

American, Bear, and Cosumnes Watersheds Adaptation Strategies

Definitions of Metrics Used for Assessment of Adaptation Actions

Type of Action	Applicable System	Applicable Regions	Climatic Hazard Sensitivity Drivers Addressed	Ecological Capacity Drivers Addressed	Socioeconomic Capacity Drivers Addressed	Built Infrastructure Capacity Drivers Addressed
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Type of Action	
Planning & Strategy	Activities that define goals, evaluate options, and establish plans to reduce climate risk and guide future implementation.
Coordination & Collaboration	Actions that strengthen cross-agency, cross-jurisdictional, and stakeholder alignment to enable integrated, watershed-scale responses.
Implementation & Operations	On-the-ground physical actions and operational changes that directly reduce risks and improve resilience under climate stress.
Science & Data	Activities to generate, integrate, and apply data, monitoring, modeling, assessment and decision-support tools to inform implementation activities.
Policy & Institutional	Reforms to policies, regulations, governance structures, or funding mechanisms that enable and sustain climate-resilient outcomes.
Applicable System	
	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management, Hydropower
Applicable Regions	
	All Sub Regions, Upper American, Lower American, Upper Bear, Lower Bear, Upper Cosumnes, Lower Cosumnes. Delineation between upper and lower region is based on the boundaries of Bulletin-118 groundwater subbasins.
Climatic Hazard Sensitivity Drivers	
Warming and Extreme Heat	The extent to which a project reduces exposure or sensitivity to increasing temperatures. Projects may reduce heat impacts directly or indirectly through cooling, shading, storage, or operational flexibility.
Snowpack Loss and Water Availability Decline	The degree to which a project mitigates reduced snowpack and declining seasonal water availability by improving storage, supply diversification, timing, or operational adaptability under changing hydrologic regimes.
Shift from Snow to Rain and Runoff Timing Shift	How a project addresses altered runoff timing and hydrograph shape caused by increased rainfall dominance, including earlier peak flows and reduced late-season supply reliability.
Increased Water Demand	The extent to which a project reduces demand growth or improves system capacity to reliably meet higher demands driven by heat, drought, population growth, or economic activity.
More Intense Storms and Flashier Hydrographs	The project's ability to manage increased peak flows, attenuate runoff, reduce erosion, and protect communities and infrastructure from extreme precipitation events.
More Frequent and Severe Droughts	How a project increases resilience to prolonged or repeated droughts through project such as supply diversification, conjunctive use, storage, operational flexibility, or demand reduction.
Increased Wildfire Risk	The degree to which a project reduces wildfire likelihood or consequences, including impacts on water quality, sedimentation, infrastructure vulnerability, and ecosystem recovery.
Ecological Capacity Drivers	
Forest Health	The extent to which a project improves forest condition, reduces fuel loads, stabilizes headwater hydrology, and supports long-term watershed resilience to climatic shocks.
Degraded Habitat and Ecosystem Function	How a project restores or enhances ecological processes (e.g., floodplain connectivity, riparian function, aquatic habitat, water quality and temperature) that provide natural buffering against climate impacts.
Socioeconomic Capacity Drivers	
Community and Economic Resilience	The degree to which a project strengthens the ability of communities and local economies to prepare for, respond to, and recover from climate impacts, particularly where adaptive capacity is limited.
Upper Watershed Agricultural Vulnerability	How a project supports agricultural viability in climate-sensitive areas that lacks access to reliable groundwater resources; for example, by improving water reliability, operational flexibility, and protection from drought, heat, and flood impacts.
Land Use and Development	The extent to which a project addresses or avoids land-use patterns that exacerbate climate risk, including development in flood- or fire-prone areas, address urban heat islands, and improves coordination between land use and water management.

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Built Infrastructure Capacity Drivers	
Aging and Fragile Infrastructure	The degree to which a project reduces vulnerability associated with deteriorating or obsolete infrastructure increasingly stressed by climate extremes. Projects may invest in replacing or hardening infrastructure, or adapt nature-based solutions.
Folsom Reservoir Constraints	How a project addresses operational, physical, or regulatory constraints affecting Folsom Reservoir's ability to balance flood management, water supply, and environmental objectives under changing conditions.
Limited Reservoir Storage Capacity	The extent to which a project compensates for limited surface storage through operational efficiency, groundwater storage, expansion of storage space, or functional storage provided by nature-based solutions.
Reservoir Operational Tradeoffs	The extent to which a project improves reservoir operations by balancing flood management, water supply, environmental flows, and hydropower under climate variability, including through advanced forecasting, real-time data, decision-support tools, and Forecast-Informed Reservoir Operations.
Levee System Fragility	The degree to which a project reduces flood risk associated with aging, constrained, or vulnerable levee systems through structural improvements or complementary non-structural measures.

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1 – Secure Surface Water Supply Entitlements	1a	Secure water rights for projected needs and maintain existing water rights to ensure local and regional supply reliability.	Planning & Strategy	Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	NA
1 – Secure Surface Water Supply Entitlements	1b	Manage and leverage collaboration through cooperative water resource agreements.	Coordination & Collaboration	Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, Increased Water Demand , More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA
1 – Secure Surface Water Supply Entitlements	1c	Develop regional water master plan or equivalent to identify management and built infrastructure investments needed to demonstrate the beneficial uses of available water rights and contract entitlements in an integrated and efficient manner for projected needs and climate resilience.	Planning & Strategy	Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	Aging & Fragile Infrastructure
1 – Secure Surface Water Supply Entitlements	1d	Determine water purveyors for areas not currently served by a water purveyor.	Planning & Strategy	Community & Equity, Surface Water Supply	Upper American , Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience, Land Use & Development	NA
1 – Secure Surface Water Supply Entitlements	1e	Develop operational agreements as needed for flexible use of collective water rights and contract entitlements to promote regionwide benefits.	Coordination & Collaboration	Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA

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2 – Continue and Expand Demand Management	2a	Review and update water demand projections to include regulatory changes, anticipated implementation of best management practices, population and growth patterns, and climate change impact information.	Planning & Strategy	Agriculture, Groundwater Supply, Surface Water Supply	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	Limited Reservoir Storage Capacity
2 – Continue and Expand Demand Management	2b	Develop implementation strategies and plans to address the compliance requirements of the "Making Conservation a California Way of Life" regulation, which includes urban water use standards, system water loss standards, variances and commercial, industrial and institutional performance measures.	Planning & Strategy	Agriculture, Groundwater Supply, Surface Water Supply	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	NA
2 – Continue and Expand Demand Management	2c	Engage in the continued development and implementation of statewide long-term water conservation policies, regulations, and legislation to ensure applicability in both urban and foothill and forested/ mountain communities while preserving countywide interests and quality of life.	Coordination & Collaboration	Agriculture, Groundwater Supply, Surface Water Supply, Ecosystem	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Land Use & Development	NA
2 – Continue and Expand Demand Management	2d	Implement water conservation projects and programs consistent with statewide conservation policies.	Implementation & Operations	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	NA
2 – Continue and Expand Demand Management	2e	Transform urban landscapes to reduce outdoor water use through irrigation efficiencies, incorporation of low water, drought tolerant and native plants, reduction of high water use grasses with a focus on maintaining and expanding tree canopy.	Implementation & Operations	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	NA
2 – Continue and Expand Demand Management	2f	Use rebates and incentives to accerlate and increase customer adoption of long-term water conservation and reuse practices with a goal of reducing overall and peak summer time water demand.	Implementation & Operations	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA
2 – Continue and Expand Demand Management	2g	Expand programs to modify customer behavior and result in decreased demand for water.	Implementation & Operations	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA
2 – Continue and Expand Demand Management	2h	Increase funding and scope of local and regional public outreach and school education programs that encourage water efficiency practices, with a primary focus on reducing outdoor water use.	Implementation & Operations	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA

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3 – Implement Sustainable Groundwater Management	3a	Implement sustainable groundwater management in the SGMA-regulated groundwater basins consistent with approved plans and best practices	Implementation & Operations	Groundwater Supply	Lower American, Lower Bear, Lower Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA
3 – Implement Sustainable Groundwater Management	3b	Engage in the development of statewide sustainable groundwater management policies, regulations, and legislation to protect the interests of headwaters and rural mountain counties.	Coordination & Collaboration	Groundwater Supply	Lower American, Lower Bear, Lower Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Land Use & Development	NA
3 – Implement Sustainable Groundwater Management	3c	Enhance alignment in groundwater management, drought resilience, and well permitting practices	Coordination & Collaboration	Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Land Use & Development	NA
3 – Implement Sustainable Groundwater Management	3d	Improve understanding of groundwater conditions and long-term sustainability in fractured rock formation	Science & Data	Groundwater Supply	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA
3 – Implement Sustainable Groundwater Management	3e	Develop County-level policy for well permitting and management to address groundwater sustainability for fractured rock aquifers and basin areas that not subject to management under a Groundwater Sustainability Agency.	Policy & Institutional	Groundwater Supply	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Land Use & Development	NA
3 – Implement Sustainable Groundwater Management	3f	Implement conjunctive use, in-lieu groundwater recharge, and aquifer storage & recovery projects where feasible to achieve regional sustainable groundwater management.	Implementation & Operations	Groundwater Supply, Surface Water Supply	Lower American, Lower Bear, Lower Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	Limited Reservoir Storage Capacity
3 – Implement Sustainable Groundwater Management	3g	Identify key recharge areas (floodplains, paleo channels, quarries) and protect via zoning.	Planning & Strategy	Groundwater Supply, Flood Management	Lower American, Lower Bear, Lower Cosumnes	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts	NA	Land Use & Development	Levee system fragility
3 – Implement Sustainable Groundwater Management	3h	Use cropland for stormwater recharge and partner with farmers to flood fields and recover water later.	Implementation & Operations	Agriculture, Groundwater Supply, Surface Water Supply, Water Quality, Flood Management	Lower American, Lower Bear, Lower Cosumnes	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts	NA	Upper Watershed Agricultural Vulnerability	Levee system fragility
3 – Implement Sustainable Groundwater Management	3i	Conduct a well vulnerability assessment and mitigation program for small systems and domestic wells (risk screening, prioritization, deepening/replacement, emergency interties).	Implementation & Operations	Community & Equity, Groundwater Supply	All Sub Regions	NA	NA	NA	Aging & Fragile Infrastructure
3 – Implement Sustainable Groundwater Management	3i	Assess and coordinate groundwater extraction and future well placement to maximize storage efficiency, retention, and system-wide operational performance.	Implementation & Operations	Community & Equity, Groundwater Supply	Lower American, Lower Bear, Lower Cosumnes	NA	NA	NA	Aging & Fragile Infrastructure, Limited Reservoir Storage Capacity
3 – Implement Sustainable Groundwater Management	3j	Institutionalize and scale flood diversions for managed recharge	Implementation & Operations	Groundwater Supply, Surface Water Supply, Flood Management	Lower American, Lower Bear, Lower Cosumnes	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts	NA	Upper Watershed Agricultural Vulnerability	Levee system fragility

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4 – Increase Water Reuse	4a	Increase implementation of cost-effective and financially responsible water reuse to improve drought resilience and benefit compliance with efficient urban water use regulations where possible.	Implementation & Operations	Community & Equity, Surface Water Supply	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	NA
4 – Increase Water Reuse	4b	Explore the feasibility of nonportable reuse for instream flow augmentation or nonrestricted irrigation use with third parties.	Planning & Strategy	Agriculture, Surface Water Supply	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
4 – Increase Water Reuse	4c	Encourage greywater reuse and rainfall harvest practices on household and individual facility level	Implementation & Operations	Community & Equity, Surface Water Supply	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Increased Water Demand , More Frequent and Severe Droughts	NA	NA	NA

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5 – Secure Drinking Water Infrastructure	5a	Ensure drinking water infrastructure integrity, operations, and maintenance through water agency-specific Capital Improvement Programs	Implementation & Operations	Community & Equity, Surface Water Supply	All Sub Regions	NA	NA	NA	Aging & Fragile Infrastructure
5 – Secure Drinking Water Infrastructure	5b	Develop means to replace lost snowpack and increase water supply reliability (such as but not limited to: increased recharge of groundwater in the lower watershed and actions to slow and capture runoff in the upper watershed).	Implementation & Operations	Surface Water Supply	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	NA	Aging & Fragile Infrastructure, Folsom Reservoir Constraints, Limited Reservoir Storage Capacity
5 – Secure Drinking Water Infrastructure	5c	Reduce vulnerability of drinking water infrastructure to large-scale wildfires.	Implementation & Operations	Community & Equity, Surface Water Supply	Upper American , Upper Bear	Increased wildfire risk	Forest Health	NA	Aging & Fragile Infrastructure
5 – Secure Drinking Water Infrastructure	5d	Update drinking water infrastructure emergency response and communication plans regularly to keep current, including the threat of wildfire and potentially extended power shutoffs.	Planning & Strategy	Community & Equity, Surface Water Supply	All Sub Regions	Increased wildfire risk	Forest Health	Community & Economic Resilience	Aging & Fragile Infrastructure
5 – Secure Drinking Water Infrastructure	5e	Assess the regional infrastructure needs to support the implementation of a regional water and master plans or equivalent	Planning & Strategy	Surface Water Supply	All Sub Regions	NA	NA	NA	Aging & Fragile Infrastructure
5 – Secure Drinking Water Infrastructure	5f	Establish fire protection water system reliability program	Implementation & Operations	Community & Equity, Surface Water Supply	All Sub Regions	NA	NA	NA	Aging & Fragile Infrastructure
5 – Secure Drinking Water Infrastructure	5g	Establish a framework to support transitions of small or failing water systems through annexation, consolidation, or emergency support.	Policy & Institutional	Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	NA	NA	NA	Aging & Fragile Infrastructure
5 – Secure Drinking Water Infrastructure	5h	Expand regional interties and inter-system connectivity between agencies to increase reliability and redundancy.	Implementation & Operations	Groundwater Supply, Surface Water Supply	All Sub Regions	NA	NA	NA	Aging & Fragile Infrastructure

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6 – Manage Stormwater as a Resource	6a	Update Stormwater Resource Plans to address changed conditions and unique foothill characteristics and needs.	Planning & Strategy	Surface Water Supply, Water Quality, Flood Management	Upper American , Upper Bear, Upper Cosumnes	More Intense Storms & Flashier Hydrographs	NA	NA	Levee system fragility
6 – Manage Stormwater as a Resource	6b	Develop implementation strategy to finance program implementation align state policy implementation, and improve project readiness, as appropriate, for capitalizing on funding opportunities	Planning & Strategy	Surface Water Supply	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	Community & Economic Resilience	Levee system fragility
6 – Manage Stormwater as a Resource	6c	Implement water quality control measures and best management practices to address runoff from highways, streets, and other priority impervious areas.	Implementation & Operations	Water Quality, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility
6 – Manage Stormwater as a Resource	6d	Implement Stormwater Management Plan (now also as part of the Stormwater Resource Plan) and California Municipal Separate Storm Sewer Systems Permits.	Implementation & Operations	Surface Water Supply, Water Quality, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	Land Use & Development	Aging & Fragile Infrastructure, Levee system fragility
6 – Manage Stormwater as a Resource	6e	Explore implementation of green infrastructure such as design of urban stormwater systems (cisterns, rain gardens, bio-swales, etc.) to capture runoff and store it for non-potable uses, such as irrigating parks, street medians, or cooling street trees.	Implementation & Operations	Surface Water Supply, Water Quality, Flood Management	All Sub Regions	Warming and Extreme Heat, Increased Water Demand , More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility

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7 – Improve Drought Preparedness and Response	7a	Convene a long-standing County Drought and Water Shortage Task Force to facilitate drought and water shortage preparedness for small water suppliers and rural communities, and provide consistency for countywide drought planning	Coordination & Collaboration	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA
7 – Improve Drought Preparedness and Response	7b	Implement and update the Regional Drought Contingency Plan and urban water supplier-specific Water Shortage Contingency Plans	Implementation & Operations	Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA
7 – Improve Drought Preparedness and Response	7c	Update drought component in the County Local or Multi-Jurisdictional Hazard Mitigation Plans for emergency response coordination and potential future FEMA assistance	Planning & Strategy	Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts	NA	Community & Economic Resilience, Land Use & Development	Levee system fragility
7 – Improve Drought Preparedness and Response	7d	Develop and implement Drought Resilience Plan for addressing water shortage vulnerability for small water suppliers and domestic well owners in rural communities	Planning & Strategy	Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA

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8 – Ensure All Residents have Access to Clean and Affordable Water	8a	Assess countywide challenges in water accessibility and affordability (Human Right to Water, California Water Code Section 106.3)	Planning & Strategy	Community & Equity	All Sub Regions	NA	NA	Community & Economic Resilience	NA
8 – Ensure All Residents have Access to Clean and Affordable Water	8b	Conduct viability assessment for water system consolidation and implementation challenges to support advocacy and acquisition of state and federal assistance	Planning & Strategy	Community & Equity	All Sub Regions	NA	NA	Community & Economic Resilience	NA
8 – Ensure All Residents have Access to Clean and Affordable Water	8c	Participate in statewide efforts to develop policy, regulations, and legislation related to water affordability that is workable for specific communities	Coordination & Collaboration	Community & Equity	All Sub Regions	NA	NA	Community & Economic Resilience	Aging & Fragile Infrastructure

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9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1a	Improve hydrological and meteorological data acquisition to support planning needs and improve forecasting.	Science & Data	Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Flood Management	All Sub Regions	Shift from Snow to Rain & Runoff Timing Shift	NA	NA	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1b	Develop and synthesize the potential economic values of ecosystem goods and services in the watershed to help properly characterize the value of the watershed.	Planning & Strategy	Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Flood Management	All Sub Regions	NA	Degraded Habitat & Ecosystem	NA	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1c	Develop and maintain a shared, publicly accessible data and tools platform, supported by regional data stewardship and build human capacity to ensure ongoing governance, QA/QC, and technology management while improving efficiency, transparency, and cross-agency coordination.	Coordination & Collaboration	Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Flood Management	All Sub Regions	NA	NA	Community & Economic Resilience, Land Use & Development	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1d	Assess the impacts of recent wildfires on ecosystem goods and services, including water supply, flood, water quality (including sedimentation), power generation, and outdoor recreation.	Science & Data	Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management, Hydropower	All Sub Regions	More Intense Storms & Flashier Hydrographs, Increased wildfire risk	Forest Health, Degraded Habitat & Ecosystem	NA	Levee system fragility
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1e	Develop a cultural heritage management strategy in collaboration with Tribes, including protocols for collaboration and consultation	Coordination & Collaboration	Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management	All Sub Regions	NA	NA	Community & Economic Resilience	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1f	Inventory upper watershed forests for vegetation types, wildlife, and other attributes to support wildfire mitigation efforts.	Science & Data	Ecosystem, Water Quality	Upper American, Upper Bear, Upper Cosumnes	Increased wildfire risk	Forest Health	NA	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1g	Inventory upper watershed headwater meadows.	Science & Data	Ecosystem, Water Quality	Upper American, Upper Bear, Upper Cosumnes	More Intense Storms & Flashier Hydrographs	NA	NA	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1h	Establish routine post-fire watershed condition assessments to guide sediment and water quality response	Science & Data	Ecosystem, Water Quality	Upper American, Upper Bear, Upper Cosumnes	More Intense Storms & Flashier Hydrographs	NA	NA	NA
9.1 – Develop Data and Tools for Improved Watershed Understanding, Knowledge Sharing, and Transparency	9.1i	Engage Tribal Nations and representatives to integrate Traditional Ecological Knowledge into planning, management, and implementation, supported by dedicated funding for Tribal participation and services.	Science & Data	Community & Equity, Ecosystem, Water Quality	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health, Degraded Habitat & Ecosystem	Community & Economic Resilience, Upper Watershed Agricultural Vulnerability, Land Use & Development	NA

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9.2 – Implement Sustainable Forest Management	9.2a	Assess the health of upper watershed forests, under existing and planned levels of hazard reduction management.	Planning & Strategy	Ecosystem, Water Quality	Upper American , Upper Bear, Upper Cosumnes	Increased wildfire risk	Forest Health	Land Use & Development	NA
9.2 – Implement Sustainable Forest Management	9.2b	Develop a regional post-fire forest restoration plan that promotes consistent management practices to support long-term forest health and public safety and cross-connects lands managed by federal agencies, local agencies, and private entities.	Planning & Strategy	Ecosystem	Upper American , Upper Bear, Upper Cosumnes	Increased wildfire risk	Forest Health	NA	NA
9.2 – Implement Sustainable Forest Management	9.2c	Develop and implement a watershed-level forest management strategy, consistent with the National Cohesive Strategy, that promotes common management practices for long-term forest health maintenance and public safety and cross-connects lands managed by federal agencies, local agencies, and private entities.	Planning & Strategy	Ecosystem	Upper American , Upper Bear, Upper Cosumnes	Increased wildfire risk	Forest Health	NA	Aging & Fragile Infrastructure
9.2 – Implement Sustainable Forest Management	9.2d	Expand options for using and disposing of woody biomass.	Implementation & Operations	Ecosystem	Upper American , Upper Bear, Upper Cosumnes	Increased wildfire risk	Forest Health	NA	NA
9.2 – Implement Sustainable Forest Management	9.2e	Collaborate with resource management agencies, power utilities, water purveyors, and interested parties to promote sustainable forest management strategies that provide long-term benefits to water supply, infrastructure, biodiversity, and ecosystem functions.	Coordination & Collaboration	Surface Water Supply, Ecosystem, Water Quality	Upper American , Upper Bear, Upper Cosumnes	Increased wildfire risk	Forest Health, Degraded Habitat & Ecosystem	NA	Aging & Fragile Infrastructure
9.2 – Implement Sustainable Forest Management	9.2f	Develop watershed health projects that restore and/or preserve the quality, quantity, and connectivity of floodplain, wetland, riparian, woodland, grassland, and other native habitat communities.	Implementation & Operations	Ecosystem, Flood Management	Upper American , Upper Bear, Upper Cosumnes	More Intense Storms & Flashier Hydrographs, Increased wildfire risk	Forest Health, Degraded Habitat & Ecosystem	NA	Levee system fragility

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9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3a	Improve vegetation management with livestock grazing.	Implementation & Operations	Agriculture, Ecosystem	All Sub Regions	NA	Degraded Habitat & Ecosystem	NA	NA
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3b	Implement invasive species management.	Implementation & Operations	Ecosystem	All Sub Regions	NA	Degraded Habitat & Ecosystem	NA	NA
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3c	Assess the health of upper watershed headwater meadows using the inventory from strategy 9.1g.	Science & Data	Ecosystem	Upper American , Upper Bear, Upper Cosumnes	More Intense Storms & Flashier Hydrographs	Degraded Habitat & Ecosystem	NA	NA
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3d	Implement headwater meadow restoration to improve water retention for water supply and flood risk reduction, water quality, and other ecosystem functions, including outdoor recreation.	Implementation & Operations	Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management	Upper American , Upper Bear, Upper Cosumnes	More Intense Storms & Flashier Hydrographs	Degraded Habitat & Ecosystem	NA	Levee system fragility
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3e	Develop an agricultural economy consistent with the County General Plans and working landscape principles to realize its potential for applicable ecosystem goods and services.	Implementation & Operations	Agriculture, Community & Equity, Ecosystem	All Sub Regions	NA	Degraded Habitat & Ecosystem	Upper Watershed Agricultural Vulnerability, Land Use & Development	Aging & Fragile Infrastructure
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3f	Implement water resource-related infrastructure development and modifications, incorporating considerations to promote co-benefits from compatible ecosystem goods and services and increased flexibility in public financing for implementation.	Implementation & Operations	Surface Water Supply, Ecosystem	All Sub Regions	NA	Degraded Habitat & Ecosystem	Land Use & Development	Aging & Fragile Infrastructure
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3g	Establish conservation easements and preservation with willing landowners that promote co-benefits from compatible ecosystem goods and services.	Implementation & Operations	Ecosystem	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	Degraded Habitat & Ecosystem	Land Use & Development	NA
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3h	Conduct research on alternatives and options for disposing short-lived climate pollutants (e.g., organic food waste) without redirecting impacts on environment or local economy.	Science & Data	Ecosystem, Water Quality	All Sub Regions	NA	Degraded Habitat & Ecosystem	NA	NA
9.3 – Implement Multi-benefit Watershed Protection and Restoration Projects	9.3i	Restore headwater meadows and wetlands, including beaver translocation as appropriate, to retain water, slow runoff, enhance baseflows, and improve ecological resilience.	Implementation & Operations	Ecosystem, Water Quality, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	Degraded Habitat & Ecosystem	NA	NA

Adaptation Strategies	ID	Adaptation Actions	Type of Action	Applicable System	Applicable Regions	Climatic Hazard Sensitivity Drivers Addressed	Ecological Capacity Drivers Addressed	Socioeconomic Capacity Drivers Addressed	Built Infrastructure Capacity Drivers Addressed
9.4 – Enhance Environmental Flows & Aquatic Habitat Resilience	9.4a	Optimize reservoir operations to protect environmental flows and cold-water habitat	Implementation & Operations	Ecosystem	Upper American , Lower American	Shift from Snow to Rain & Runoff Timing Shift	Degraded Habitat & Ecosystem	NA	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
9.4 – Enhance Environmental Flows & Aquatic Habitat Resilience	9.4b	Implement a cold-water management program to Retain conserved or reallocated water to support summer/fall ecological flows.	Implementation & Operations	Surface Water Supply, Ecosystem	Lower American	Shift from Snow to Rain & Runoff Timing Shift	Degraded Habitat & Ecosystem	NA	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
9.4 – Enhance Environmental Flows & Aquatic Habitat Resilience	9.4c	Adapt hatchery and fishery management to drought and warming conditions, including options for fish to access river reaches above Folsom Dam.	Implementation & Operations	Surface Water Supply, Ecosystem	Lower American	NA	Degraded Habitat & Ecosystem	NA	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
9.4 – Enhance Environmental Flows & Aquatic Habitat Resilience	9.4d	Protect and expand thermal refugia and spawning/rearing habitat through side-channel reconnection, riparian shading prioritization, and targeted habitat enhancement.	Implementation & Operations	Ecosystem	Lower American, Lower Bear, Lower Cosumnes	Warming and Extreme Heat, Increased Water Demand	Degraded Habitat & Ecosystem	NA	NA
9.4 – Enhance Environmental Flows & Aquatic Habitat Resilience	9.4e	Implement a sediment and gravel management program (gravel augmentation, sediment routing/bypass where feasible) to sustain spawning habitat downstream of reservoirs.	Implementation & Operations	Ecosystem, Water Quality	Lower American, Lower Bear, Lower Cosumnes	NA	Degraded Habitat & Ecosystem	NA	Limited Reservoir Storage Capacity
9.4 – Enhance Environmental Flows & Aquatic Habitat Resilience	9.4f	Assess and manage climate impacts on tributaries to the American River and assoicated groundwater-dependent ecosystems (GDEs)	Science & Data	Groundwater Supply, Ecosystem	Lower American	NA	Degraded Habitat & Ecosystem	NA	NA

Adaptation Strategies	ID	Adaptation Actions	Type of Action	Applicable System	Applicable Regions	Climatic Hazard Sensitivity Drivers Addressed	Ecological Capacity Drivers Addressed	Socioeconomic Capacity Drivers Addressed	Built Infrastructure Capacity Drivers Addressed
10 – Prevent Contamination of Surface Water and Groundwater Resources	10a	Apply advanced technologies for water quality monitoring (surface water and groundwater), including remote sensing, for areas susceptible to water quality problems	Science & Data	Groundwater Supply, Surface Water Supply, Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA
10 – Prevent Contamination of Surface Water and Groundwater Resources	10b	Implement Sewage System Management Plans in coordination with system owners, including emergency response protocols and vulnerability assessments.	Implementation & Operations	Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	Aging & Fragile Infrastructure
10 – Prevent Contamination of Surface Water and Groundwater Resources	10c	Implement the Nutrient Management Plan for agricultural practice to reduce the risk of long-term effects on the quality of surface water and groundwater resources.	Implementation & Operations	Groundwater Supply, Surface Water Supply, Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Upper Watershed Agricultural Vulnerability	NA
10 – Prevent Contamination of Surface Water and Groundwater Resources	10d	Implement County Local Agency Management Plan for Onsite Wastewater Treatment Systems, including enforcement of guidelines for approval and repairs	Implementation & Operations	Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	Aging & Fragile Infrastructure
10 – Prevent Contamination of Surface Water and Groundwater Resources	10e	Conduct public outreach and education activities to encourage prevention of water supply contamination.	Coordination & Collaboration	Community & Equity, Surface Water Supply, Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA
10 – Prevent Contamination of Surface Water and Groundwater Resources	10f	Implement the Local Agency Management Plan for Onsite Wastewater Treatment Systems (e.g., septic tanks) and comply with relevant Waste Discharge Requirement Orders	Implementation & Operations	Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA
10 – Prevent Contamination of Surface Water and Groundwater Resources	10g	Develop and implement a post-wildfire water quality response playbook (turbidity/ash response, treatment adjustments, source switching, watershed erosion controls).	Implementation & Operations	Agriculture, Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA
10 – Prevent Contamination of Surface Water and Groundwater Resources	10h	Implement targeted nutrient and septic hot-spot reduction projects in priority subareas (buffers, treatment wetlands, septic upgrades, agricultural BMP expansion).	Implementation & Operations	Agriculture, Community & Equity, Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA
10 – Prevent Contamination of Surface Water and Groundwater Resources	10i	Address waste water discharge issues during periods of heavy storm water to prevent partially treated water from being discharged to the rivers.	Implementation & Operations	Surface Water Supply, Ecosystem, Water Quality	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	NA	NA

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11 – Reduce the Risk of Flooding in Communities	11a	Update potential risks of flooding and water infrastructure vulnerability.	Planning & Strategy	Surface Water Supply, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11b	Develop and implement flood risk reduction projects to reduce localized and neighborhood flooding with considerations of increase in frequency and intensity of flood-causing storms in facility planning (siting and design) for long-term sustainability	Implementation & Operations	Community & Equity, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11c	Improve implementation of residual flood risk mitigation actions, including participation of the National Flood Insurance Program, or its successor or alternatives, and voluntary use of flood-resistant materials and other California Building Code requirements, as appropriate.	Implementation & Operations	Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11d	Develop strategies and collaborate to combine nature-based solutions to reduce expenditure, facilitate additional flexibility of pooled funding use, and prolong the effectiveness of hard infrastructure investment and operational changes for regional flood risk reduction.	Implementation & Operations	Ecosystem, Water Quality, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11e	Complete critical flood infrastructure upgrades to achieve 500-year protection for deep floodplains along the Lower American River, including levee reinforcements and Folsom Dam outlet improvements.	Implementation & Operations	Community & Equity, Flood Management	Lower American	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Folsom Reservoir Constraints, Reservoir Operational Tradeoffs, Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11f	Implement Forecast-Informed Reservoir Operations (FIRO) to release water in advance of major storms using forecast data, improving flood space management and water supply reliability.	Implementation & Operations	Surface Water Supply, Flood Management, Hydropower	Lower American	More Intense Storms & Flashier Hydrographs	NA	NA	Folsom Reservoir Constraints, Limited Reservoir Storage Capacity, Reservoir Operational Tradeoffs, Levee system fragility

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11 – Reduce the Risk of Flooding in Communities	11g	Update flood risk maps and apply to land use planning by revising hazard zones, adjusting building codes, and requiring retention basins in vulnerable areas.	Planning & Strategy	Community & Equity, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	Community & Economic Resilience, Land Use & Development	Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11h	Expand natural flood management features by restoring floodplains, wetlands, and open-space buffers where practicable to store and slow runoff while providing ecological co-benefits.	Implementation & Operations	Ecosystem, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11i	Require use of retention basin in developing areas, especially those upstream of vulnerable areas or those with low resilience.	Implementation & Operations	Community & Equity, Groundwater Supply, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11j	Enhance levee and bank monitoring systems using side-scan sonar and remote sensing to detect erosion and structural vulnerabilities before failure occurs.	Implementation & Operations	Flood Management	Lower American, Lower Bear, Lower Cosumnes	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11k	Implement levee encroachment/penetration remediation and maintenance access improvements	Implementation & Operations	Flood Management	Lower American, Lower Bear, Lower Cosumnes	More Intense Storms & Flashier Hydrographs			
11 – Reduce the Risk of Flooding in Communities	11l	Expand behind-the-levee risk communication and resident preparedness program.	Coordination & Collaboration	Community & Equity, Flood Management	All Sub Regions	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility
11 – Reduce the Risk of Flooding in Communities	11m	Advance regional conveyance and floodway improvements that reduce peak stages (e.g., Yolo Bypass).	Implementation & Operations	Ecosystem, Flood Management	Lower American	More Intense Storms & Flashier Hydrographs	NA	NA	Aging & Fragile Infrastructure, Levee system fragility

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12 – Promote Fire-Adapted Communities	12a	Update the County and City General Plans to improve protection of communities from unreasonable risks of hazards, including wildfire and associated considerations of safe egress route requirements and building requirements for home fire hardening, with concurrent efforts in updating California Building Code for consistency.	Planning & Strategy	Agriculture, Community & Equity, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience, Land Use & Development	NA
12 – Promote Fire-Adapted Communities	12b	Update and enforce vegetation management and defensible space ordinances, including coordinate with CAL FIRE to prioritize County Focus Area inspections.	Coordination & Collaboration	Agriculture, Community & Equity, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	NA	NA
12 – Promote Fire-Adapted Communities	12c	Update the requirements for building permits to have owner(s) acknowledge being located in CAL FIRE high and very high Fire Hazard Severity Zones, and for deed recording to provide sufficient evidence for meeting fire disclosure requirements by real estate property seller(s) and homeowner associations for common areas, if applicable per AB 38 of 2019.	Policy & Institutional	Community & Equity, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience, Land Use & Development	NA
12 – Promote Fire-Adapted Communities	12d	Develop/implement/update a community wildfire protection plan, including the assessment of fire protection needs of communities within the Wildland Urban Interface in coordination with an associated implementation plan, including a financing plan and funding acquisition assistance.	Planning & Strategy	Community & Equity	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	NA	NA
12 – Promote Fire-Adapted Communities	12e	Develop a public education campaign to improve wildfire preparedness; improve resident awareness of relevant laws, regulations, and best management practices; and facilitate community-specific wildfire emergency preparedness and response plans.	Coordination & Collaboration	Community & Equity	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA

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12 – Promote Fire-Adapted Communities	12f	Implement strategic shaded fuel breaks using canal and utility corridors to protect communities and critical infrastructure while maintaining ecological function.	Implementation & Operations	Agriculture, Community & Equity, Surface Water Supply, Ecosystem	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
12 – Promote Fire-Adapted Communities	12g	Establish and implement Tribal and interagency cultural burning partnerships (Memorandums of Understanding, training, burn windows, and programmatic compliance) to scale prescribed fire safely.	Coordination & Collaboration	Agriculture, Community & Equity, Ecosystem	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
12 – Promote Fire-Adapted Communities	12h	Implement distributed “micro-pond” and small water retention features in strategic upland or Wildland–Urban Interface (WUI) locations	Implementation & Operations	Agriculture, Community & Equity, Surface Water Supply, Ecosystem	All Sub Regions	Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
12 – Promote Fire-Adapted Communities	12i	Improve the implementation of existing requirements by local fire districts to have adequate water tank installed on site for structural protection against fire if not served by a community water system with adequate fire hydrants, and encourage additional volume considerations to accommodate short-term health and safety water supply needs in water shortage during drought or other emergencies (SB 552).	Implementation & Operations	Community & Equity, Surface Water Supply	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
12 – Promote Fire-Adapted Communities	12j	Complete and update Countywide and/or consistent area-specific Community Wildfire Protection Plans with consistent update of the County's Multi-hazard mitigation plan.	Planning & Strategy	Community & Equity	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
12 – Promote Fire-Adapted Communities	12k	Review and update the community water system's fire flow capacities in light of changing climate and potential wildfire risks for potential rehabilitation and improvements.	Implementation & Operations	Community & Equity, Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA

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13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13a	Coordinate with counties, economic development interests, and the California Community College to develop workforce needs, curriculums, and programs to foster local workforce growth to support long-term sustainable watershed management.	Coordination & Collaboration	Community & Equity	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts	NA	Community & Economic Resilience, Land Use & Development	NA
13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13b	Perform a regional transportation needs assessment to support agricultural development consistent with County General Plans that incorporates working landscapes, improves outdoor recreation access, expands broadband availability in rural-agricultural areas, and promotes safe egress of communities during wildfires and other emergencies.	Planning & Strategy	Agriculture, Community & Equity, Recreation	Upper American , Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience, Upper Watershed Agricultural Vulnerability, Land Use & Development	NA
13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13c	Investigate the opportunities to create new, or expand existing, wood-utilization businesses within the watershed in collaboration with state and federal agencies.	Planning & Strategy	Agriculture, Community & Equity, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13d	Explore potential alternative funding mechanisms based on the findings from the ecosystem good and service valuation (strategy 9.1b) to support long-term sustainable adaptation strategy implementation.+C114	Planning & Strategy	Ecosystem	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Degraded Habitat & Ecosystem	Community & Economic Resilience	NA
13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13e	Improve emergency response planning for major disasters, including wildfires and floods and the shared understanding of the roles and responsibilities of involved agencies and entities; and expand and share tools for recovery planning.	Coordination & Collaboration	Agriculture, Community & Equity, Surface Water Supply, Flood Management	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	Forest Health	Community & Economic Resilience	NA
13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13f	Determine water suppliers for areas within County General Plans that are currently outside of service areas of any major water suppliers to ensure water resilience for planned development.	Coordination & Collaboration	Groundwater Supply, Surface Water Supply	All Sub Regions	Snowpack Loss & Water Availability Decline, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts, Increased wildfire risk	NA	Community & Economic Resilience, Land Use & Development	NA
13 – Increase Community Capacity for Sustainable Management and Resilience to Major Disasters	13g	Address urban heat islands through nature-based solutions with emphasis on prioritizing vulnerable communities.	Implementation & Operations	Community & Equity	All Sub Regions	Warming and Extreme Heat	NA	Community & Economic Resilience, Land Use & Development	NA

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14 - Preserve and enhance access to open space and support sustainable recreation	14a	Through collaboration with local agencies, non-profits, and tribes, develop the capacity to effectively plan for recreation needs while anticipating, avoiding, and mitigating impacts from high recreation use.	Coordination & Collaboration	Recreation	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	Aging & Fragile Infrastructure, Limited Reservoir Storage Capacity
14 - Preserve and enhance access to open space and support sustainable recreation	14b	Identify opportunities to increase public access to outdoor recreation while also preserving critical areas and educating the public about the associated value.	Planning & Strategy	Community & Equity, Recreation	All Sub Regions	Warming and Extreme Heat, Snowpack Loss & Water Availability Decline, More Frequent and Severe Droughts	NA	Community & Economic Resilience	NA

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15 – Preserve and optimize reservoir and river system operations	15a	Optimize operations of hydropower projects for multi-purposes included water supply, ecosystems, recreation, flood management and clean energy production.	Implementation & Operations	Surface Water Supply, Ecosystem, Recreation, Flood Management , Hydropower	All Sub Regions	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Intense Storms & Flashier Hydrographs, More Frequent and Severe Droughts	Degraded Habitat & Ecosystem	NA	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs, Levee system fragility
15 – Preserve and optimize reservoir and river system operations	15b	Ensure reservoir and hydropower infrastructure integrity and reliability through agency-specific Capital Improvement Programs, with dedicated dam-safety and spillway assessment, upgrade, and maintenance actions.	Implementation & Operations	Surface Water Supply, Hydropower	Upper American , Lower American, Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	NA	Aging & Fragile Infrastructure, Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
15 – Preserve and optimize reservoir and river system operations	15c	Implement enhancements to physical facilities that better transport sediment, debris, flow, etc. for the environment and species.	Implementation & Operations	Surface Water Supply, Ecosystem, Flood Management , Hydropower	Lower American	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	NA	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
15 – Preserve and optimize reservoir and river system operations	15d	Implement enhancements to recreational elements for greater public access and use (upgrades to boat launches, trails, and campgrounds for safety and broader access).	Implementation & Operations	Recreation	All Sub Regions	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	Community & Economic Resilience	Folsom Reservoir Constraints, Reservoir Operational Tradeoffs
15 – Preserve and optimize reservoir and river system operations	15e	Implement forecast informed reservoir operations and forecast coordinated operations, and adaptive reservoir rule curves where applicable.	Implementation & Operations	Surface Water Supply, Ecosystem, Flood Management , Hydropower	Upper American , Lower American, Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	NA	Folsom Reservoir Constraints, Limited Reservoir Storage Capacity, Reservoir Operational Tradeoffs
15 – Preserve and optimize reservoir and river system operations	15f	Implement reservoir sediment management and capacity recovery program	Implementation & Operations	Surface Water Supply, Ecosystem, Flood Management , Hydropower	Upper American , Lower American, Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	NA	Folsom Reservoir Constraints, Limited Reservoir Storage Capacity, Reservoir Operational Tradeoffs
15 – Preserve and optimize reservoir and river system operations	15g	Implement hydropower asset reliability upgrades for climate and grid resilience	Implementation & Operations	Hydropower	Upper American , Lower American, Upper Bear, Upper Cosumnes	Snowpack Loss & Water Availability Decline, Shift from Snow to Rain & Runoff Timing Shift, More Frequent and Severe Droughts	NA	NA	Folsom Reservoir Constraints, Limited Reservoir Storage Capacity, Reservoir Operational Tradeoffs

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16 - Enhance and streamline policies, regulations, and funding for resilient watershed management	16a	Clarify roles and responsibilities for local, regional, Tribal, State and federal agencies to efficiently manage natural resources collectively, such as formalized agreements or legislation.	Coordination & Collaboration	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management , Hydropower	All Sub Regions	NA	NA	Community & Economic Resilience	NA
16 - Enhance and streamline policies, regulations, and funding for resilient watershed management	16b	Align and coordinate project planning by developing landscape-scale projects to better leverage available funding sources, reduce inter-agency competition for funding, and pool resources to improve administrative efficiency.	Coordination & Collaboration	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management , Hydropower	All Sub Regions	NA	NA	Community & Economic Resilience	NA
16 - Enhance and streamline policies, regulations, and funding for resilient watershed management	16c	Identify new or revisit existing financing mechanisms to improve the ability to fund forest health and infrastructure projects and operation and maintenance needs over the long term.	Planning & Strategy	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management , Hydropower	All Sub Regions	NA	Forest Health	Community & Economic Resilience	Aging & Fragile Infrastructure
16 - Enhance and streamline policies, regulations, and funding for resilient watershed management	16d	Implement regional and programmatic permitting methods to decrease administration costs and delays for environmental/cultural compliance and mitigation to allow for more efficient project implementation.	Planning & Strategy	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management , Hydropower	All Sub Regions	NA	NA	Community & Economic Resilience, Land Use & Development	NA
16 - Enhance and streamline policies, regulations, and funding for resilient watershed management	16e	Advocate for new or amended policies that reduce regulatory burdens to promote collective regional interests.	Policy & Institutional	Agriculture, Community & Equity, Groundwater Supply, Surface Water Supply, Ecosystem, Water Quality, Recreation, Flood Management , Hydropower	All Sub Regions	NA	NA	Community & Economic Resilience	NA