

Uncertainty Category	Narrative Scenario Factor Definitions	
	Factor	Definition
Economic and Financial (E/F)	Total Population	Statewide total population projection regardless of geographical distribution.
	Per Capita Income	Average annual income from all sources per person for a planning area.
	Total Commercial Activity	Refers to all activities in the service-producing sectors, which include farm services, transportation, public utilities, trade, finance, insurance, real estate, services, and government. This factor is a driver of (and indicator for) commercial water use.
	Commercial Activity Mix	The mix of high and low water using commercial activity.
	Total Industrial Activity	Refers to all activities in good-producing sectors, which include farm production, mining, construction, and manufacturing. This factor is a driver of (and indicator for) industrial water use.
	Industrial Activity Mix	The mix of high and low water using industrial activity.
	Commercial Employment	Total number of people employed by the commercial sector.
	Industrial Employment	Total number of people employed by the industrial sector.
	International Trade Agreements	Agreements in place to foster trade between the United States and other countries.
	Water Management Funding	Funding provided by federal, State, regional, and local entities to finance water management and infrastructure.
	Pesticide and Fertilizer Costs	The costs of pesticides and fertilizers for agricultural and landscape uses.
	Water and Wastewater Treatment Costs	Total cost for treating water supply and wastewater.
	Energy Costs	Refers to the cost of energy use related to producing, conveying and applying water. It also refers to the cost of energy use for processes and inputs not directly related to water, but which can affect the demand for water (e.g. the cost of nitrogen fertilizer, tractor manufacturing, etc).
	Irrigated Crop Area - Irrigated land area	Geographic footprint of irrigated crop acres (by type) planted as a function of crop markets.
	Irrigated Crop Area - Multi-cropped land area	Total acres of crops planted as a second or third crop within a year.
	Irrigated Crop Area - Permanent crop land area	Total acres of permanent crops such as orchards and vines that require several years to mature into productive plants.
	Irrigated Crop Area - Seasonal crop land area	Total acres of seasonal crops that are planted and harvested once or more a year.
Institutional and Political (IP)	Population Density	Average number of people per square mile for a planning area.
	Population Distribution	Geographic location within California of the population projection.
	Passive Conservation	The amount of background water conservation occurring independent of the BMP and EWMP programs.
	Drinking Water Standards	State and federal regulations regarding water delivered by water purveyors that is used as a potable supply.
	Irrigated Crop Area - Irrigated Land Area	Geographic footprint of irrigated crop acres (by type) planted as a function of institutional and political policies.
	Irrigation Technology Use	Technologies used for the direct irrigation of crops or for crop water use savings.
	Water Price - Rate Structure	Designates the rate basis for cost recovery (e.g., flat, uniform, tiered, etc.). Block/tiered rates are assumed to provide cost signals to consumers. Costs can include capital, O&M, financing, environmental compliance (documentation, permitting and mitigation), etc.
	Water Price - Cost Recovery	Designates who (marginal or existing users) pays the marginal and existing water costs. Also specifies circumstances where other revenue sources are used to recover costs. Costs can include capital, O&M, financing, environmental compliance (documentation, permitting and mitigation), etc.
	Managed Wetlands - Irrigated land area	Total acres of irrigated habitat managed within a federal, state, or local wildlife refuge.
	Private Wetlands - Irrigated land area	Total acres of irrigated habitat managed within a privately owned wildlife refuge.
	Instream Flow Requirements / Objectives	Volume of water dedicated to instream uses and aquatic habitat.

Uncertainty Category	Narrative Scenario Factor Definitions	
	Factor	Definition
Institutional and Political (IP)	Floodplain Development	Total acres of land developed for non agricultural purposes within a designated 100 year, 200 year, and 500 year floodplain.
	Flood Threat Recognition	Total economic value of land located within a designated 100 year, 200 year, and 500 year floodplain.
	Flood Protection Standards	Regulatory requirements affecting flood protection infrastructure design and maintenance and floodplain development.
	Urban Runoff Regulations	State, federal, and local regulations and management practices affecting the quality, re-use, and discharge of dry weather and storm runoff from urban areas.
	Agricultural Runoff Discharge Requirements	State and federal regulations regarding water returned to streams, rivers, groundwater aquifers or evaporation ponds by agricultural users.
	Regulation of Delta Exports	State and federal regulations, contractual agreements, and court rulings affecting the inflows, outflows, and export of water from the Delta.
	Colorado River Agreements	State and federal regulations, contractual agreements, and court rulings affecting the use of water from the Colorado River.
	Endangered Species Listing	Number of species listed as State or federal threatened or endangered.
	Land Use Regulations / Eminent Domain	State, federal, and local regulations, court rulings, and management practices affecting land use practices.
	Air Quality Regulations(Green House Gas Emissions)	State, federal, and local regulations, court rulings, and management practices enacted to control greenhouse gas emissions.
	Water Privatization	State, federal, and local regulations, court rulings, and management practices that support or restrict private or investor owned water supply and treatment facilities.
	Massive Population Migrations	Large influxes of people into state above recent rates caused by economic or natural events.
	Passive Energy Conservation	The amount of background energy conservation occurring independent of institutional incentives or requirements.
	Governance System	
	Farm Bill Policies	Economic and management policies enacted under the federal Farm Bill affecting agricultural practices or planting decisions.
	Water Quality Requirements / Objectives	State, federal, and local regulations, court rulings, and management practices affecting ambient surface water and groundwater quality.
	Recreational Requirements	State, federal, and local regulations, court rulings, and management practices affecting recreational use of water bodies or facilities.
	Forest Management Requirements	State, federal, and local regulations, court rulings, and management practices affecting forest management.
	Regional Transportation Systems	State, federal, and local regulations, court rulings, and management practices affecting regional transportation systems.
	Regulations of Chemicals	State, federal, and local regulations, court rulings, and management practices affecting production, use or treatment of chemicals like pesticides and fertilizers.
Rural Development	State, federal, and local regulations, court rulings, and management practices affecting land use decisions in rural areas.	
Habitat Restoration	State, federal, and local regulations, court rulings, and management practices affecting habitat restoration.	
Emerging Contaminants	State, federal, and local regulations, court rulings, and management practices affecting production, use, or treatment of unregulated chemicals found in raw water supplies.	
Natural System (NS)	Air Temperature Variability	Changes in the fluctuation of daily high and low air temperatures at specific location.
	Air Temperature Trends	Changes in monthly average air temperature over time at a specific location.
	Precipitation Variability	Changes in the intensity and frequency of precipitation at a specific location.
	Precipitation Trends	Changes in monthly average precipitation over time at a specific location.
	Snowpack/melt (intermediate factor)	Geographic distribution of monthly snow accumulations and runoff for a specific watershed

Uncertainty Category	Narrative Scenario Factor Definitions	
	Factor	Definition
Natural System (NS)	Sea-level Rise	Departure of mean daily sea level from historical average.
	River/Stream Unimpaired Flows	Monthly estimated volume of unimpaired flows in rivers and streams within California. Unimpaired flow refers to the full natural flow within a stream that would exist without storage or diversion of water for human uses.
	Extent of Invasive Species	Estimated number, geographic distribution, and hazard posed by species that are not native to an area.
	Resilience of Endangered Aquatic Species	Health and vitality of endangered species whose primary habitat is dependent on water.
	Water Temperature Variability	Changes in the fluctuation of daily high and low water temperatures at specific location.
	Water Temperature Trends	Changes in monthly average water temperature over time at a specific location.
	Stream-Aquifer Interaction	Amount of water that flows between rivers and groundwater basins through direct hydraulic connection.
	Catastrophic Events	The specific effects of extreme events such as wild land fires, earthquakes, floods, and droughts on water and natural resource management.
	Saltwater Intrusion	The movement of saline or brackish quality water into areas of fresh water. Generally refers to intrusion of sea water into the Delta or coastal groundwater basins, but can include movement of brackish groundwater into groundwater basins of better quality water.
	Extreme Precipitation Events	Magnitude and duration of flood events and extended droughts.
	Condition of Pelagic Fishes	The ecological health of pelagic fish species like the Delta Smelt, Long fin Smelt, Threadfin Shad, and Striped Bass.
	Groundwater Recharge Area	Land areas and stream courses that provide a significant amount of recharge of water through natural runoff.
	Phytoplankton Densities	The quantity of phytoplankton species observed at a particular location.
	Water Quality (Surface Water / Groundwater)	The concentration of chemical constituents observed at specific surface water and groundwater monitoring locations.
Technological (Tech)	Membrane Technology Innovation	Effectiveness of as yet developed membrane technology to treat water and reduce associated energy requirements.
	Groundwater Injection Technology Innovation	Effectiveness of as yet developed water injection technology to improve groundwater injection and reduce associated energy requirements.
	Water Use Technology Innovation	Effectiveness of as yet developed technology to improve water conservation and reduce associated energy requirements for agricultural and landscape irrigation.
	Flood System Integrity	Ability of flood infrastructure to withstand a flood with a 100 year, 200 year, and 500 year return interval.
	Infrastructure Performance	Ability of water management system infrastructure to perform as designed over time.
	Development of Safer Chemicals	Breakthroughs in research and development that lead to chemicals with fewer impacts to environmental and public health.
	Data Sharing Technology	Availability of new technology to foster sharing of water and natural resource management information between resource managers, policy makers, and the public.
	Water Quality Monitoring/Detection Technology	Availability of new technology that reduces the monitoring costs or can detect potentially polluting constituents at lower and lower concentrations.
	Stormwater Capture Systems	Effectiveness of as yet developed stormwater capture systems that allow re-use of storm runoff for potable and non-potable uses.
	Gray Water Systems	Effectiveness of as yet developed water treatment technology to treat and re-use water from dishwashers, washing machines, sinks, showers, and bathtubs.
Social Practices (Soc)	Water Treatment Technology	Improvements in water treatment technology that reduces the cost or increases the effectiveness of treating water.
	Demand for Water-based Recreation	Water-dependent recreation activities that are consumptive (e.g. parks), flat-water (e.g. boating), or flow-based (e.g. whitewater rafting).
	Population Density	Average number of people per square mile within for a planning area.

Uncertainty Category	Narrative Scenario Factor Definitions	
	Factor	Definition
Social Practices (Soc)	Population Distribution	Geographic location within California of the population projection.
	Consumer Preferences	The preference of consumers for specific products or activities that affect water use or water quality like desire for certain types of landscaping or acceptance of water saving technologies.
	Water Use Intensity	Preferences or social customs that affect the amount of water used above what is required for human health or crop consumptive use requirements like hosing down sidewalks or flooding rice fields for the benefit of water fowl.
	Forest Management Practices	Practices by resource managers that affect forest health, susceptibility to wildfires, ability to absorb storm runoff, etc.
	Sustenance Fishing	Cultural practices that include fishing for personal sustenance.
	Tribal Access to Sacred Sites and Cultural Resources	The ability of Tribes to access sacred sites and other locations used for ceremonial or cultural purposes.