds, and pumping facilities.	St. Helena	Safety Element Policy/Action
Require that development within Special Flood Hazard Areas prepare and implement infrastructure and drainage plans compliant with State and federal requirements in order to minimize risk in these areas.	St. Helena	Safety Element Policy/Action
Locate new essential public facilities outside of Special Flood Hazard Areas, including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities.	St. Helena	Safety Element Policy/Action
Coordinate with the Napa County Flood Control District to ensure that stream channels are routinely cleared of vegetation and debris which could impede stormwater flows, while protecting riparian habitat.	St. Helena	Safety Element Policy/Action
Require developers with land adjacent to the Napa River to construct or contribute a fair share toward the construction of necessary flood control improvements.	St. Helena	Safety Element Policy/Action
Strengthen and enforce regulations that prohibit the dumping of litter, fill, and waste materials into creeks and waterways. Educate the public about flooding and health hazards associated with these activities.	St. Helena	Safety Element Policy/Action
Require that sewer and water lines in areas subject to flooding are sited to avoid contamination and flooding when pipelines break.	St. Helena	Safety Element Policy/Action
Prohibit the introduction of urban development in FEMA-designated Floodway zones.	St. Helena	Safety Element Policy/Action
Review Municipal Code Chapter 15.52, Flood Damage Prevention, to ensure that regulations reflect best practices. Periodically update the City's flood hazard regulations in accordance with FEMA/NFIP regulations.	St. Helena	Safety Element Policy/Action
Implement the requirements of FEMA relating to construction in Special Flood Hazards Areas as illustrated on Flood Insurance Rate Maps.	St. Helena	Safety Element Policy/Action

Implement low impact development practices for new development and redevelopment projects to reduce stormwater peak flow rates and volumes from smaller, more frequently occurring storm events.	St. Helena	Safety Element Policy/Action
Mesa-Tallent Lane Storm Drainage Benefit District. Require all development within the Mesa-Tallent Lane Storm Drainage Benefit District to participate and fund improvements which address the drainage problems of the area.	Yountville	Safety Element Policy/Action
Hopper Creek. Maintain Hopper Creek as a natural creek. Preserve and enhance the riparian habitat and flood control attributes of the creek by requiring development setbacks and regulating the planting and removal of creekside vegetation.	Yountville	Safety Element Policy/Action
Flood Insurance Rate Maps. Use the most recent Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps to identify 100-Year Flood Events and calculate flow rates within identified stream channels. Monitor FEMA's efforts to map the 200-year flood plain and address new requirements as appropriate.	Yountville	Safety Element Policy/Action
Development within the 100-Year Flood Zone. Require development within the 100-year flood zone to comply with the floodplain management regulations of the Yountville Municipal Code.	Yountville	Safety Element Policy/Action
Maintain Flood Wall. Maintain the flood wall surrounding the mobile home parks to reduce damage from flooding.	Yountville	Safety Element Policy/Action
Extension of Flood Wall. Evaluate whether to extend the flood wall to the church-owned property at the far southeast corner of town.	Yountville	Safety Element Policy/Action
Storm Drainage System. Maintain unobstructed water flow in the storm drainage system to the maximum extent feasible. Continue to carry out inspections and maintenance of drainage systems.	Yountville	Safety Element Policy/Action
Flood Protection Easements. Ensure the retention of flood protection easements held by public agencies on private property to prevent development in these areas.	Yountville	Safety Element Policy/Action
Beard Ditch. Work with Napa County to support its efforts to perform annual maintenance of Beard Ditch for drainage purposes.	Yountville	Safety Element Policy/Action
Rector Creek Dam. Work with Napa County, the State, and federal agencies to encourage measures to ensure the safety of Rector Creek Dam and to prepare for and respond to potential flooding events.	Yountville	Safety Element Policy/Action
Coordination with Napa County. Work with Napa County officials in urging the State and federal governments to make flood control improvements to the Napa River which will reduce or eliminate the danger of flooding caused by overflow of the Napa River.	Yountville	Safety Element Policy/Action

Napa County Stormwater Pollution Prevention Program. Work with the Napa County Flood Control District to implement the Stormwater Pollution Prevention Program to minimize negative impacts of storm runoff.	Yountville	Safety Element Policy/Action
Napa County Flood Control District. Participate in the Napa County Flood Control and Water Conservation District to manage flood and storm waters to protect life and property, and to maintain the Napa River, its tributaries, and watershed.	Yountville	Safety Element Policy/Action
A flood hazard element exists but is not really available; looks like the file is corrupted.	American Canyon	Safety Element Policy/Action
No construction shall be permitted in the floodway as mapped by FEMA and modified in subsequent site-specific studies without the approval of a variance by the City Council.	Calistoga	Safety Element Policy/Action
Continue to administer the City's floodplain management regulations.	Calistoga	Safety Element Policy/Action
Encourage property owners in Calistoga to purchase National Flood Insurance to reduce the financial risk from flooding and mudflows.	Calistoga	Safety Element Policy/Action

Drought & Water Supply

Description	Responsible Party	Time Frame	Estimated Capital Costs	Estimated Maintenance Costs	Potential Funding Sources	Priority
Construct and develop alternative water supplies to augment single sources of water delivery.	County	3-5 Years	1,000,000	50,000	Grants/Bonds/Fee Increases	High
Construct rainwater catchment systems to recharge groundwater in government ROWs.	County	5-10 Years	1,000,000	50,000	Grants/Bonds/Fee Increases	Low
Require mandatory water conservation measures during drought emergencies.	American Canyon	Ongoing	Unknown	Unknown	Existing Budget, grants	High
Augment City water supply systems with supply contingency projects for Drought years, such as increasing water supply and treatment capacity of Kimball Reservoir. Contingency planning/projects will include provisions for ag sector.	Calistoga	5-10 Years	Unknown	Unknown	Water Enterprise/General Fund/Impact Fees/Grants	High
Develop a public education campaign to encourage water conservation during drought.	County	3-5 Years	25,000	5,000	Existing County Budget/Grants	Medium
Install water monitoring devices on government-owned facilities.	County	5-10 Years	1,000,000	50,000	Grants/Bonds/Fee Increases	High
Install drought tolerant landscaping at government-owned facilities.	County	3-5 Years	250,000	25,000	Grants/Bonds/Fee Increases	Low
Amend or revise water conservation regulations for landscape design.	County	1-3 Years	50,000	10,000 Annually	Existing County Budget/Grants	Medium
Adopt a new water conservation ordinance for commercial and residential land uses limiting outdoor watering.	County	1-3 Years	50,000	10,000 Annually	Existing County Funds/Grants	Medium
Retrofit water supply systems in order to improve water supply and delivery and conserve water.	County	5-10 Years	Unknown	Unknown	Bonds, grants, fee increases	High
Develop landscape planting procedures and planting plans for residents and business wishing to reduce water usage through landscape design.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	High
During drought conditions increase fuel reduction in parks and open space areas.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	High
Increase engagement between the fire and drought communities.	Yountville	Ongoing	Unknown	Unknown	General Fund and grants if available	Medium
Secure internal and external water supply sources and maintain reservoir levels to withstand drought years.	City of Napa	Ongoing	Medium	Unknown	HMGP/BRIC	High

Develop a public education campaign to encourage water conservation during drought, in collaboration with the Napa Valley Drought Contingency Plan Task Force and Napa Sanitation District. The intent is to avoid or delay issuance of water restriction emergency declarations.	City of Napa	3-5 Years	Medium	Unknown	HMGP/BRIC, Internal Funding	Medium
Implement recommendations from the Napa Valley Drought Contingency Plan. Incorporate into the City's Urban Water Management Plan.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC, Internal Funding	High
Construct rainwater catchment systems.	County	Safety Element Policy/Action				
Develop alternative water supplies.	County	Safety Element Policy/Action				
Continue to invest in programs that promote water conservation in Napa County's agricultural industry.	County	Safety Element Policy/Action				
Install water monitoring devices on government-owned facilities.	County	Safety Element Policy/Action				
Invest in water use efficiency and conservation.	County	Safety Element Policy/Action				
Strengthen water conservation measures that result in significant reductions in local water use and the protection of local water resources.	St. Helena	Safety Element Policy/Action				
Adopt landscape ordinances that promote drought resistant plants, and limit or restrict lawns and other high-water-demand plants unless irrigated with reclaimed or grey water systems.	St. Helena	Safety Element Policy/Action				

Energy Grid

Description	Responsible Party	Time Frame	Estimated Capital Costs	Estimated Maintenance Costs	Potential Funding Sources	Priority
Establish tree pruning / removal standards for above ground utilities lines within City limits.	Calistoga	1-3 Years	Unknown	Unknown	Existing department budgets	High
Identify schools that have been designated as emergency shelters by the Red Cross within City Limits and ensure they have sufficient back up power generators.	Calistoga	1-3 Years	Unknown	Unknown	Grants	High
Procure backup generators in the event that public meeting spaces such as community centers or town halls will be used as Emergency Command Centers. Perform regular maintenance on generators at water treatment plants.	County	3-5 Years	1,500,000	5,000 annually	Federal Grant Funds	High
Develop microgrids to provide emergency power during natural disasters.	Calistoga	3-5 Years	Unknown	Unknown	General Funds/Grants	High
Harden and build redundant (power and other) capability into Public Safety buildings.	County	5-10 Years	1,000,000	20,000 Annually	Federal Grant Funds	Medium
Construct/Install back up power generators for fire stations, pump houses, emergency shelters and cooling centers.	County	1-3 Years	1,500,000	5,000 Annually	Federal Grant Funds	High
Develop microgrids to provide emergency power during natural disasters.	St. Helena	3-5 Years	Unknown	Unknown	Bonds, grants, fee increases	Medium
Provide hazard mitigation information (e.g. ways to reduce risk) to first responders living within hazard-prone areas.	St. Helena	Ongoing	Unknown	Unknown	Existing budget, grants	Medium
Construct backup generators at critical facilities (fire stations, hospital) and sheltering locations to respond to hazard events in loss of power.	City of Napa	Ongoing	Medium	Unknown	HMGP/BRIC	High
Develop cost share program to help private landowners with tree maintenance to avoid power outages and damage during windstorms.	City of Napa	3-5 Years	High	Unknown	HMGP/BRIC	Medium

Emergency Preparedness & All Hazards

Description	Responsible Party	Time Frame	Estimated Capital Costs	Estimated Maintenance Costs	Potential Funding Sources	Priority
Organize outreach to vulnerable populations, including establishing and promoting accessible shelters in the community.	County	1-3 Years	40,000	5,000	Existing County Funds/Grants	High
Develop a public information campaign on 72-hour kits.	County	1-3 Years	20,000	5,000	General Fund	Medium
Develop a "Natural Hazard Awareness Week" campaign and conduct corresponding outreach to the community and all interested parties. Activities will focus on flooding and other natural hazards, including associated hazard functions, governing laws/regulations, mitigation strategies and precautions. Outreach will also be conducted throughout the year, wherever possible.	County	1-3 Years	80,000	10,000 Annually	Existing County Funds	High
Inform residents and tourists of shelter locations and evacuation routes and procedures for storing or taking valued items before large scale evacuations.	St. Helena	Ongoing	Unknown	Unknown	Unknown	High
Improve existing communication systems, especially developing redundant communication systems and wireless infrastructure.	City of Napa	3-5 Years	High	N/A	HMGP / BRIC, EMPG	High
Build an alternate EOC.	City of Napa	3-5 Years	High	N/A	EMPG, Internal Funding	High
Create a Remote Workers Infrastructure.	City of Napa	1-3 Years	High	N/A	HMGP / BRIC	Medium
Promote greater public awareness of disaster preparedness, hazard mitigation, and disaster recovery.	City of Napa	Ongoing	Low	N/A	Internal funding, N/A	High
Maintain and equip an Emergency Operation Center (EOC) for immediate availability in the event of a disaster.	City of Napa	Ongoing	Low	N/A	N/A	High
Work with local businesses to prepare Emergency Preparedness Plans by working with other agencies and advocacy organizations to distribute to and assist businesses with the preparation of plans in the case of disaster.	City of Napa	Ongoing	Low	N/A	N/A	High
Develop short-term shelter options for residents and animals by working with the American Red Cross, Humane Society, animal shelters, pet stores, local veterinarians and others. Identify locations, necessary facilities, responders, etc.	City of Napa	Ongoing	Low	N/A	N/A	High
Develop procedures for inspecting and tagging business for occupancy after a disaster (Post Disaster Restoration Ordinance).	City of Napa	Ongoing	Low	N/A	N/A	Medium
Establish the position of Disaster Coordinator for the City of Napa.	City of Napa	1-3 Years	Medium	N/A	N/A	Medium
Develop a program to identify evacuation routes and procedures for all sensitive facilities and implement programs to practice evacuation and safety maneuvers.	City of Napa	Ongoing	Medium	N/A	N/A	Low
Develop a Climate Action Plan applicable with state and federal law.	City of Napa	Ongoing	Medium	N/A	N/A	Low
<p>Promote intergovernmental cooperation and training. The County supports and will promote intergovernmental cooperation among local, state, and federal public agencies to reduce known hazards; further define uncertain hazards; and provide interagency training to effectively respond and coordinate during hazardous events. In particular, the County will work to develop cooperative working relationships with agencies having responsibility for flood and fire protection.</p> <p>Action Item SAF-1.1a: Participate in education programs. Participate in local, regional, and state education programs regarding fire, flood, and geologic hazards.</p> <p>Action Item SAF-1.1b: Promote safety training. Work to ensure that all county fire departments and local law enforcement, as well as other emergency office staff, identify potentially hazardous and cascading hazardous events and perform regular training biannually.</p>	County				Safety Element Policy/Action	

Provide up-to-date information. Individuals and businesses should have access to up-to-date information that allows them to collaborate with regional agencies and community-based organizations to expand communications, improve hazard preparation and response, and be able to make informed decisions about potential safety hazards and the level of risk they are willing to accept.	County	Safety Element Policy/Action
Perform post-disaster evaluation. Following disasters, conduct an evaluation of redevelopment, particularly after large fires.	County	Safety Element Policy/Action
Develop intra-county evacuation routes. The County shall cooperate with other local jurisdictions to develop intra-county evacuation routes to be used in the event of a disaster within Napa County.	County	Safety Element Policy/Action
Update evacuation routes.	County	Safety Element Policy/Action
Utilize diverse communication technologies.	County	Safety Element Policy/Action
Maximize Alert Napa County registrations.	County	Safety Element Policy/Action
Address mental health in emergency planning.	County	Safety Element Policy/Action
Disseminate emergency planning information (to the ag industry)	County	Safety Element Policy/Action
Update evacuation planning actions	County	Safety Element Policy/Action
36 actions on emergency preparedness - that's a lot already	County	Safety Element Policy/Action
Regularly assess adequacy of emergency response and evacuation routes and identify any need for road extensions to serve neighborhoods that do not have sufficient evacuation routes or access for emergency services.	City of Napa	Safety Element Policy/Action
Work with Downtown businesses to establish plans and procedures guiding response to natural disasters.	City of Napa	Safety Element Policy/Action
Inform and educate community members about natural hazards and safety procedures.	City of Napa	Safety Element Policy/Action
Effectively coordinate disaster response and preparation strategies with County, regional, State, and federal agencies in the event of major seismic activity, flood, or wildland fire.	City of Napa	Safety Element Policy/Action
Coordinate with other local public agencies to facilitate resilient telecommunication networks and infrastructure during disasters.	City of Napa	Safety Element Policy/Action
Facilitate expansion of the telecommunication system to ensure widespread community access during a disaster.	City of Napa	Safety Element Policy/Action
Ensure that City emergency procedures are adequate in the event of potential natural or man-made disasters.	St. Helena	Safety Element Policy/Action
Maintain and periodically update the City's Emergency Response Plan.	St. Helena	Safety Element Policy/Action
Conduct periodic emergency response exercises to test the effectiveness of City emergency response procedures.	St. Helena	Safety Element Policy/Action
Continue to collaborate with regional agencies and neighboring jurisdictions to develop and implement a regional emergency coordination plan and agreement for police, fire, and emergency medical services.	St. Helena	Safety Element Policy/Action
7 policies/actions + 3 policies/actions on emergency management + disaster planning	Yountville	Safety Element Policy/Action
5 Policies/actions on emergency management + disaster planning	Calistoga	Safety Element Policy/Action