

RECLAMATION

Managing Water in the West

American River Basin Study

Executive Committee Meeting #2

March 3, 2017



U.S. Department of the Interior
Bureau of Reclamation

Basin Study Program

- **Purpose**

- Work with state and local partners in 17 Western States to evaluate future water supply and demand imbalances in a changing climate

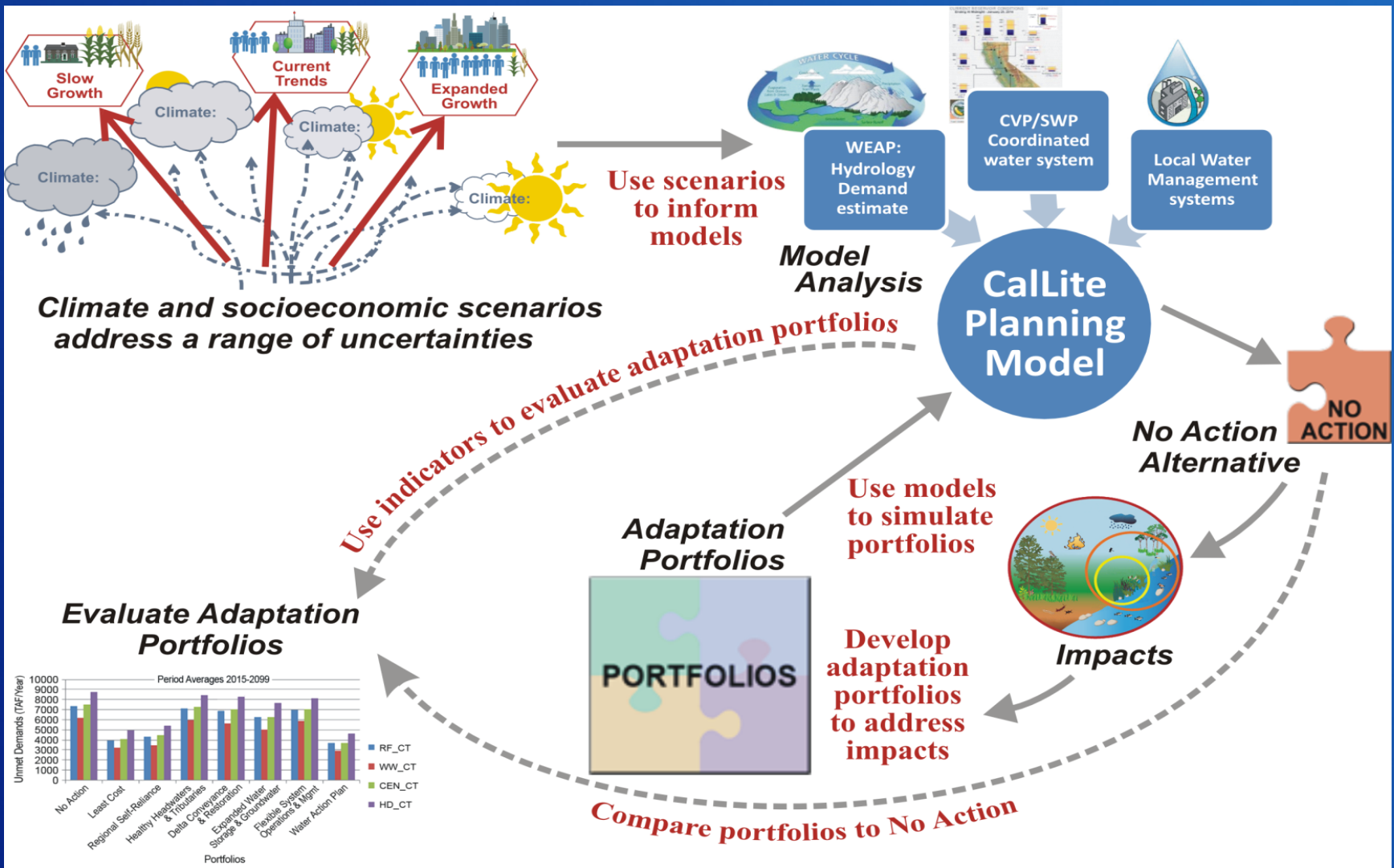
- **Basin Studies Include:**

- Assessments of the risks and impacts of climate change on water resources, and
- Development of adaptation strategies to address impacts to water supplies and demands
- **Potential follow-on more detailed Investigations**

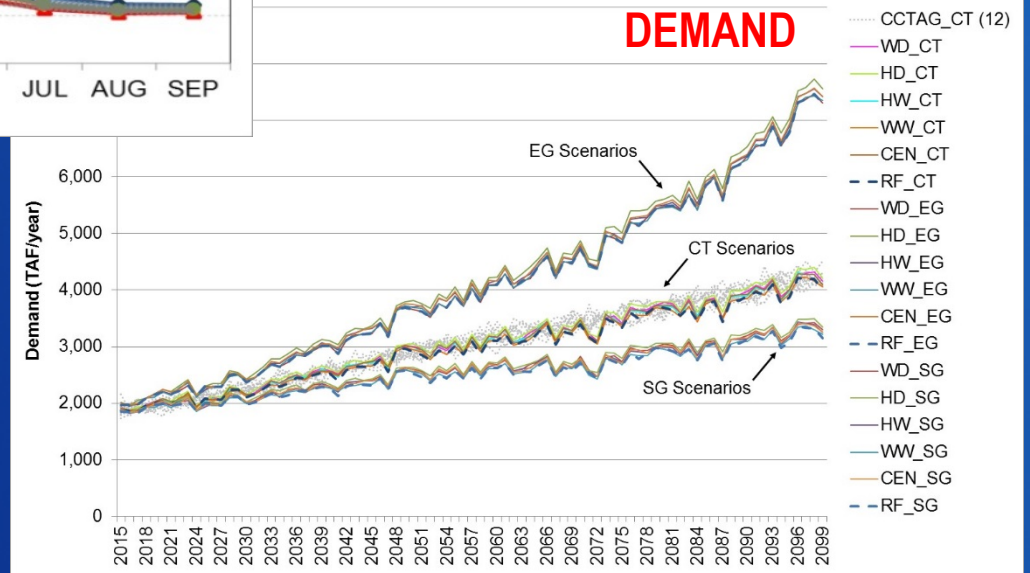
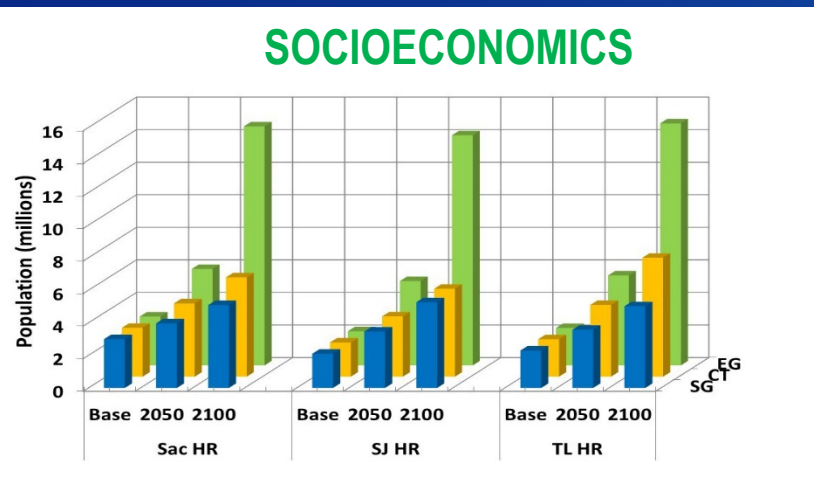
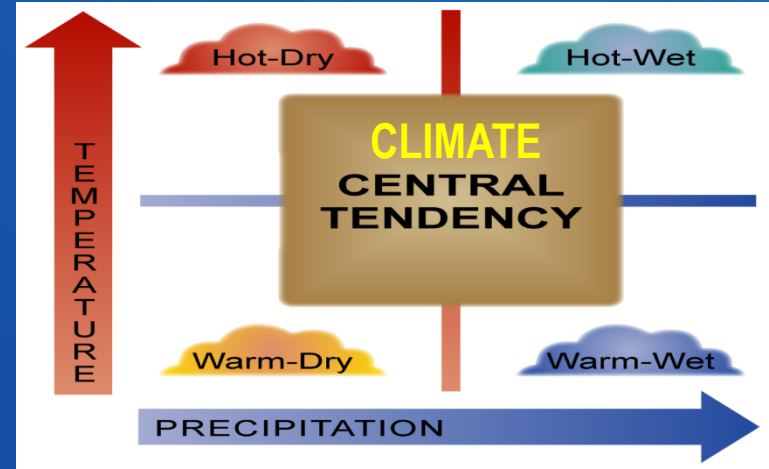
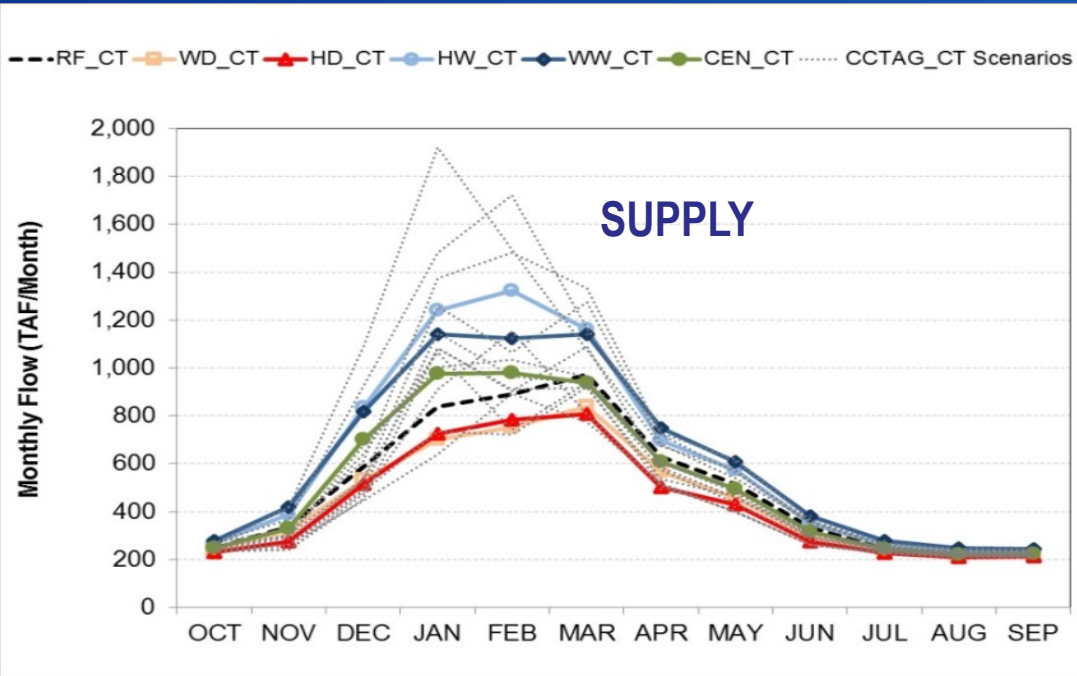
Plan of Study

- **Develop Future Climate and Socioeconomic Scenarios**
- **Assess Current and Future Risk and Reliability**
- **Develop Water Management Actions and Portfolios**
- **Evaluate Portfolio Performance and Trade-offs**

Overview

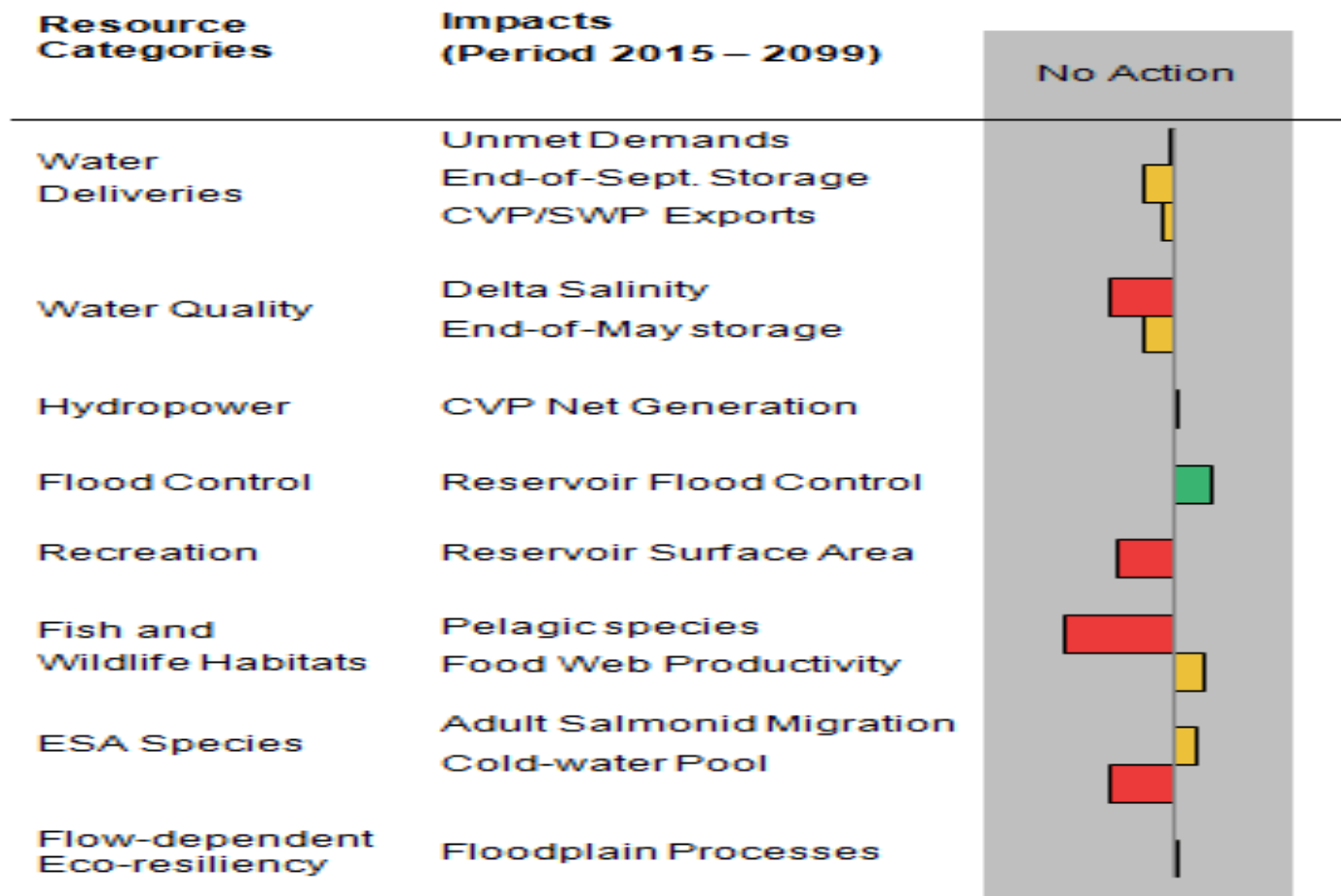


Water Supply & Demand Assessments



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Risk & Reliability Assessment



Management Actions

- **Reduce Water Demand**
 - Increase agricultural water efficiency
 - Increase municipal & industrial water use efficiency
- **Increase Water Supply**
 - Increase regional reuse
 - Increase ocean desalination
 - Precipitation enhancement
 - Rainwater harvesting
- **Improve Operational Efficiency**
 - Conjunctive groundwater management
 - Enhance groundwater recharge
 - Improve salinity and nutrient management
 - Improve temperature management
 - Improve SWP/CVP operations
 - Improve tributary and environmental flows
 - Improve system and regional conveyance
 - Increase Sac, SJ, export area, and upper watershed storage
- **Improve Resource Stewardship**
 - Improve forest health
- **Improve Institutional Flexibility**
 - Improve regulatory flexibility and adaptability
- **Improve Data Management**



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Cost, Quantity, and Timing

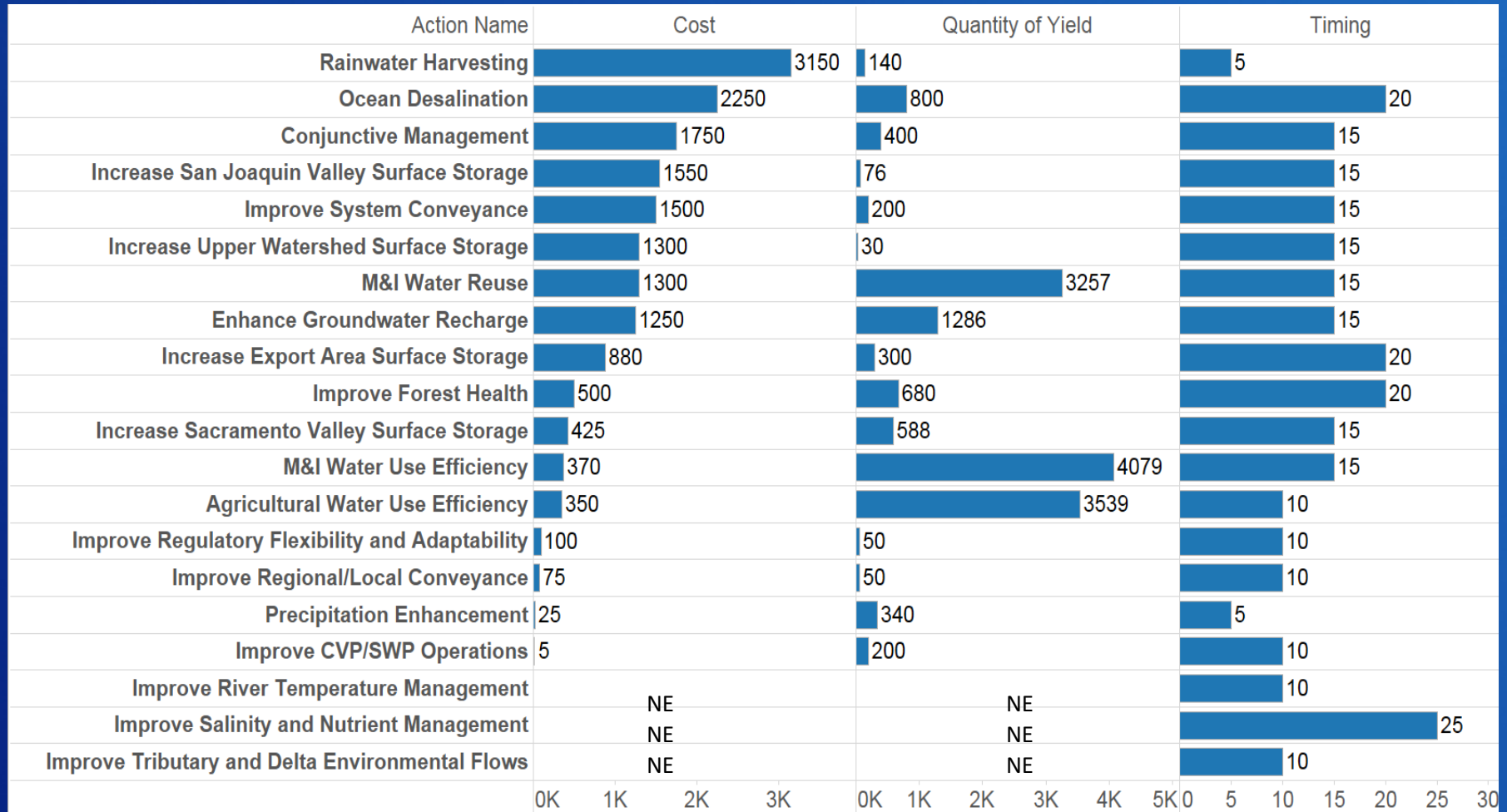


FIGURE 6-2 ESTIMATED MEDIAN COST, QUANTITY, AND TIMING FOR EACH OF THE ACTIONS. COST ARE IN \$/AFY OF SUPPLY IMPROVEMENT OR DEMAND REDUCTION. QUANTIFY OF NEW SUPPLY OR DEMAND REDUCTION IN TAFY. TIMING TO IMPLEMENTATION IN YEARS.

Other Screening Criteria

Action Name	Cost	Quantity of Yield	Timing	Technical Feasibility	Permitting	Legal	Policy	Implementation Risk	Long-term Viability Risk	Operational Flexibility	Energy Needs
Agricultural Water Use Efficiency	A	A	B	B	B	B	A	B	C	E	A
M&I Water Use Efficiency	A	A	C	A	A	A	B	B	B	B	A
M&I Water Reuse	B	A	C	B	C	C	B	B	C	D	D
Ocean Desalination	D	B	C	C	C	C	C	B	C	D	D
Precipitation Enhancement	A	C	A	C	B	C	C	B	D	B	C
Rainwater Harvesting	E	D	A	A	A	A	B	A	B	A	A
Conjunctive Management	C	B	C	B	C	C	A	B	C	D	B
Enhance Groundwater Recharge	C	B	C	B	B	B	A	B	B	E	A
Improve Tributary and Delta Environmental Flows	A	E	B	A	C	B	D	B	B	B	C
Improve System Conveyance	E	C	C	B	D	C	C	C	C	D	D
Improve CVP/SWP Operations	A	D	B	A	D	C	C	B	B	B	C
Improve Regional/Local Conveyance	A	D	B	A	B	B	B	A	B	C	C
Increase Sacramento Valley Surface Storage	A	C	C	B	D	C	B	C	B	D	C
Increase San Joaquin Valley Surface Storage	C	D	C	B	D	C	B	C	B	D	C
Increase Export Area Surface Storage	B	C	C	B	D	C	B	C	B	D	C
Increase Upper Watershed Surface Storage	B	D	C	B	D	C	B	C	B	D	B
Improve Forest Health	A	B	C	D	C	C	E	D	D	E	C
Improve Regulatory Flexibility and Adaptability	A	D	B	A	D	D	B	C	B	A	A
Improve River Temperature Management	E	E	B	A	B	C	B	C	D	C	C
Improve Salinity and Nutrient Management	E	E	D	B	C	D	B	D	C	D	B

Adaptation Portfolios

Water Management Action	Least Cost	Regional Self-Reliance	Healthy Headwaters & Tributaries	Delta Conveyance and Restoration	Expanded Water Storage	Flexible System Operations	Water Action Plan
Increase Agricultural Water Use Efficiency	X	X					X
Increase Urban Water Use Efficiency	X	X					X
Increase Regional Reuse		X					X
Increase Ocean Desalination		X					X
Precipitation Enhancement	X	X					X
Rainwater Harvesting		X					X
Conjunctive Groundwater Management		X			X	X	X
Enhance Groundwater Recharge		X			X	X	X
Improve Tributary Environmental Flows			X				X
Improve System Conveyance	X			X	X		X
Increase Sac Valley Surface Storage	X				X		X
Increase SJ Valley Surface Storage					X		X
Increase Export Area Surface Storage	X				X		X
Increase Upper Watershed Surface Storage					X		X
Improve Forest Health	X		X				X
Improve Regulatory Flexibility/Adaptability	X					X	X

Performance & Tradeoffs



No Action CEN_CT to RF_CT

Portfolio Comparisons to No action CEN_CT only

Discussion

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