



CHAPTER 5

Climate Adaptation Measures

5 CLIMATE ADAPTATION MEASURES

This chapter presents strategies, measures, and actions to reduce risk, adapt, and build resilience to the effects of climate change.

5.1 WHY MUST WE ADAPT?

The effects of climate change are already occurring on global, regional, and local scales and will continue to worsen throughout Napa County. As discussed in the previous chapter, climate change effects in Napa County include: increased wildfire risk; increased temperatures and extreme heat; extreme precipitation, sea level rise, and flooding; drought and water supply impacts; and energy grid impacts. While natural hazards have existed historically in the county and surrounding regions, their frequency, intensity, duration, and/or onset timeframe are projected to increase or change as a result of climate change. The impact from climate change will vary across the county based on physical, social, and economic characteristics.

As local jurisdictions within Napa County (hereinafter referred to as “Napa County Jurisdictions” when describing the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville) and other regional or local agencies continue to reduce local greenhouse gas (GHG) emissions, communities must also be prepared to withstand and adapt to the impacts of climate change. Climate change adaptation involves adjusting to effects that are already occurring and making preparations for those that are anticipated to occur in the future. Climate change adaptation planning enhances community resilience by evaluating jurisdiction-specific vulnerabilities and developing measures to respond to and prepare for current and future impacts.

For Napa County Jurisdictions and other regional or local agencies, existing plans, policies, and programs address climate-related hazards and risks. These may be sufficient for the time being, but new policies are needed to address policy gaps. This Napa County Regional Climate Action and Adaptation Plan (RCAAP) aims to address those gaps.

5.2 CLIMATE ADAPTATION FRAMEWORK AND SUMMARY

The RCAAP's adaptation framework consists of a three-pronged approach: 1) high-level strategies; 2) overarching adaptation strategies; and 3) 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 change effects.
- ▶ **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 and projects. Action(s) may not be necessary if the corresponding measure is already sufficiently specific for implementation.

Based on this approach, six adaptation strategies address climate change vulnerability or specific climate impacts. The first strategy enhances regional climate resilience, irrespective of specific climate impacts. The remaining five strategies directly address specific climate change effects identified in the RCAAP Climate Vulnerability Assessment and summarized in **Chapter 4**. The measures and actions within each strategy define the programs, policies, and regulations that the Napa County Jurisdictions and other regional or local agencies will need to implement to prepare for and adapt to climate change.

5.3 CLIMATE ADAPTATION STRATEGIES, MEASURES, AND ACTIONS

Napa County Jurisdictions' existing hazard mitigation plans and general plan safety elements were reviewed to identify gaps in addressing climate-related hazards and risks (see **Appendix K**). The climate adaptation strategies, measures, and actions in this chapter fill gaps to enhance Napa County Jurisdictions' climate resilience. **Table 5.1** below lists these six adaptation strategies, providing further descriptions and context for each strategy, along with the specific climate adaptation measures associated with each strategy. Each individual measure is presented and described in more detail, along with implementing actions for each measure, on the subsequent pages after **Table 5.1**.

Table 5.1 Climate Adaptation Strategies and Measures

Strategy ID	Strategy	Strategy Description and Associated Measures
ALL	Improve Napa County Jurisdictions' Overall Climate Resilience	<p>This strategy prepares Napa County Jurisdictions for impacts from more than one climate hazard or related stressors. Napa County Jurisdictions already have 50+ existing hazard mitigation actions and safety element measures that target multiple hazards (see Appendix K). Eight measures are included under this strategy, as follows:</p> <ul style="list-style-type: none"> ▶ Measure ALL-1: Implement and Monitor Existing Plans ▶ Measure ALL-2: Promote Region-Wide Implementation of Relevant Measures and Actions ▶ Measure ALL-3: Increase the Climate Resilience of Existing and New Residential and Commercial Development ▶ Measure ALL-4: Integrate Climate Change and Health Equity into All Government Initiatives and Operations ▶ Measure ALL-5: Improve the Resilience of the Region's Transportation Infrastructure ▶ Measure ALL-6: Improve the Resilience of the Region's Agricultural Industry ▶ Measure ALL-7: Protect the Region's Biodiversity and Ecosystems from Climate Stressors ▶ Measure ALL-8: Integrate Climate Change into Emergency Management Planning & Response
FIRE	Prepare and Adapt to Increased Wildfire Risk	<p>This strategy prepares Napa County Jurisdictions for more frequent and severe wildfire events, while also reducing risk in communities and recognizing the role that beneficial fire plays in the county's ecosystems. Napa County Jurisdictions already have around one hundred existing wildfire-focused hazard mitigation actions and safety element measures, along with efforts identified in relevant local plans, such as community wildfire protection plans. Six measures are included under this strategy (listed below), which can collectively help reduce the spread and severity of wildfire and offer important benefits, such as the reduction of black carbon (i.e., a short-lived climate pollutant).</p> <ul style="list-style-type: none"> ▶ Measure FIRE-1: Map and Identify Areas with Increasing Risk to Fire Hazards ▶ Measure FIRE-2: Establish Post-Fire Ecological Recovery Programs ▶ Measure FIRE-3: Apply Wildfire Mitigation Best Practices Countywide ▶ Measure FIRE-4: Plan New Development Strategically in High or Very High Fire Hazard Severity Zones ▶ Measure FIRE-5: Enhance Forest Health and Wildfire Resilience through Active Management ▶ Measure FIRE-6: Minimize Wildfire Smoke Exposure

Strategy ID	Strategy	Strategy Description and Associated Measures
TEMP	Prepare for Increased Temperatures and More Frequent Extreme Heat Events	<p>This strategy focuses on preparing Napa County Jurisdictions for increased temperatures and more frequent extreme heat events. Napa County Jurisdictions already have six existing hazard mitigation actions and safety element measures that address increased temperatures and extreme heat. Five measures are included under this strategy, as follows:</p> <ul style="list-style-type: none"> ▶ TEMP-1: Protect Outdoor Workers from Extreme Heat ▶ TEMP-2: Create or Enhance Urban Greening and Agricultural Programs ▶ TEMP-3: Alleviate Extreme Heat Effects on Vulnerable Populations ▶ TEMP-4: Protect Critical Infrastructure from Extreme Heat ▶ TEMP-5: Promote Cool Roofs, Passive Solar Design, Green Roofs, and Rooftop Gardens
FLOOD	Prepare for More Frequent Extreme Precipitation and Flooding Events, Combined with Sea Level Rise Threats	<p>This strategy focuses on improving Napa County Jurisdictions' resilience against more frequent and extreme precipitation and flooding events, as well as the threat posed by sea level rise. Napa County Jurisdictions already have around 90 existing hazard mitigation actions and safety element measures targeting these climate stressors. Twelve measures are included under this strategy, as follows:</p> <ul style="list-style-type: none"> ▶ FLOOD-1: Implement Low-Impact Development to Reduce Local Flooding ▶ FLOOD-2: Assess and Upgrade Stormwater Systems for Intense Rainfall Events ▶ FLOOD-3: Improve Sewage and Solid Waste Management Infrastructure ▶ FLOOD-4: Identify Flood Control Sites, Prioritizing Green Infrastructure and Wetland Restoration ▶ FLOOD-5: Upgrade or Relocate Flood-Exposed Infrastructure and Facilities Identified via GIS Analysis ▶ FLOOD-6: Replant Bare or Disturbed Areas ▶ FLOOD-7: Protect Freshwater from Contamination, Degradation, or Loss ▶ FLOOD-8: Enhance Flood Warnings and Information Sharing ▶ FLOOD-9: Adapt to the Long-Term Impacts of Sea Level Rise ▶ FLOOD-10: Monitor Sea Level Rise Data and Steer Development Away from Vulnerable Areas ▶ FLOOD-11: Factor in Sea Level Rise When Planning Capital Improvements and New Developments ▶ FLOOD-12: Preserve Undeveloped Land to Help Ecosystems Adapt to Sea Level Rise

Strategy ID	Strategy	Strategy Description and Associated Measures
DROUGHT	Prepare for More Frequent Drought Events and Enhance the Region's Overall Water Supply Resilience	<p>This strategy focuses on preparing Napa County Jurisdictions for more frequent drought events and enhancing the region's overall water supply resilience. Napa County Jurisdictions already have around 23 existing hazard mitigation actions and safety element measures that address drought events and water supply resilience. Five measures are included under this strategy, as follows:</p> <ul style="list-style-type: none"> ▶ DROUGHT-1: Implement Water Conservation and Explore Water Reuse Options ▶ DROUGHT-2: Support Agriculture in Adapting to More Frequent and Severe Droughts ▶ DROUGHT-3: Evaluate Water Supply Vulnerabilities and Develop Resilience Strategies ▶ DROUGHT-4: Enhance Water Conservation Outreach for Residents and Businesses ▶ DROUGHT-5: Partner with Agencies to Secure Future Water Supplies, Explore Alternatives, and Enhance Capacity
ENERGY	Improve the Region's Energy Grid Resilience	<p>This strategy focuses on improving Napa County Jurisdictions' energy grid resilience, which includes some overlap with the intended outcomes of other strategies (e.g., FIRE, TEMP, FLOOD). Napa County Jurisdictions already have around 10 existing hazard mitigation actions and safety element measures for energy grid resilience. Four measures are included under this strategy, as follows:</p> <ul style="list-style-type: none"> ▶ ENERGY-1: Transition to Climate-Smart Energy ▶ ENERGY-2: Strengthen Energy Infrastructure Resilience and Enhance Redundancy via Collaboration ▶ ENERGY-3: Reduce Energy Grid Strain During Extreme Heat ▶ ENERGY-4: Install Backup Power at Critical Facilities, Resilience Centers, and Shelters

MEASURE ALL-1: Implement and Monitor Existing Plans

Napa County Jurisdictions will implement and continuously monitor the effectiveness of existing policies, actions, and measures outlined in existing local and regional hazard mitigation plans and general plan safety elements. This process is essential to maintaining adaptive, data-driven solutions that strengthen the region’s long-term climate preparedness as well as hazard mitigation efforts. Regular evaluations will also help refine approaches, ensure alignment with best practices, and enhance community resilience.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Energy Security



Public Health & Wellbeing



Quality of Life

ACTIONS

ALL-1.1: Collaborate among departments and jurisdictions to ensure progress on existing actions and measures already included in other plans.

ALL-1.2: Monitor, evaluate, and update the County’s Multi-Jurisdictional Hazard Mitigation Plan and the City of Napa’s Local Hazard Mitigation Plan to ensure progress is made on proposed hazard mitigation actions, especially extreme and high priority actions during the hazard mitigation planning processes. Make changes and updates to these actions if necessary.

MEASURE ALL-2: Promote Region-Wide Implementation of Relevant Measures and Actions

Napa County Jurisdictions will implement measures and actions applicable throughout the region to ensure a coordinated and effective response to the effects of climate change. A consistent approach across jurisdictions enhances community resilience, reduces duplication of efforts, and maximizes resource efficiency. It also fosters regional collaboration, allowing local governments, agencies, and stakeholders to share best practices, leverage funding opportunities, and address cross-boundary climate risks.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Public Health & Wellbeing



Quality of Life



Social Cohesion

ACTIONS

ALL-2.1: Advocate for countywide measures and actions, 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

Napa County Jurisdictions will increase climate resilience of residential and commercial development through structural strengthening and hardening, which is essential to safeguarding communities and economic stability from multiple climate stressors, such as extreme heat, wildfires, and flooding. Strengthening buildings reduces the risk of damage and costly repairs, minimizes displacement of residents and businesses, and enhances public safety during disasters. Moreover, by integrating resilient design and materials, developments can better withstand climate hazards while lowering long-term maintenance and insurance costs.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ California Department of Forestry and Fire Protection (CAL FIRE)
- ▶ Napa Communities Firewise Foundation (NCFF)

ACTIONS

ALL-3.1: Require owners/developers of existing and new residential and commercial developments in Federal Emergency Management Agency (FEMA) 100-year and 500-year floodplains to waterproof structures and foundations, use flood-resistant materials, retrofit existing structures with flood-resistant features, or other appropriate flooding mitigation measures. This action builds on the County's floodplain management ordinance codified in Section 16.04.690.

ALL-3.2: Reduce wildfire risk in existing and new residential and commercial developments by requiring owners/developers to create and maintain defensible space and fire breaks; harden structures with fire-resistant materials; or other appropriate wildfire risk reduction measures.

ALL-3.3: Encourage and incentivize the use of pervious and reflective paving surfaces, climate-smart landscaped surfaces in new and existing developments to prepare for more frequent extreme heat, drought, and flooding events.

MEASURE ALL-4: Integrate Climate Change and Health Equity Into All Government Initiatives and Operations

Napa County Jurisdictions will incorporate climate change and health equity into all governmental initiatives and operations to ensure that policies are environmentally sustainable and socially just. Actions under this measure include establishing a structural framework, working on public health initiatives, and collaborating with local medical providers. This effort helps address the disproportionate impacts of climate change on vulnerable communities, ensuring they have access to resources, services, and protections in the face of climate risks. Moreover, this approach promotes inclusive decision-making, reduces inequities, and strengthens resilience, ensuring everyone, regardless of socioeconomic status, can adapt to and thrive in a changing climate.

Applicable Jurisdictions

All

Partners

- ▶ California Department of Public Health (CDFH)
- ▶ Live Healthy Napa County

Co-Benefits



Public Health & Wellbeing



Quality of Life

ACTIONS

ALL-4.1: Adopt a "Health in All Policies" approach through a resolution considered 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.

ALL-4.2: Ensure that public health initiatives serving vulnerable communities address the disproportionate 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).

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

Napa County Jurisdictions will improve the resilience of the region's transportation infrastructure. Jurisdictions will revise maintenance protocols for transportation systems by considering climate vulnerabilities, as well as collaborating with regional partners to identify vulnerable populations and alternative routes and stops to prepare for extreme events. A resilient transportation network ensures that critical routes remain operational during disasters, allowing for efficient evacuation, access to emergency services, and continued movement of goods. Moreover, strengthening infrastructure also reduces the long-term costs of repairs and disruptions, and enhances community well-being by providing reliable, safe travel options.

Applicable Jurisdictions

All

Partners

- ▶ California Department of Transportation (Caltrans)
- ▶ Napa Valley Transportation Authority

Co-Benefits



Social Cohesion

ACTIONS

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.

ALL-5.2: Coordinate with community members, transportation agencies, and private entities to identify vulnerable populations served by local and regional transportation, transit, and active transportation corridors in the face of climate change impacts.

ALL-5.3: Collaborate with regional transportation agencies to identify alternative routes and stops to mitigate disruptions in vital transportation routes in case of damage or closure of primary infrastructure due to extreme events.

ALL-5.4: Support the Napa Valley Transportation Authority (NVTa) in developing an emergency traffic operations center, ensuring all-electric transit fleet can meet community needs during evacuations and other emergency scenarios resulting from climate hazards.

MEASURE ALL-6: Improve the Resilience of the Region’s Agricultural Industry

Climate change threatens Napa County’s agricultural industry by impacting crop yields, quality, and overall productivity. Adapting to climate change is essential to preserving Napa County’s agricultural heritage, ensuring the long-term sustainability of wine production, and maintaining the regional economy. To ensure the ongoing viability of agriculture as conditions change, Napa County Jurisdictions will enhance agricultural climate resilience through locally tailored actions that supplement existing state safety and regulatory requirements. These may include strategies to strengthen workforce protection, advance sustainable agricultural practices, and incorporate climate adaptation considerations into agricultural planning and operations.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Economic Opportunity



Public Health & Wellbeing

ACTIONS

ALL-6.1: Develop locally tailored agricultural heat-resilience guidelines and other safety standards that consider enhancements beyond the requirements of the California Division of Occupational Safety and Health (Cal/OSHA) (e.g., providing permanent shaded rest stations, enhanced hydration station spacing, flexible work-shift scheduling during extreme heat).

ALL-6.2: Expand access to bilingual training programs for the agricultural workforce on heat and smoke exposure risks, first aid and emergency responses, and other related items.

ALL-6.3: Install or retrofit shade structures, cooling misters, and ventilated barns to reduce heat stress on livestock.

ALL-6.4: Create and maintain livestock evacuation plans, including shelter locations and rapid deployment logistics during wildfires and other climate hazard events.

ALL-6.5: Promote and support regenerative agricultural practices (e.g., soil health improvements, cover cropping, shade plantings, and water-efficient irrigation) to reduce crop losses from extreme heat events and other climate extremes.

MEASURE ALL-7: Protect the Region's Biodiversity and Ecosystems from Climate Stressors

Napa County Jurisdictions will guard Napa County's biodiversity and ecological habitats from climate stressors, which is essential for preserving the region's natural resources, ecosystem services, and overall environmental health. Climate change can disrupt habitats, alter species distribution, and threaten biodiversity, which in turn affects agriculture, water resources, and tourism. By protecting ecosystems from these impacts, Napa County Jurisdictions can maintain resilient natural systems that support carbon sequestration, water filtration, and biodiversity, contributing to climate adaptation efforts and long-term sustainability for both human and wildlife communities.

Moreover, this measure and action ALL-7.4 below align with GHG reduction measure AG-3: Enhance Carbon Farming Practices in the Region and its associated actions.

Applicable Jurisdictions

All

Partners

- ▶ California Department of Fish and Wildlife (CDFW)
- ▶ California Department of Conservation (DOC)
- ▶ Napa County Groundwater Sustainability Agency (NCGSA)
- ▶ Napa Green

- ▶ Napa County Resource Conservation District (Napa RCD)
- ▶ Federally recognized and non-recognized tribes and indigenous communities

Co-Benefits



Ecosystem Health

ACTIONS

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. Partner with the Napa RCD to advance habitat restoration efforts, with emphasis on wetlands, riparian areas, and wildlife corridors, to support ecosystem connectivity and long-term resilience.

ALL-7.2: Coordinate with the NCGSA to fully implement the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan: Napa Valley Subbasin (ISW/GDE Workplan).

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.

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.

ALL-7.5: Partner with Napa RCD to expand youth education and workforce development programs focused on climate resilience, biodiversity protection, and ecosystem restoration, building long-term community capacity.

MEASURE ALL-8: Integrate Climate Change into Emergency Management Planning & Response

Incorporating climate change considerations into emergency management planning helps communities proactively address evolving risks. Napa County Jurisdictions will identify emerging threats and adjust emergency plans accordingly by using climate data and future projections. This measure also involves siting “resilience hubs.” Integrating climate change into emergency management planning can also help jurisdictions allocate resources effectively and develop more robust emergency response protocols, ultimately safeguarding communities and reducing damage. Furthermore, this integration promotes proactive planning by shifting from a reactive to a forward-thinking approach, ensuring that emergency management remains effective as climate and environmental conditions change.

Applicable Jurisdictions

All

Partners

- ▶ FEMA
- ▶ California Office of Environmental Health Hazard Assessment (OEHHA)

Co-Benefits



Public Health & Wellbeing

ACTIONS

ALL-8.1: Incorporate insights from the Climate Vulnerability Assessment across all stages of emergency management planning, encompassing mitigation, preparedness, response, and recovery endeavors.

ALL-8.2: Ensure that emergency management activities are executed equitably by prioritizing the safety of identified vulnerable communities within the county.

ALL-8.3: Identify potential locations throughout the county for siting new community resilience centers or “resilience hubs” through new construction or repurposing of existing facilities.

MEASURE FIRE-1: Map and Identify Areas with Increasing Risk to Fire Hazards

Napa County Jurisdictions will map and identify locations that are newly at risk, or at higher risk for fire hazards because of climate change. This effort improves awareness by helping communities understand where wildfire risk is growing, allowing them to prepare and respond more effectively. Such mapping and identification process also guides resource allocation by informing planners and emergency services on where to prioritize mitigation measures, infrastructure investments, and enhanced emergency preparedness and response efforts. Furthermore, this process can provide essential data for early warning systems and fire prevention strategies, potentially reducing damage and saving lives.

Applicable Jurisdictions

All

- ▶ Napa RCD

Partners

- ▶ CAL FIRE
- ▶ NCFF

Co-Benefits

N/A

ACTIONS

FIRE-1.1: Work with CAL FIRE, Napa County Fire Marshall, NCFF, American Canyon Fire Protection District, and fire departments 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: Establish Post-Fire Ecological Recovery Programs

Napa County Jurisdictions will coordinate with State agencies or other partners to establish post-fire ecological recovery programs that rebuild and strengthen ecosystems damaged by wildfires, ensuring they can better withstand future climate stressors. Such post-fire ecological recovery programs can also promote the recovery of vegetation and soil health, which minimizes erosion, flooding, and subsequent fire hazard risks. Moreover, multi-agency coordination will leverage combined knowledge and funding to improve effective recovery plans.

Applicable Jurisdictions

All

Partners

- ▶ CAL FIRE
- ▶ NCCF
- ▶ CDFW

- ▶ US Fish and Wildlife
- ▶ USDA Natural Resources Conservation Service
- ▶ Napa RCD

Co-Benefits



Ecosystem Health

ACTIONS

FIRE-2.1: Coordinate with federal, state, and local partners to establish post-fire ecological restoration programs. Ecological restoration endeavors may reintroduce native species and ecologically beneficial vegetation management techniques (e.g., prescribed burns, invasive species removal) to reduce the potential for high-intensity wildfires and improve the resilience of the county's wildlands.

MEASURE FIRE-3: Apply Wildfire Mitigation Best Practices Countywide

Consistent with the intent of Measure All-2, application of wildfire mitigation best practices such as creating defensible space, home hardening, and fuel modification across the landscape can enhance community and ecosystem resilience while minimizing the potential for future wildfires. Napa County Jurisdictions will ensure that the best practices for wildfire mitigation that apply to the region are implemented consistently throughout the county. In addition, uniform standards across the county also enable better coordination of resources and response efforts. Moreover, regional preventative actions reduce the need for expensive, reactive recovery efforts after wildfires and, therefore, help to avoid potentially high long-term rebuilding and disaster recovery costs.

Applicable Jurisdictions

All

Partners

- ▶ CAL FIRE
- ▶ NCCF

▶ Napa RCD

Co-Benefits

N/A

ACTIONS

FIRE-3.1: Ensure that wildfire mitigation best practices, such as creating defensible space, home hardening, and fuel reduction projects are planned and implemented in all jurisdictions in the region. This may require developing regionally consistent local plans, zoning and building 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. Wildfire mitigation best practices should also be implemented with caution to prevent increases in erosion and runoff, impacts to sensitive species and water quality.

MEASURE FIRE-4: Plan New Development Strategically in High or Very High Fire Hazard Severity Zones

As discussed in the RCAAP Climate Vulnerability Assessment, High or Very High Fire Hazard Severity Zones are areas identified by CAL FIRE as having a significant wildfire risk. Napa County Jurisdictions will direct growth away from or require enhanced safety measures in high-risk wildfire areas. This planning effort would ensure that new infrastructure and other developments are designed and built to withstand increasing fire hazards. In addition, strategic development planning would mitigate future expenses related to emergency response, recovery, and rebuilding in fire-prone areas.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ CAL FIRE
- ▶ NCCF

ACTIONS

FIRE-4.1: Plan and design new development to avoid or minimize risk in High or Very High Fire Hazard Severity Zones throughout the county.

FIRE-4.2: 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 Health and Wildfire Resilience through Active Management

Napa County Jurisdictions will collaborate with federal, state, regional, and local partners to enhance forest health and wildfire resilience. This effort is critical to restore natural fire regimes and reduce widespread tree mortality and related conditions that can lead to more severe and catastrophic wildfires. Healthy forest management actions include decreasing or modifying the amount of fuel, such as dead material in the understory or overall tree density, and promoting fire-adapted ecosystems. Healthy forests also better withstand and recover from wildfire events and other climate-related stresses. Therefore, this measure and the actions developed below collectively help mitigate wildfire risks and support long-term forest health in a changing climate.

Applicable Jurisdictions

All

- ▶ Napa RCD
- ▶ Napa Firewise Foundation

Partners

- ▶ US Forest Service
- ▶ Bureau of Land Management
- ▶ CAL FIRE

Co-Benefits



Ecosystem Health



Public Health & Wellbeing

ACTIONS

FIRE-5.1: Develop a countywide forest health and wildfire resilience vision that assesses current conditions and helps to inform project prioritization and management decisions to improve forest health and wildfire resilience.

FIRE-5.2: Identify key metrics of forest health and wildfire resilience to track over time, and implement a monitoring program aligned with those metrics.

FIRE-5.3: Plan and implement forest management projects (e.g., weed control, planting, thinning, and other vegetation treatment types) following best practices, considering future climate conditions, and aligning with natural wildfire regimes.

MEASURE FIRE-6: Minimize Wildfire Smoke Exposure

Napa County Jurisdictions will collaborate with regional partners to increase public awareness and community resilience against wildfire smoke, supporting residents to take protective actions during wildfires. Outreach and education efforts will supplement existing state smoke protection standards and improve community access to information, resources, and protective measures. By building enhanced local capacity and awareness, communities can reduce exposure to potentially harmful air quality conditions, better coordinate with emergency services, and adapt to the increasing frequency of wildfires and smoke hazards.

Applicable Jurisdictions

All

Partners

- ▶ Cal/OSHA
- ▶ Bay Area Air District
- ▶ Businesses that employ outdoor workers

Co-Benefits



Public Health & Wellbeing

ACTIONS

FIRE-6.1: Partner with the Cal/OSHA and other regional agencies to promote educational campaigns on the health effects of wildfire smoke and preventative measures.

FIRE-6.2: Enhance and promote early warning systems that alert the public to upcoming smoke events via multiple media forms (e.g., radio, text messaging, ALERT Napa County). Provide real-time updates on air quality.

FIRE-6.3: Support local employers in improving wildfire smoke protection by providing guidance, training resources, and access to information on personal protective equipment, indoor air filtration options, and recommended practices for modifying work processes during hazardous air quality events.

MEASURE TEMP-1: Protect Outdoor Workers from Extreme Heat

Napa County Jurisdictions will support employers and regional partners to provide outdoor workers with sufficient protection from extreme heat conditions, ensuring healthy and safe working environments. Local programs may include enhanced outreach, training, and access to protective resources during extreme heat events. Offering outdoor workers sufficient protection from extreme heat conditions reduces the risks of heat stress, dehydration, and heat-related illnesses. Such efforts will also help build a more adaptable workforce prepared for increasing extreme heat events. Furthermore, these efforts promote equity by safeguarding vulnerable populations most exposed to extreme weather conditions.

Applicable Jurisdictions

All

Partners

- ▶ Cal/OSHA
- ▶ Businesses that employ outdoor workers

Co-Benefits



Public Health & Wellbeing

ACTIONS

TEMP-1.1: Collaborate across jurisdictions to share resources, update protocols, and coordinate efforts, consistent with existing heat-related illness prevention regulations (CA Code of Regulations, Title 8), to protect outdoor workers' activities during extreme heat events, such as a threshold of maximum temperature allowed or mandatory breaks after a certain period.

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 on heat impacts, and vector-borne diseases.

MEASURE TEMP-2: Create or Enhance Urban Greening and Agriculture Programs

Napa County Jurisdictions will create or enhance urban greening and urban agriculture programs and engage community-based organizations as partners on these programs. Urban greening and urban agriculture programs can further extreme heat adaptation by promoting and expanding tree planting, landscaping, parks, or gardens, all of which increase vegetation that cools urban areas by providing shade, increasing evapotranspiration, and reducing the urban heat island effect. Urban agriculture also supports local food production and sustainable resource use. Moreover, community-driven programs ensure adaptation strategies meet local needs and build social cohesion.

Applicable Jurisdictions

All

Partners

- California Urban Forests Council

Co-Benefits



Quality of Life



Social Cohesion

ACTIONS

TEMP-2.1: Develop policies or strategies to foster the growth and preservation of urban forests, include best practices for removing unhealthy, dangerous, or destructive trees, and the planting and long-term maintenance of site-appropriate trees.

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.

TEMP-2.3: Ensure newly established urban parks and trail systems are connected to high-density residential areas, workplaces, and offices.

TEMP-2.4: Increase parking lot shading by revising local parking lot standards to require larger minimum tree planter sizes for better tree health. Prioritize tree species in parking lots that maximize carbon sequestration potential. For example, native trees adapted to Napa County that are resistant to disease and insects are better at sequestering carbon than trees not adapted to Napa County's climate.

TEMP-2.5: Enhance shading and reduce heat island effects for active commuters and transit riders by increasing greenery along bike paths, sidewalks, pathways, streets, and transit stops.

MEASURE TEMP-3: Alleviate Extreme Heat Effects on Vulnerable Populations

Napa County Jurisdictions will collaborate with regional transportation partners to alleviate the effects of extreme heat on populations dependent on walking and/or public transportation. Extreme heat adversely and disproportionately impacts vulnerable populations dependent on walking and/or public transportation. Reducing heat impacts through shade structures, urban greening, improving access to drinking water in public places, and other actions in the region's transportation system will provide more equitable extreme heat protection. Furthermore, protecting these vulnerable populations strengthens overall public health and ensures that essential transportation remains safe and reliable as extreme heat events become more frequent.

Applicable Jurisdictions

All

Partners

- ▶ Caltrans
- ▶ Napa Valley Transportation Authority

Co-Benefits



Public Health & Wellbeing



Quality of Life

ACTIONS

TEMP-3.1: Partner with public works departments and regional transit providers to provide heat-mitigating materials on pedestrian walkways and transit stops, such as site-appropriate shade trees and/or shade structures.

TEMP-3.2: Collaborate with regional partners to identify cool pavement technologies best suited for different applications in the county.

TEMP-3.3: Install water fountains at transit stops if possible.

TEMP-3.4: Improve shading in high pedestrian traffic areas such as downtown Napa.

MEASURE TEMP-4: Protect Critical Infrastructure from Extreme Heat

Napa County Jurisdictions will improve the resilience of critical facilities and infrastructure vulnerable to extreme heat events. This measure ensures the reliability of hazard-prone critical facilities and infrastructure by keeping essential services like power, water, and transportation functioning during extreme heat events. This measure also prevents cascading failures by avoiding breakdowns in one system that could trigger failures in others.

Applicable Jurisdictions	Co-Benefits
All	N/A

Partners
► N/A

ACTIONS

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: Promote Cool Roofs, Passive Solar Design, Green Roofs, and Rooftop Gardens

Napa County Jurisdictions will encourage or require the installation or use of cool-roof technologies, passive solar home design, green roofs, and rooftop gardens via building code mandates and developing incentive programs. Encouraging or requiring these technologies helps reduce heat absorption by reflecting or dissipating heat, lowering indoor and outdoor temperatures. They also boost energy efficiency by cutting cooling demands and reducing energy costs during heat events. Moreover, these technologies support stormwater management and increase urban greenery, contributing to broader sustainability.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Energy Security



Quality of Life

ACTIONS

TEMP-5.1: Consider adopting a mandatory green building code that requires installation of cool roof technologies for new development consistent with the upcoming 2025 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Building Code, Title 24, Part 6). Cool roofs counteract the urban heat island effect from roof exposure to sunlight.

TEMP-5.2: Consider developing 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. Emphasize education that demonstrates that passive solar design will yield long-term energy savings for the building lifetime.

TEMP-5.3: Consider developing 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. Emphasize education that demonstrates that rooftop gardens and green roofs can yield long-term energy savings for the building lifetime.

MEASURE FLOOD-1: Implement Low-Impact Development to Reduce Local Flooding

Napa County Jurisdictions will consider the implementation of low-impact development (LID) to reduce local flooding. As discussed in the Climate Vulnerability Assessment prepared for this RCAAP, the county may experience an increase in the frequency and intensity of flood events due to the increasing occurrence of extreme precipitation events. LID techniques absorb and slow down stormwater, reducing runoff. By capturing water where it falls, LID also decreases the volume and speed of water reaching drainage systems to reduce peak flows. Moreover, LID can support the restoration of natural hydrology, which helps prevent water from overwhelming local infrastructure. In addition, natural filtration processes in LID systems help remove pollutants from stormwater before entering waterways and can then improve water quality.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Quality of Life

ACTIONS

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 square feet (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.

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 sq ft of impervious surface.

MEASURE FLOOD-2: Assess and Upgrade Stormwater Systems for Intense Rainfall Events

Napa County Jurisdictions will upgrade stormwater systems to prepare for more intense rainfall events by investing in green infrastructure and implementing regular maintenance and clean-ups. Evaluating and improving stormwater infrastructure ensures that such systems can handle extreme rainfall, reduce flood risks, minimize damage, and enhance community resilience amid more frequent severe storm and flood events.

Applicable Jurisdictions

All

Partners

- ▶ Private developers

- ▶ Homeowners

Co-Benefits



Ecosystem Health

ACTIONS

FLOOD-2.1: Invest in green infrastructure, such as rain gardens, bioswales, stormwater tree trenches, green roofs, and detention basins to reduce peak runoff, filter stormwater, and increase groundwater recharge.

FLOOD-2.2: Maintain flood control infrastructure, such as gutters, drainage ditches, and culverts to maximize drainage capacity.

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 Permits.

MEASURE FLOOD-3: Improve Sewage and Solid-Waste Management Infrastructure

Napa County Jurisdictions will collaborate with regional sanitation districts and waste management agencies to upgrade sewage and solid-waste management infrastructure. Improving such infrastructure helps prevent contamination and ensures wastewater and litter do not enter the storm drain system, preventing contamination during flooding events and minimizing the public's exposure to infectious hazards during such events. Hardening such infrastructure will also help keep essential services running during extreme weather, supporting community safety and well-being.

Applicable Jurisdictions

All

Partners

- Napa Sanitation District

Co-Benefits



Public Health & Wellbeing

ACTIONS

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 Flood Control Sites, Prioritizing Green Infrastructure and Wetland Restoration

Napa County Jurisdictions will collaborate with regional partners to identify new flood control projects that prioritize green infrastructure and wetland restoration. These nature-based solutions absorb and slow stormwater, reduce peak flows, and improve stormwater management while also supporting groundwater recharge. In addition, proactively identifying and developing multi-benefit flood control sites can minimize flood damage and economic losses, helping build more resilient communities. Moreover, wetlands and green infrastructure provide co-benefits such as improved air and water quality, enhanced biodiversity, carbon sequestration, and new recreational opportunities. Efforts will be made to collaborate and work in coordination and consultation with federally recognized and non-recognized tribes and indigenous communities with cultural ties to the region.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Flood Control and Water Conservation District
- ▶ Napa RCD
- ▶ NCGSA
- ▶ Napa Green
- ▶ Other agricultural and environmental organizations

- ▶ Federally recognized and non-recognized tribes and indigenous communities

Co-Benefits



Ecosystem Health

ACTIONS

FLOOD-4.1: Identify new locations suitable for multi-benefit flood control (e.g., underutilized agricultural areas, small streams) that also support groundwater recharge, habitat restoration, and carbon sequestration. Work with Napa County Flood Control and Water Conservation District, Napa RCD, the NCGSA, and other agricultural and environmental organizations to evaluate and prioritize sites.

FLOOD-4.2: Advance wetland restoration projects that provide multiple resilience benefits, including improved floodwater storage, groundwater recharge, water quality enhancement, carbon sequestration, and expanded habitat for fish and wildlife. Wetlands also act as natural buffers, reducing flood risks for nearby communities while supporting biodiversity and long-term ecosystem health.

MEASURE FLOOD-5: Upgrade or Relocate Flood-Exposed Infrastructure and Facilities Identified via GIS Analysis

Napa County Jurisdictions will upgrade or relocate flood-exposed infrastructure and critical facilities via GIS analysis. GIS analysis is essential because GIS-based data pinpoints where upgrades or relocations are most needed. Upgrading or relocating such infrastructure enhances its resilience during flood events and ensures that essential infrastructure remains operational during disasters.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- Napa County Flood Control and Water Conservation District

ACTIONS

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

Napa County Jurisdictions will replant areas with bare soil or significant disturbance due to natural hazards and/or human factors. The restoration of such bare or disturbed areas is important because it stabilizes soil, reduces erosion, and increases water absorption, which helps mitigate flood risks and enhances ecosystem resilience. Severe loss of cover, after wildfire for example, is directly related to increased runoff and has an immediate impact on downstream flood risk. As wildfires become more frequent and rain events intensify, restoration strategies will need to evolve, for instance transitioning some areas to appropriate vegetation (e.g., from Douglas Fir to more heat-resilient Oak woodlands) to ensure long-term soil stability and stronger post-fire recovery.

Applicable Jurisdictions

All

Partners

- ▶ CAL FIRE
- ▶ Napa RCD
- ▶ CDFW

- ▶ US Army Corps of Engineers

- ▶ USDA Farm Service Agency

Co-Benefits



Ecosystem Health

ACTIONS

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: Protect Freshwater from Contamination, Degradation, or Loss

Napa County Jurisdictions will collaborate with regional partners to safeguard the region’s freshwater supply against contamination, degradation, or loss via infrastructure improvements and watershed protections. Safeguarding freshwater is crucial because floods can introduce contaminants, overwhelm treatment systems, and degrade water quality, risking public health and essential water services. Efforts will be made to collaborate and work in coordination and consultation with federally recognized and non-recognized tribes and indigenous communities with cultural ties to the region.

Applicable Jurisdictions

All

- ▶ Federally recognized and non-recognized tribes and indigenous communities

Partners

- ▶ Napa County Flood Control and Water Conservation District

Co-Benefits



Public Health & Wellbeing

ACTIONS

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 Napa County Jurisdictions’ ability to provide drinking water to its residents during flood events.

MEASURE FLOOD-8: Enhance Flood Warnings and Information Sharing

Napa County Jurisdictions will work with regional partners to improve flood warning and information dissemination. Timely alerts allow communities to prepare and evacuate if necessary. Early warnings help minimize property damage and personal harm. In addition, clear communication enables authorities and emergency services to respond more effectively. Moreover, quick and accurate information is key to protecting lives during flood events.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Office of Emergency Services
- ▶ Napa County Flood Control and Water Conservation District

- ▶ Napa RCD
- ▶ National Weather Service

Co-Benefits



Public Health & Wellbeing

ACTIONS

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). When appropriate, publicize information regarding potential 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 learn Napa County's evacuation procedures in the case of flooding.

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: Adapt to the Long-Term Impacts of Sea Level Rise

Adapting to the long-term impacts of sea level rise is critical for Napa County and can be achieved by reducing risks to coastal roads, utilities, and public facilities. Napa County Jurisdictions will conduct a detailed asset-level sea level rise vulnerability assessment to identify at-risk infrastructure and properties. Based on the vulnerability assessment, jurisdictions will develop a regional sea level rise adaptive management plan. Moreover, minimizing flood damage when combined with coastal flooding is also crucial. Such adaptation efforts support long-term economic stability, particularly in coastal tourism. Efforts will be made to collaborate and work in coordination and consultation with federally recognized and non-recognized tribes and indigenous communities with cultural ties to the region.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

Partners

- ▶ San Francisco Bay Conservation and Development Commission
- ▶ Metropolitan Transportation Commission

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council
- ▶ Federally recognized and non-recognized tribes and indigenous communities

Co-Benefits

N/A

ACTIONS

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.

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: Monitor Sea Level Rise Data and Steer Development away from Vulnerable Areas

Napa County and the City of American Canyon will continue their collaboration on sea level rise data analysis, as well as coordinate with NCGSA to evaluate and monitor sea level rise. Ongoing sea level rise analysis informs data-driven planning, ensuring new development avoids high-risk zones. This effort also reduces flood damage when combined with future sea level rise, minimizes costly future adaptations, and protects communities and infrastructure as sea levels rise.

Moreover, Senate Bill (SB) 272, enacted in 2023, requires a local government within the coastal zone or within the jurisdiction of the San Francisco Bay Conservation and Development Commission to develop a sea level rise plan as part of either a local coastal program or a subregional San Francisco Bay shoreline resiliency plan on or before January 1, 2034. These plans aim to coordinate local efforts to address the impacts of rising sea levels on communities, infrastructure, and ecosystems. Implementation of Measure Flood-10 and the implementing actions below can serve as initial steps to developing sea level rise plans for American Canyon and unincorporated Napa County.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

- ▶ Federally recognized and non-recognized tribes and indigenous communities

Partners

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council
- ▶ NCGSA

Co-Benefits

N/A

ACTIONS

FLOOD-10.1: Napa County’s current planning mechanisms already include supporting the ongoing analysis of sea level rise data as an existing action. Napa 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.

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: Factor in Sea Level Rise When Planning Capital Improvements and New Developments

Napa County Jurisdictions will consider the implications of sea level rise when planning future capital improvement and new development projects. Factoring in sea level rise during the planning process is crucial because it ensures infrastructure and new developments are resilient over time, minimizes costly future retrofits, and protects communities from increasing coastal hazards. Jurisdictions will implement this measure by updating capital improvement plans using sea level rise data and requiring new development projects to implement sufficient protective measures. Efforts will be made to collaborate and work in coordination and consultation with federally recognized and non-recognized tribes and indigenous communities with cultural ties to the region.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

- Federally recognized and non-recognized tribes and indigenous communities

Partners

- California Coastal Commission
- California Ocean Protection Council

Co-Benefits

N/A

ACTIONS

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.

FLOOD-11.2: Design and locate future critical infrastructure projects accordingly and away from potential inundation areas such as those mentioned in FLOOD-12.1, using sea level rise data.

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. Avoid adaptation measures that increase filling land in areas subject to sea level rise because it can cause more flooding elsewhere

MEASURE FLOOD-12: Preserve Undeveloped Land to Help Ecosystems Adapt to Sea Level Rise

Napa County and the City of American Canyon will collaborate with regional partners to preserve undeveloped land to help ecosystems adapt to sea level rise impacts. Providing space for natural buffers like coastal wetlands helps reduce the impact of coastal flooding and erosion. This preservation effort also supports habitat migration by allowing ecosystems to shift inland as sea levels rise, protecting biodiversity. Moreover, the preservation of undeveloped land also offers a cost-effective and natural alternative to expensive engineered solutions.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

Partners

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council
- ▶ DOC

Co-Benefits



Ecosystem Health

ACTIONS

FLOOD-12.1: Conserve undeveloped land where sea level rise is anticipated, such as the southwestern portion of Napa County and western American Canyon. As sea level rise inundates wetlands, ecosystem adaptation allows coastal wetland habitats and the species that depend upon them to migrate to new wetlands further inland.

MEASURE DROUGHT-1: Implement Water Conservation and Explore Water Reuse Options

Napa County Jurisdictions will endeavor to implement water conservation and explore new options for water reuse and recycling. Water conservation helps lower water usage during drought events. Jurisdictions will raise the region's public awareness of water conservation, develop incentive programs, and expand the use of recycled water. These efforts will also prepare the region for prolonged water shortages and support long-term water security.

Applicable Jurisdictions

All

Partners

- ▶ Napa RCD
- ▶ Napa Sanitation District
- ▶ NCGSA

Co-Benefits



Cost Savings



Quality of Life

ACTIONS

DROUGHT-1.1: Raise public awareness of water conservation and expand incentives such as rebates for water-saving devices and "Cash for Grass" landscape conversion. Further incentivize water conservation infrastructure upgrade projects, such as leak detection programs and conversion of non-functional turf to water-efficient landscaping.

DROUGHT-1.2: Implement regional and local water conservation opportunities. For water conservation in the building sector, consider adopting the California Plumbing Code Appendix M. This code appendix 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.

DROUGHT-1.3: Increase on-site greywater and rainwater reuse, stormwater reuse, managed aquifer recharge, and expand the use of recycled water.

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.

DROUGHT -1.5: Consider County-wide implementation of the American Canyon Zero Water Footprint program, which requires new development to offset its potable water demand by funding water conservation programs elsewhere in the water service area.

MEASURE DROUGHT-2: Support Agriculture in Adapting to More Frequent and Severe Droughts

Agriculture is a key economic driver in Napa County. Napa County Jurisdictions will collaborate with regional partners to support the region's agricultural industry to adapt to more frequent and severe drought events. Jurisdictions and their partners will promote agricultural water conservation practices and improve water use efficiency. They will also enhance the region's groundwater recharge. Adapting to more frequent and severe droughts ensures that farmers can continue to operate amid changing climate conditions. Moreover, innovations in water management and crop selection safeguard the region's future.

Applicable Jurisdictions

All

Partners

- ▶ Napa RCD
- ▶ NCGSA

- ▶ Napa County Farm Bureau
- ▶ Napa Valley Grapegrowers

Co-Benefits



Cost Savings

ACTIONS

DROUGHT-2.1: Promote and incentivize industry adoption of state-of-the-art water conservation practices in the cultivation of wine grapes and other crops and breeding of livestock 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 expanding prohibitions on mid-day urban watering practices to minimize evaporation loss.

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.

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).

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 unincorporated county.

MEASURE DROUGHT-3: Evaluate Water Supply Vulnerabilities and Develop Resilience Strategies

Napa County Jurisdictions will identify water supply system reliability weakness and networks via water supply vulnerability assessment and resilience planning. Jurisdictions should then direct investments to where they are most needed, such as the maintenance and improvement of water infrastructure that are identified to have weaknesses. Jurisdictions should also consider adopting municipal codes to enforce resiliency standards for water-related infrastructure. Such strategies to improve water supply resilience will keep water systems operational during drought events and help the region build long-term resilience against water supply disruptions.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ Napa County Flood Control and Water Conservation District Napa Sanitation District

ACTIONS

DROUGHT-3.1: Evaluate the local water supply system and network vulnerability to climate impacts and develop strategies to increase the resilience of these systems. Resilient water supply systems must be able to deliver services during disruptive events (e.g., storms, drought).

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 extreme storms or related weather events.

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.

DROUGHT-3.4: Implement feasible 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: Enhance Water Conservation Outreach for Residents and Businesses

Napa County Jurisdictions will expand upon existing water conservation education and outreach programs, which will help guide residents and businesses to adopt sustainable water conservation practices, leading to an overall water demand decrease. Jurisdictions will leverage multiple media platforms and utilize different channels to enhance public awareness of water conservation. By improving education and outreach, communities can improve water efficiency, reduce strain on resources, and better prepare for future shortages. This adaptation is crucial for managing drought conditions and ensuring long-term water supply resilience.

Applicable Jurisdictions

All

Partners

- ▶ Napa RCD
- ▶ Napa County Flood Control and Water Conservation District

Co-Benefits



Social Cohesion

ACTIONS

DROUGHT-4.1: Expand 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. Ensure that “Water Conservation as a Way of Life” becomes deeply ingrained in the community.

DROUGHT-4.2: Expand educational materials available to water users through websites, consider developing a regional hub (e.g., NapaValleySavesWater.org) and disseminate conservation messages through customer bills. Expand the audience to include self-supplied users of groundwater, particularly in the Napa Valley Subbasin.

DROUGHT-4.3: Invest in water conservation demonstration projects (e.g., drought-tolerant landscaping, efficient irrigation systems, and greywater reuse) as part of public education campaigns to showcase best practices and encourage adoption by residents and businesses.

DROUGHT-4.4: Provide Spanish-language training for agricultural workers on sustainable water management, including irrigation efficiency and distribution uniformity testing, to improve drought resilience, reduce water use, and support equitable access to technical knowledge in sustainable agricultural operations.

MEASURE DROUGHT-5: Partner with Agencies to Secure Future Water Supplies, Explore Alternatives, and Enhance Capacity

Napa County Jurisdictions will collaborate with federal, State, and local agencies and organizations to identify future water supplies, explore alternative supply sources, and improve capacity. This collaboration effort will leverage regional expertise, funding, and resources. Identifying future water sources and exploring alternatives, such as groundwater recharge, increases the region’s resilience to droughts. Moreover, improving capacity ensures efficient water management, reducing vulnerability to supply disruptions, and ensuring long-term sustainability in the face of changing climate conditions.

Applicable Jurisdictions

All

Partners

- ▶ State Water Resources Control Board (SWRCB)
- ▶ California Department of Water Resources (DWR)
- ▶ U.S. Bureau of Reclamation (Reclamation)
- ▶ U.S. Army Corps of Engineers (USACE)
- ▶ Abuelitos Foundation

- ▶ Napa County Flood Control and Water Conservation District

Co-Benefits

N/A

ACTIONS

DROUGHT-5.1: Pursue grant funding opportunities from SWRCB, DWR, Reclamation, USACE and other State and federal agencies related to water recycling projects and/or other water resource planning projects.

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 (e.g., the Abuelitos Foundation) to rehydrate the Napa River Watershed.

MEASURE ENERGY-1: Transition to Climate-Smart Energy

Napa County Jurisdictions will consider transitioning to climate-smart sources of energy, such as renewable sources and energy storage. This measure will enhance grid resilience by reducing reliance on vulnerable fossil fuel infrastructure. In addition to diversified energy supply sources, transitioning to climate-smart energy sources also helps decrease strain during peak demand, and mitigates disruptions from extreme weather events, ensuring a more reliable and sustainable energy system.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E

Co-Benefits



Energy Security

ACTIONS

ENERGY-1.1: Evaluate opportunities to transition to decentralized renewable energy sources, reducing reliance on centralized generation sources and long-range transmission (e.g., see MCE's Virtual Power Plant Pilot Program).

MEASURE ENERGY-2: Strengthen Energy Infrastructure Resilience and Enhance Redundancy via Collaboration

Napa County Jurisdictions will work with partners to enhance the resilience of energy infrastructure systems against climate-related impacts. Strengthening redundancy improves the grid's ability to withstand and recover from disruptions, supporting long-term energy security. Jurisdictions will also collaborate with PG&E and MCE to bolster redundancy in the energy network by integrating backup systems to reduce the risk of outages.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E

Co-Benefits



Energy Security

ACTIONS

ENERGY-2.1: Work with partners to harden energy infrastructure against climate stressors, such as undergrounding overhead electrical transmission lines for wildfire events and installing barriers and floodgates for flooding hazards.

MEASURE ENERGY-3: Reduce Energy Grid Strain During Extreme Heat

Napa County Jurisdictions will work with MCE and PG&E to minimize stress on the region's energy grids during extreme heat events, which will help prevent overloads, reduce the risk of blackouts, and ensure reliable power for critical services. Actions under this measure include managing demand through education campaigns and expanding the use of energy storage technologies to improve backup power supply availability. In addition, this measure supports long-term energy security in a warming climate.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E

Co-Benefits



Energy Security

ACTIONS

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.

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. This action aligns with the GHG reduction action BE-1-b, which encourages on-site renewable energy and battery storage, as well as GHG reduction action BE-3-a, which discusses rebates and incentives for renewable energy and storage, including battery storage.

MEASURE ENERGY-4: Install Backup Power at Critical Facilities, Resilience Centers, and Shelters

Napa County Jurisdictions will partner with MCE and PG&E to install backup batteries, generators, or microgrids at critical facilities (e.g., fire stations, hospitals, campuses), community resilience centers, or similar sheltering locations. This measure also involves identifying existing facilities that can serve as emergency shelters and upgrading these facilities with backup power. Installing backup power at critical facilities ensures continuous operations during grid failures, protecting public safety and essential services. Batteries, generators, and microgrids provide emergency power, reduce dependence on the main grid, and enhance the overall community's energy resilience during extreme weather or disasters.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E
- ▶ BayREN

Co-Benefits



Energy Security

ACTIONS

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 resilience of these facilities.

ENERGY-4.2: Partner with MCE and PG&E to explore microgrid installation feasibility 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.