

# California **Water Plan** Highlights

## California Water Plan Update 2009

INTEGRATED WATER MANAGEMENT

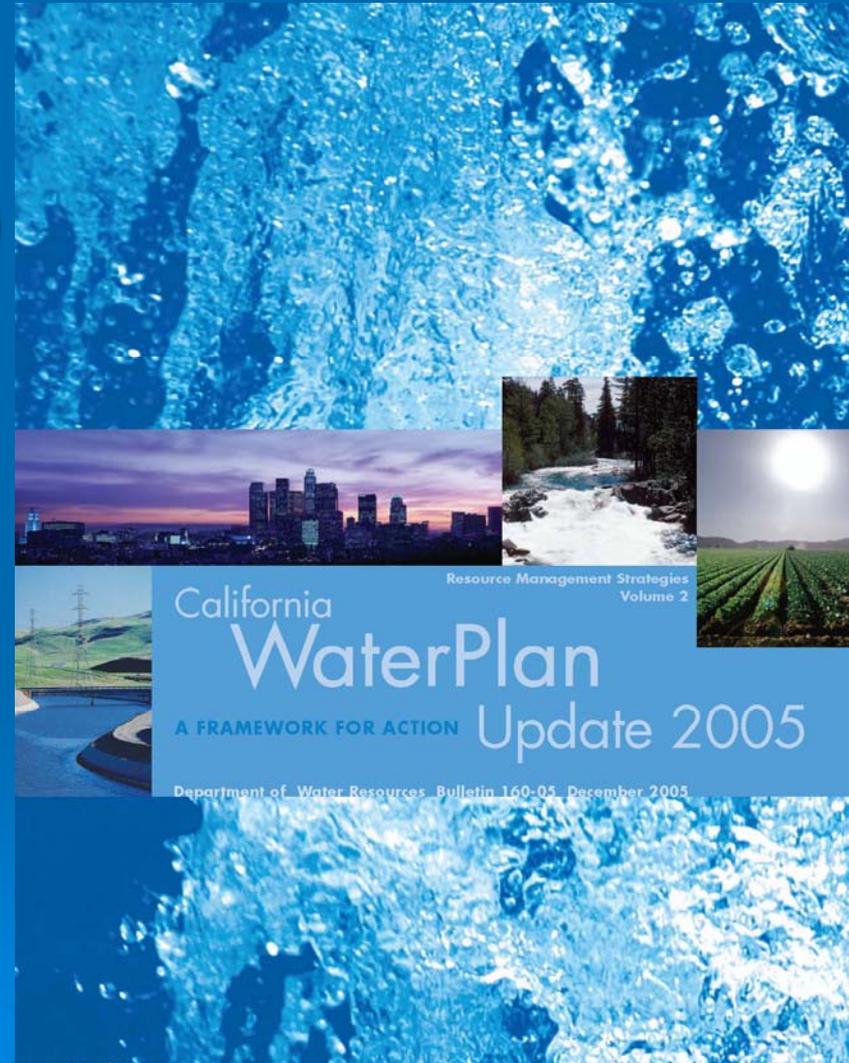


Update 2009 • Department of Water Resources

California Water  
Commission  
September 28, 2010

# The California Water Plan

- First published in 1957 as Bulletin 3
- Updated 9 times as Bulletin 160  
→ Update 2009 released Mar 2010
- Water Code requires DWR to update Water Plan every 5 years  
→ next one in 2013
- Growing interest by Legislature & stakeholders
- Part of Governor's Strategic Growth Initiative
- Not a mandate & No appropriation



# Update 2009 – State's Blueprint Integrated Water Management & Sustainability

## VISION

- Public Health, Safety, Quality of Life
- Vitality, Productivity, Economic Growth
- Healthy Ecosystem, Cultural Heritage

### Foundational Actions for **SUSTAINABLE WATER USES**

- Use Water Efficiently
- Protect Water Quality
- Expand Environmental Stewardship

### Initiatives for **RELIABLE WATER SUPPLIES**

- Expand Integrated Regional Water Management
- Improve Statewide Water and Flood Management Systems

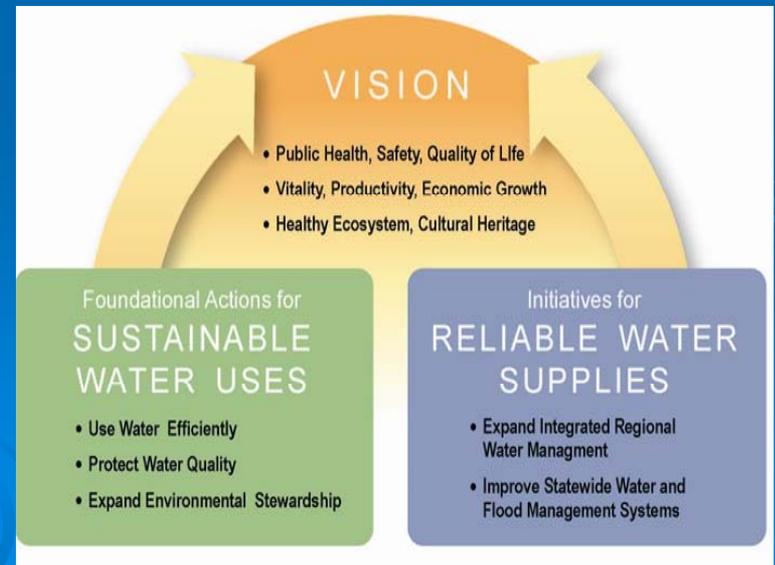
# Update 2009 Features



- Provides water community a framework & investment guide
  - ➔ Array of strategies to achieve multiple goals & benefits
- Integrates 2009 Comprehensive Water Legislation and State government companion plans, initiatives & strategies
  - ➔ Inform the 115+ near- and long-term actions
- Incorporates consideration of uncertainty, risk & resource sustainability into water & flood planning (future scenarios)
  - ➔ Advocates placing greater value on sustainable outcomes than on water supply yield & extraction

# Update 2009 Features

- Advances strategies for Integrated Flood Management and Climate Change adaptation & mitigation
- Describes 27 resource management strategies to diversify regional water portfolios & increase regional self-sufficiency
- Outlines new IWM analytical methods and tools to account for population growth & development patterns, economic & climate change, and other uncertainties
- Updates 12 regional reports with information on:
  - IRWM partnerships & planning
  - Water portfolios 1998 – 2005
  - Water quality conditions
  - Flood management
  - Future scenarios to 2050





# State Agency Steering Committee

## Companion State Plans, Initiatives & Strategies

- Air Resources Board
- Boating & Waterways
- Business, Transportation & Housing (Caltrans)
- Cal-EMA
- Cal-EPA
- CALFED Bay-Delta Program
- California Energy Commission
- California Public Utilities Commission
- Conservation
- Fish & Game
- Food & Agriculture
- Forestry & Fire Protection
- Housing & Community Develop
- Parks & Recreation
- Planning & Research
- Public Health (HHS)
- Native American Heritage Commission
- Natural Resources Agency
- State Lands Commission
- Water Boards
- Water Resources

# Chapter on Companion State Plans

- Present role of 21 agencies on Update 2009 Steering Committee
- Feature 23 State Plans
- Describe nexus of State Plans and Update 2009 objectives & management strategies



# Water Plan Update Organization

## California **Water Plan** Update 2009

INTEGRATED WATER MANAGEMENT



Bulletin 160-09 • Department of Water Resources

*Volume*  
The Strategic Plan

1

- Water Plan Highlights
  - CD - Entire Water Plan
  - CD - Tribal Water Summit Proceedings
- **Vol. 1 > The Strategic Plan**
- Vol. 2 > 27 Resource Management Strategies
- **Vol. 3 > 12 Regional Reports**
- Vol. 4 > Reference Guide (120+ articles)
- **Vol. 5 > Technical Guide (Online documentation)**

# Water Plan Highlights

## California **Water Plan** Highlights

INTEGRATED WATER MANAGEMENT



Update 2009 • Department of Water Resources

# Secretary's Message

It is my pleasure to introduce the 2009 California Water Plan Update (Update 2009), which sets forth a blueprint for sustainability and forges a new direction for water management in California. Our new reality is one in which we must manage a resource characterized by uncertainty and vulnerability due to climate change and changing ecosystem needs. Our past hydrology is no longer an accurate indicator of the future.



This Water Plan follows the Update 2005 roadmap of strategies for sustainable water use but with an increased sense of urgency. Update 2009 reinforces the need to follow the principles of integrated water management – statewide and regionally – and to use water efficiently, improve water quality and reliability, and integrate environmental stewardship into every aspect of how we manage our water.

Update 2009 comes on the heels of a historic water legislation package passed by the Legislature and signed into law by Governor Schwarzenegger in November 2009. The landmark legislative package positions California for 21st Century water management by establishing new urban water conservation targets, requiring statewide groundwater monitoring, and creating a new framework for improved governance in the Sacramento-San Joaquin Delta.

The Resource Management Strategies in Update 2009 build upon the new legislation and chart a path forward into a future characterized by risk and uncertainty. There is a new urgency with which we must embrace water use efficiency in the context of climate change and increased urban demand. Improved water conveyance is a strategy from past Water Plans, but is now presented with renewed significance given the context of a Delta ecosystem in continued decline and the threats of seismicity and sea level rise.

New to this Water Plan is an integration of water resource management and flood management throughout the state. This approach aims to increase resiliency in our systems while yielding multiple benefits like increased public safety, habitat protection, and water supply reliability. A critical strategy in Update 2009 is the development of a reliable revenue stream to fund necessary system improvements and to invest in the continued resilience and robustness of California's water resources and the ecosystem that supports them.

Climate change and increasing demand have greatly reduced the flexibility and resilience of the last century's infrastructure investments. Now is the time to recognize our changed conditions and reinvest in that infrastructure in a sustainable manner. In addition to statewide improvements, local resource strategies such as conservation, water recycling, groundwater storage and conjunctive use, urban runoff management, and more can converge in the context of Integrated Regional Water Management (IRWM) planning.

The strategies outlined in these pages provide the means to manage resources comprehensively; from snowmelt to estuary, from field to tap, and all of the uses within the watershed.

California water management cannot be changed overnight, but Update 2009 and the momentum behind it provide the plan, tools, and strategies to achieve momentous change beginning now. I hope you will agree that Update 2009 is the state's blueprint for sustainability and integrated water management and marks a significant new chapter in the way California manages its water resources.

A handwritten signature in black ink, appearing to read 'Lester A. Snow'.

Lester A. Snow  
Secretary for Natural Resources  
The Natural Resources Agency

# Secretary's Message

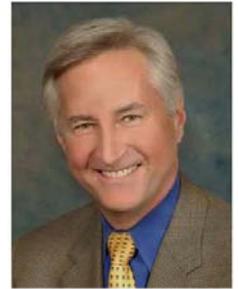
"The strategies outlined in these pages provide the means to manage resources comprehensively; from snowmelt to estuary, from field to tap, and all of the uses within the watershed".

# Director's Foreword

"Update 2009 spells out the urgencies that demand action: dealing with longer and more pronounced droughts, increased flood risk, threats to the environment, impaired water bodies, and aging infrastructure".

## Foreword

Water Plan Update 2009 epitomizes collaboration. It reflects the perspectives of many and varied individuals, groups, and government entities representing the full spectrum of issues, concerns, and visions for the future of water management in California. Update 2009 has been enhanced by the leadership of 21 State agencies and departments that oversee or carry out water-related activities. Federal, Tribal, regional, and local entities helped shape the strategic plan—its goals, objectives, and recommendations—and 27 resource management strategies that are key to success.



Update 2009 reflects a new reality for resource management, a blueprint for sustainability, and a new direction for water decisions. This reality includes significant challenges: ecosystems in peril, the uncertainties of climate change and sea level rise, and population growth to name just a few. Update 2009 also spells out the urgencies that demand action: dealing with longer and more pronounced droughts, increased flood risk, threats to the environment, impaired water bodies, and aging infrastructure.

The Water Plan's outreach to Native American Tribes brought about a Tribal Communication Plan and culminated in the first of its kind California Tribal Water Summit in 2009. Update 2009 also introduces new water planning methods with the use of scenarios and response packages while evaluating the effects of future climate change.

This Water Plan marks a dynamic new approach to the way California manages its water resources—statewide and regionally. We must adapt California's water systems more quickly and effectively to keep pace with ever-changing conditions. With new urgency, regions must develop and implement truly integrated regional water management plans as roadmaps to meeting future water demands in sustainable ways. We must also continue our efforts at the statewide level to develop and implement plans for a sustainable Delta and to improve our flood management system. To assure balanced, effective solutions are implemented, we must develop long-term, reliable funding methods to make necessary system improvements and to invest in the continued resilience of California's water resources and the ecosystem that supports them.

In November 2009, the Legislature passed and Governor Schwarzenegger signed a comprehensive water package which is integral to Update 2009. Today, State government has the responsibility and opportunity to work with local partners within a new Delta governance structure to complete and implement plans for improving both the Delta ecosystem and the reliability of water supply derived from the Delta. We also must step up our efforts to integrate this work with our ongoing responsibilities to develop a Central Valley Flood Protection Plan, implement the FloodSAFE California initiative, and improve water storage statewide.

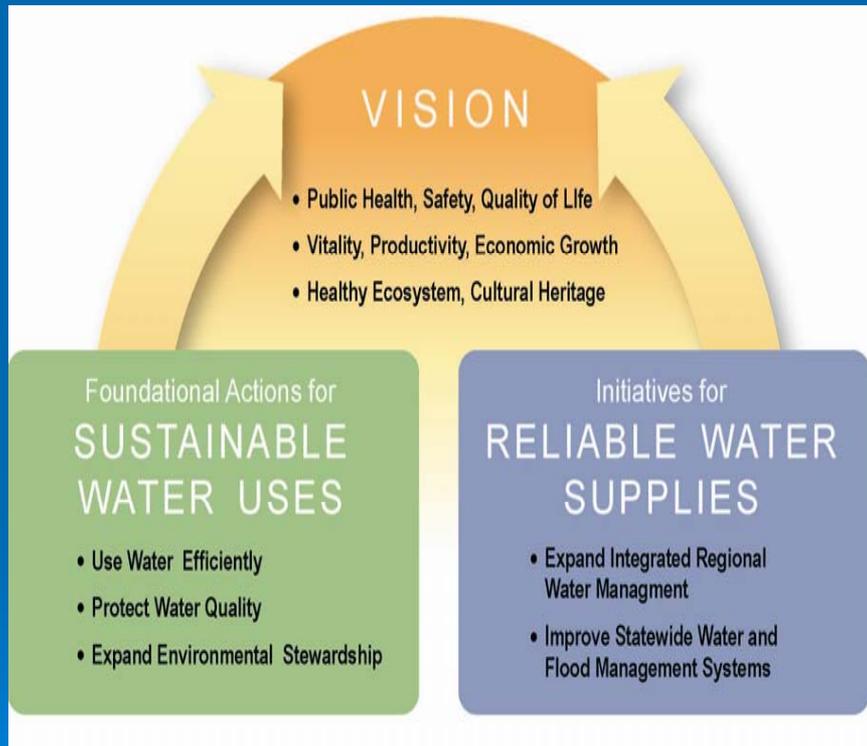
Regional water planning and management is essential for solving California's water issues. Local governments, agencies, and stakeholders have the best understanding of their water management challenges. DWR and other State agencies must partner with local agencies and governments to advance Integrated Regional Water Management, and to implement the new requirements for water conservation and groundwater monitoring. State government can provide expertise, technical assistance, and other essential support activities.

The California Water Plan Update 2009 will help chart our course toward more sustainable, integrated resources management. In broad strokes, this means considering water supply reliability, flood protection, water quality, and environmental stewardship in all resource management decisions. By doing so, we increase our chances of realizing the Water Plan's vision: a productive economy, healthy ecosystem, and desirable quality of life for all Californians.

A handwritten signature in black ink, appearing to read "Mark W. Cowin".

Mark W. Cowin, Director

# Imperative to Act to Keep Pace w/ Changes



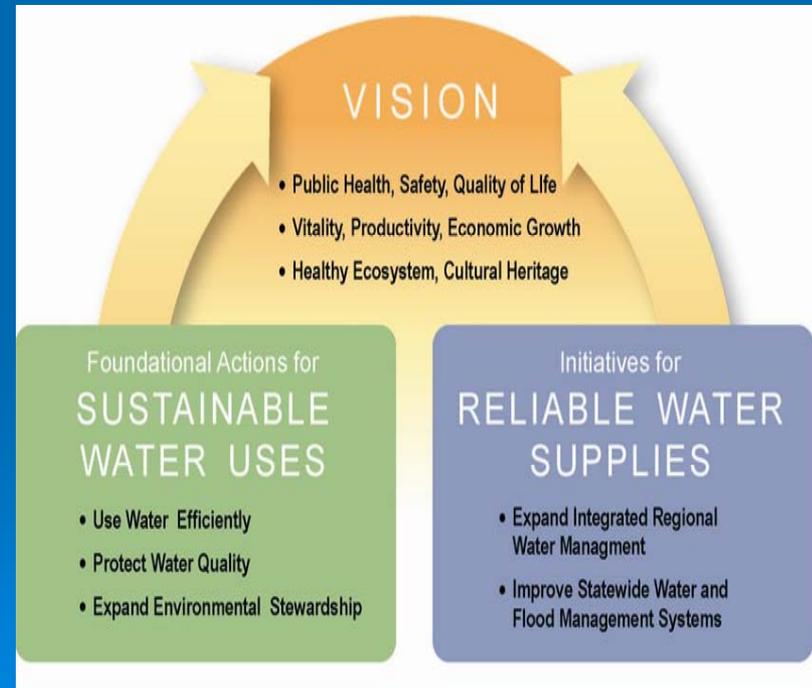
- Population growth & movement
- Shift to permanent crops
- Increasing flood risk
- Declining Delta & watersheds
- Impaired water bodies
- Climate Change profoundly impacting water systems
- Aging water & flood systems challenged by legal remedies & regulatory protections
- Growing economic & societal consequences of declining water reliability and degraded quality of surface & groundwater supplies

# Imperative to Act to Keep Pace w/ Changes

## The *Entire System* –

water & flood facilities,  
watersheds & ecosystems

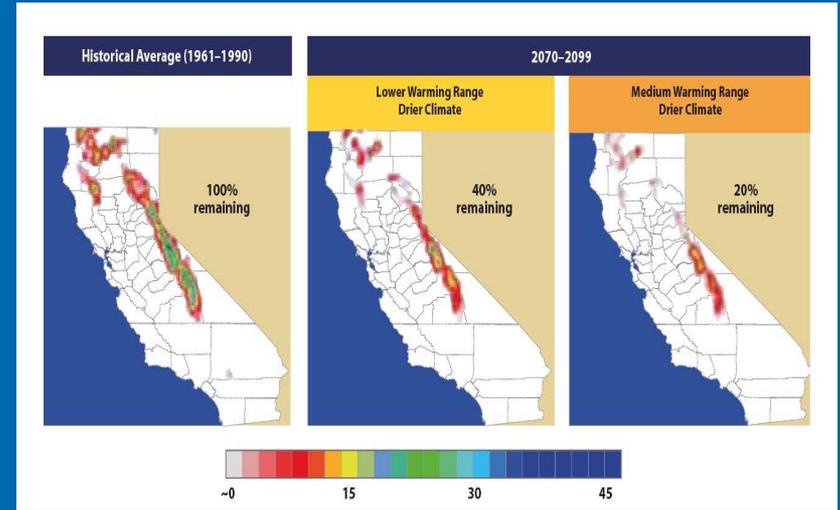
– has lost resilience and is  
changing in undesirable ways.



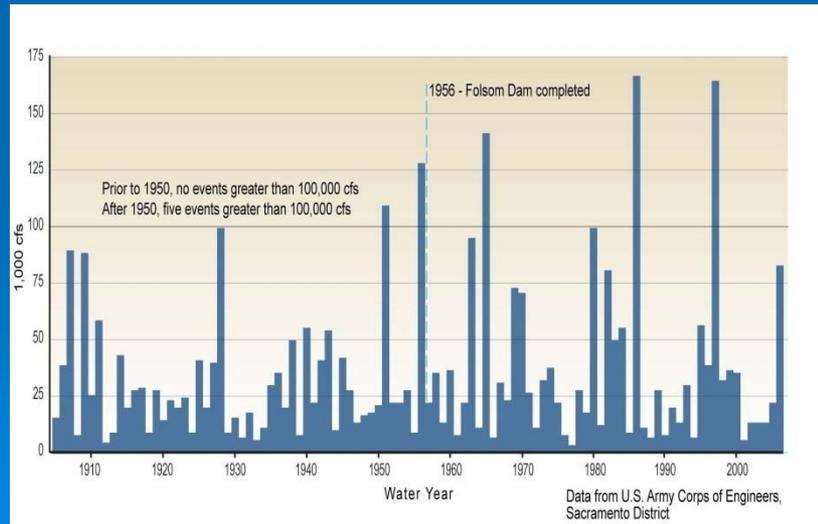
# Climate Change: Future Hydrology Unlike the Past



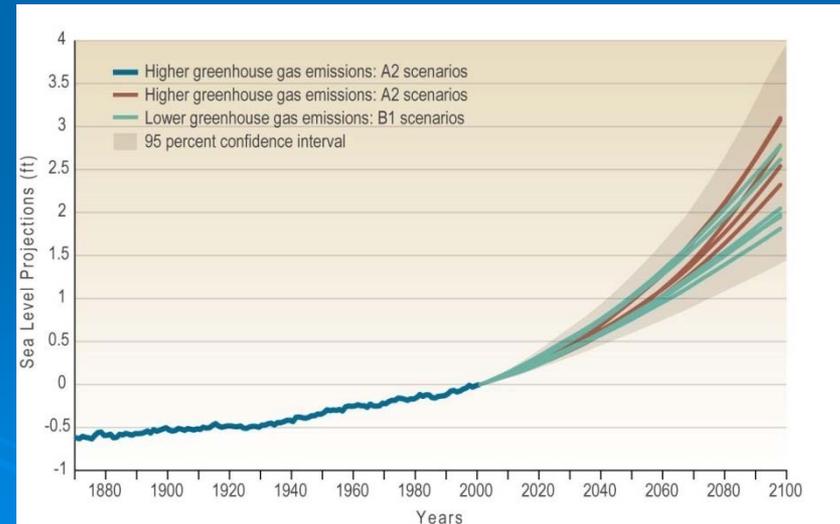
Higher air & water temperature



Early snowmelt & less snowpack



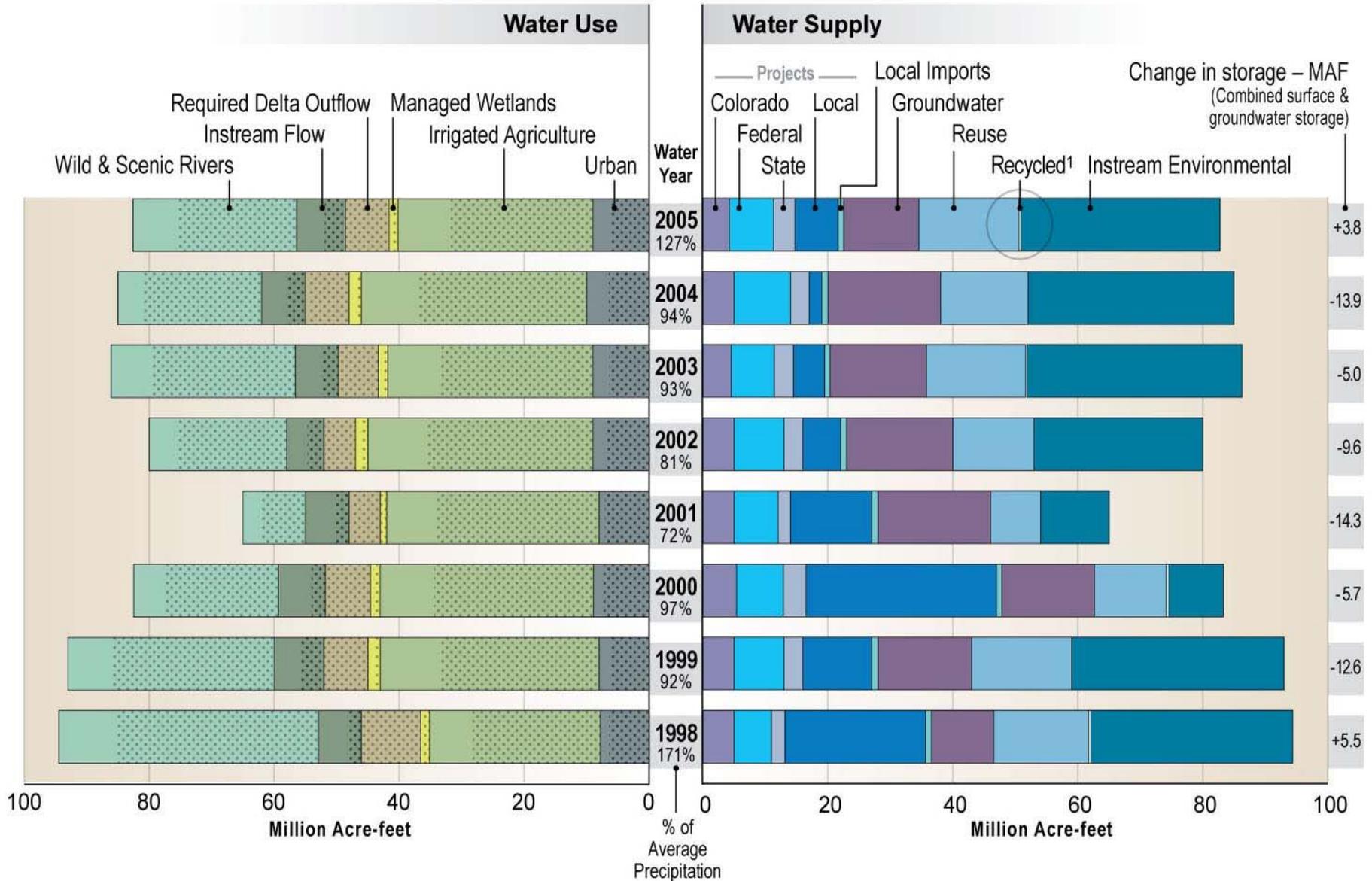
Changing runoff pattern



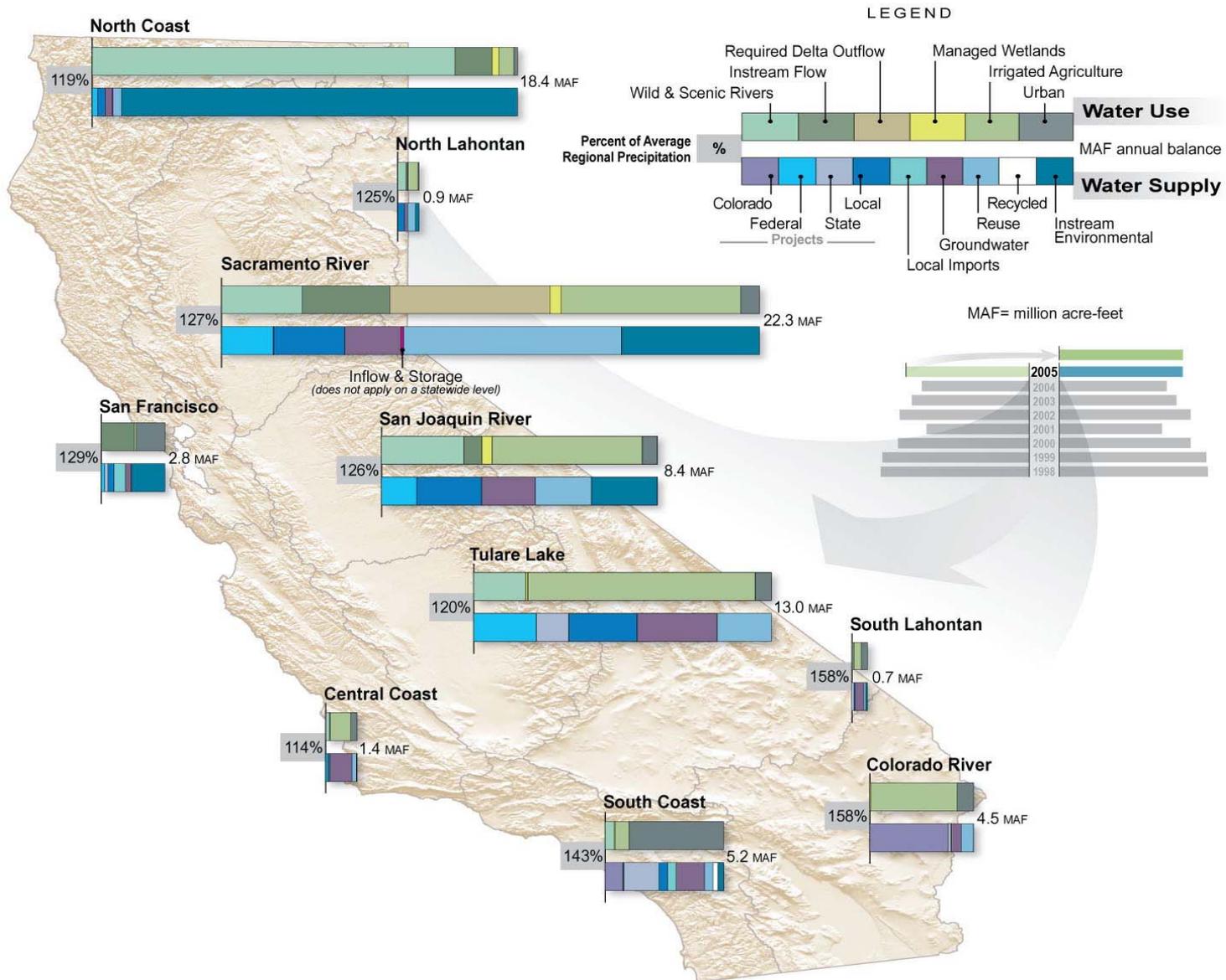
Rising sea level

# California's Water Resources: Variable & Extreme

## Butterfly Chart

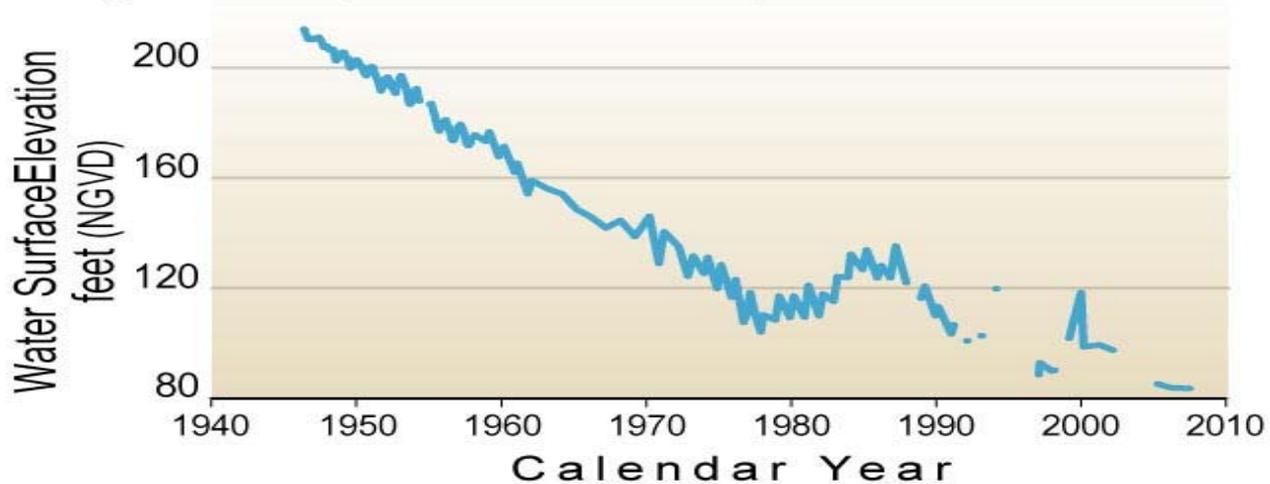


# Understanding Regional Diversity (2005)

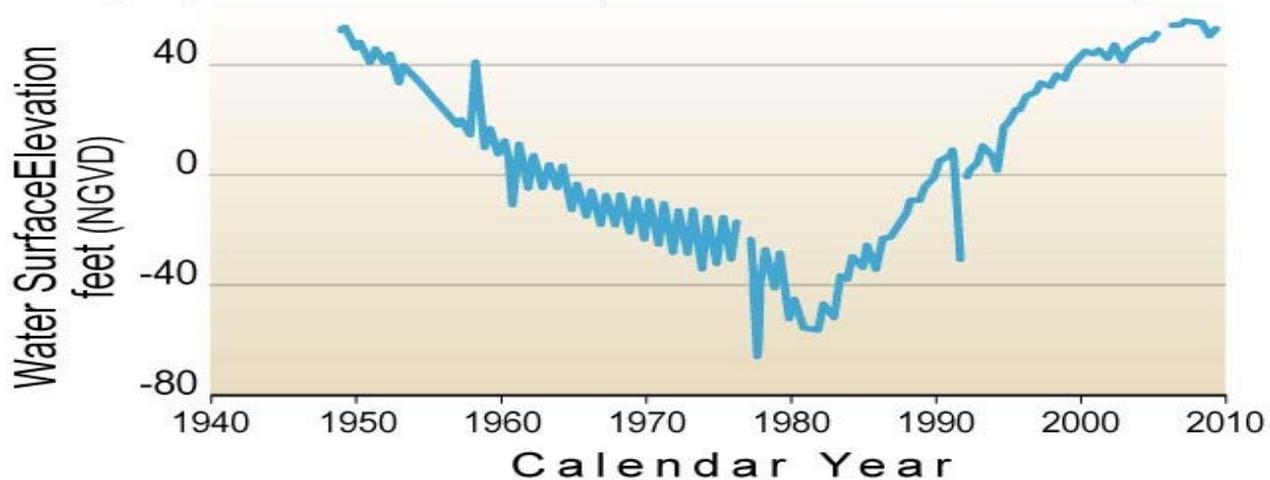


# Groundwater Overdraft & Recovery

## Kings Basin, Fresno County



## Brophy Water District, South Yuba County



# 3 Future Scenarios: Key Factors of Uncertainty

## Current Trends

Recent trends are assumed to continue into the future. Regulations are not coordinated or comprehensive, creating uncertainty for planners and managers. The state continues to face lawsuits, from flood damages to water quality and endangered species protections.

## Slow & Strategic Growth

Private, public, and governmental institutions form alliances to provide for efficient planning and development that is less resources intensive than current conditions. State government implements comprehensive and coordinated regulatory programs to improve water quality, protect fish and wildlife, and protect communities from flooding.

## Expansive Growth

Future conditions are more resource intensive than existing conditions. Protection of water quality and endangered species is driven mostly by lawsuits. State government has responded on a case-by-case basis, creating a patchwork of regulations and uncertainty for planners and water managers.

### Factors of Uncertainty

Population



59.5 million\* (22.8 million increase)



44.2 million (7.5 million increase)



69.8 million (33.1 million increase)

Land Use



Continued development



Compact development



Sprawling development

Irrigated Crop Area



8.6 million acres (0.7 mil. acre decrease)



9.0 million acres (0.2 mil. acre decrease)



8.2 million acres (1.0 mil. acre decrease)

Environmental Water



1.0 additional MAF



1.5 additional MAF



0.6 additional MAF

Background Water Conservation



10% more efficient



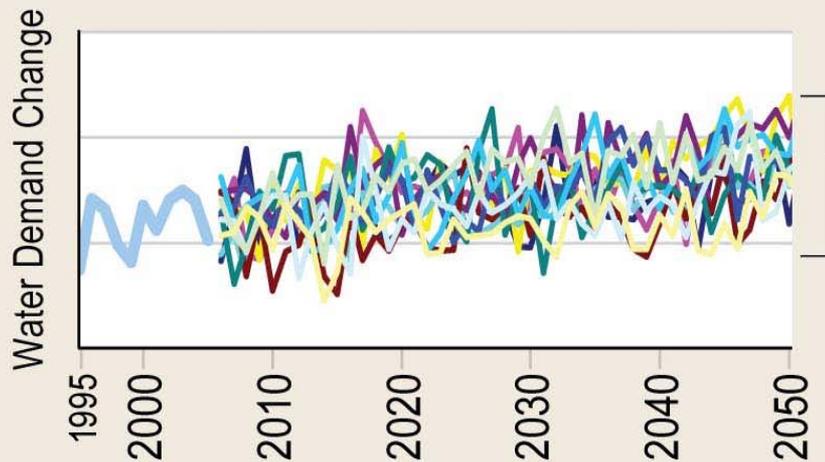
15% more efficient



5% more efficient

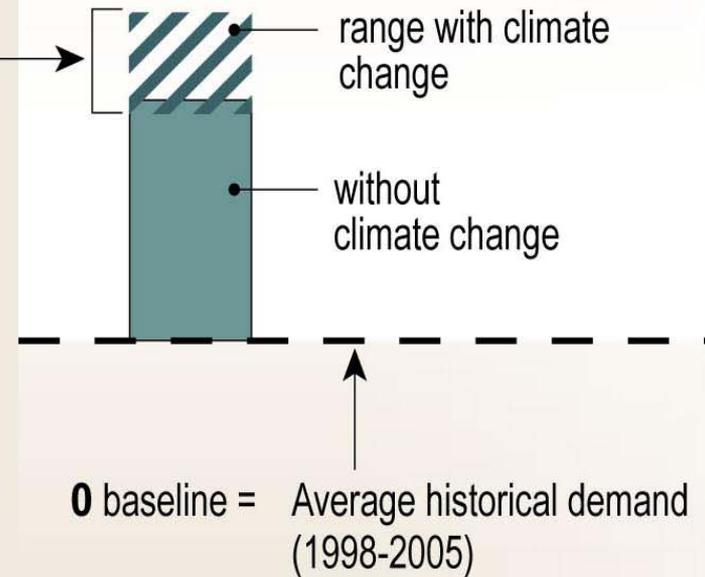
# Legend: Water Demand Changes & Climate Change Variability

12 Climate Scenarios



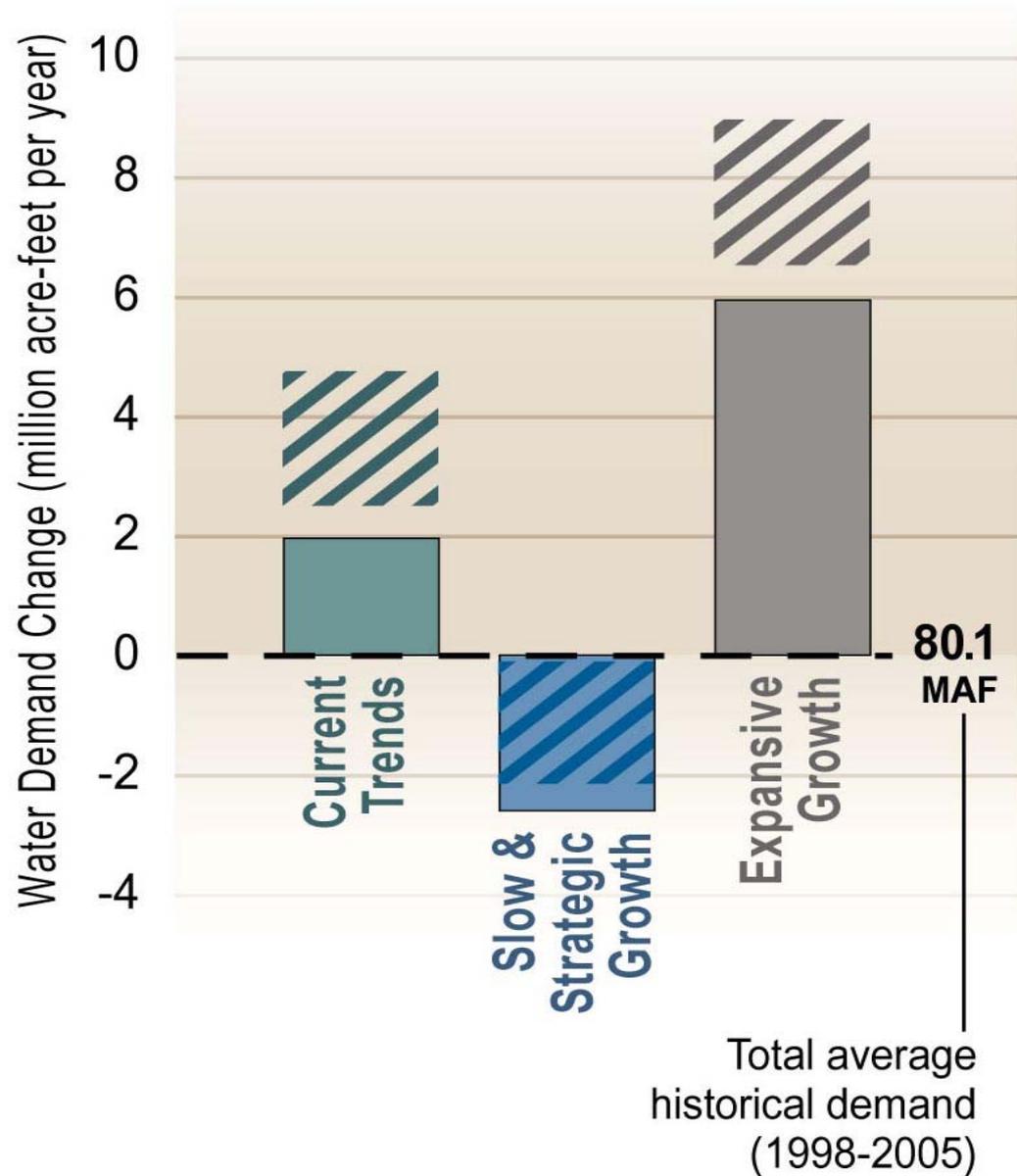
## Water demand change:

Average projected future demand (2043-2050)



# Statewide Water Demand Change for 2050 Scenarios

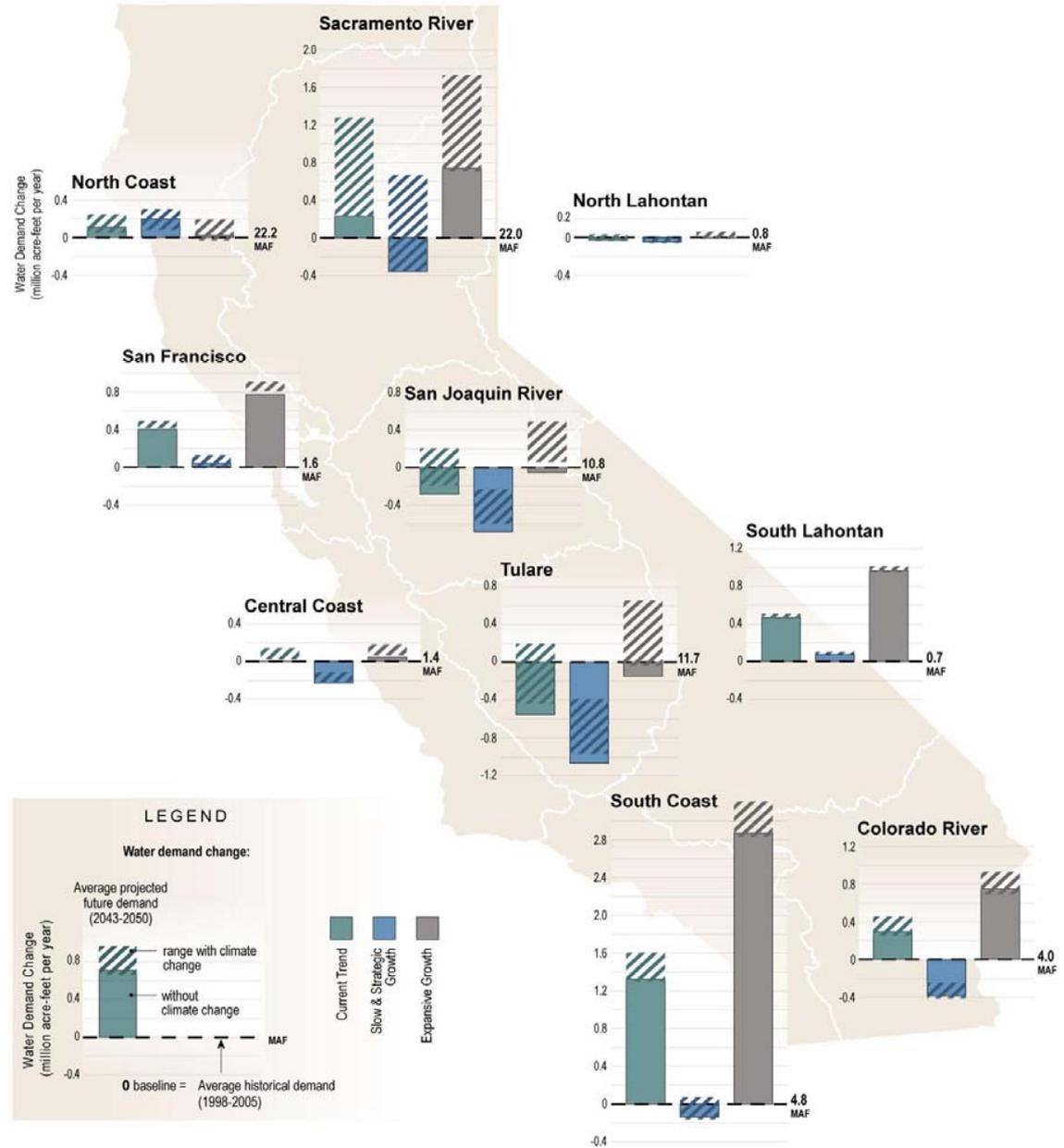
Without & With  
Climate Change



# Water Demand Change for 2050 Scenarios

## From a Regional Perspective

Wide-ranging climate variability



# 27 Resource Management Strategies

## *A Range of Choices*

### Reduce Water Demand

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency

### Improve Operational Efficiency & Transfers

- Conveyance – Delta
- Conveyance – Regional / Local
- System Reoperation
- Water Transfers

### Increase Water Supply

- Conjunctive Management & Groundwater Storage
- Desalination – Brackish & Seawater
- Precipitation Enhancement
- Recycled Municipal Water
- Surface Storage – CALFED
- Surface Storage – Regional / Local

### Improve Flood Management

- Flood Risk Management

### Improve Water Quality

- Drinking Water Treatment & Distribution
- Groundwater / Aquifer Remediation
- Matching Quality to Use
- Pollution Prevention
- Salt & Salinity Management
- Urban Runoff Management

### Practice Resource Stewardship

- Agricultural Lands Stewardship
- Economic Incentives  
(Loans, Grants & Water Pricing)
- Ecosystem Restoration
- Forest Management
- Land Use Planning & Management
- Recharge Areas Protection
- Water-Dependent Recreation
- Watershed Management

Other – Crop idling, dew vaporization, fog collection, irrigated land retirement, rainfed agriculture, waterbag transport

# Objectives of Integrated Regional Water Management



- Foster regional partnerships and resolve conflicts
- Integrate data & resources mgmt
- Diversify regional water portfolios
- Leverage existing resources & reduce costs
- Implement actions with sustainable outcomes

# Regional Strategies: Multiple Responses & Benefits

## Regional Strategies:

## Multiple Responses and Benefits

**R**egional partnerships in many parts of the state are successfully employing a mix of resource management strategies. Experience is showing that these regional efforts can better resolve regional needs, especially when paired with statewide water management systems.

With integrated regional water management, regions have been able to take advantage of opportunities that are not always available to individual water suppliers: reduce dependence on imported water and make better use of local supplies; enhance use of groundwater with greater ability to limit groundwater overdraft; increase supply reliability and security; and improve water quality. More is being done to meet water demands with water conservation, reoperation of facilities, water recycling, groundwater storage and management, transfer programs, and, in limited cases, regional or local surface storage reservoirs. Overall, this increased focus on integrated regional water management solves water management problems more efficiently, considers other resource issues, and enjoys broader public support.

Integrated Regional Water Management (IRWM) provides a critical framework for actions to address the uncertainties presented by climate change as well as other risks to California's water future. The extent to which regions have carried these out has been driven by considerations like economics, environment, engineering, and institutional feasibility. For more information on the IRWM Program, go to Web site: <http://www.water.ca.gov/irwm/>



See more about regional strategies in Volume 3 regional reports.



**North Coast**

- Araujo Dam Restoration Project
- Newell Water System Upper Mattole River Culvert Replacement
- Westport Water Tank



**San Francisco Bay**

- Mocho Groundwater Demineralization Plant
- Water Saving Hero Campaign



**South Coast**

**Los Angeles**

- Calleguas Regional Salinity Management Project
- Arundo Removal
- Las Virgenes Creek Restoration
- Joint Water Pollution Control Plant Marshland Enhancement (Bixby Marshland)

**Santa Ana**

- Arlington Desalter
- Orange County Groundwater Replenishment System
- Solar Array at RP-5 Wastewater Treatment Plant

**San Diego**

- Tri-County Funding Area Coordinating Committee
- El Monte Valley Groundwater Recharge and River Restoration Project
- Carlsbad Desalination Project Local Conveyance
- Rancho California Water District Water Reclamation Project
- Santa Margarita Conjunctive Use Project




**Sacramento River**

- Red Clover Valley Restoration – Upper Feather River Watershed
- The Bear River Project: Reducing Legacy Mercury Contamination



**San Joaquin River**

- Yosemite Spring Park Utility Company Improvements



**Central Coast**

- Groundwater Recharge Enhancement
- City of Watsonville Recycled Water Facility and Pajaro Valley Water Management Agency Coastal Distribution System
- Salinas Valley Water Project
- Santa Maria Wastewater Treatment Plant Expansion
- Los Osos Wastewater Project



**North & South Lahontan**

- Inyo-Mono Integrated Regional Water Management Project
- Upper Amargosa Creek Recharge and Nature Park Project
- Antelope Valley Regional Recycled Water Project



**Colorado River**

- Coachella Valley Regional Water Management Group potential projects include water conservation, recycling, conjunctive use and water quality improvements.
- Salton Sea restoration partnership
- Coachella Lining Project
- All-American Canal Project



**Tulare Lake**

- Southern Sierra IRWM Effort
- Alta Irrigation District Harder Pond recharge and banking project

# Variable Conditions & Unique Responses

## 12 Regional Reports



- Setting
- Regional Water Conditions
- Relationship with Other Regions
- Regional Water and Flood Planning and Management
- Looking to the Future
- Water Portfolios 1998-2005
- Selected References

# Strategic Plan Elements

double foldout 12A – 12D

➤ Desired future for CA water & Purpose of Water Plan

Vision & Mission

➤ Desired outcomes for the 2050 planning horizon

7 Goals

➤ Core values & philosophies

10 Guiding Principles

➤ Statements of intent / Focus on what & when

13 Objectives & 115+ Actions

➤ Removing impediments & leveraging opportunities

9 Recommendations

# 2009 Comprehensive Water Package

## Integrated in Water Plan Actions



- Delta Governance
- Statewide Water Conservation
- Statewide Groundwater Monitoring
- Water Rights Enforcement
- Funding for Water Supply Reliability

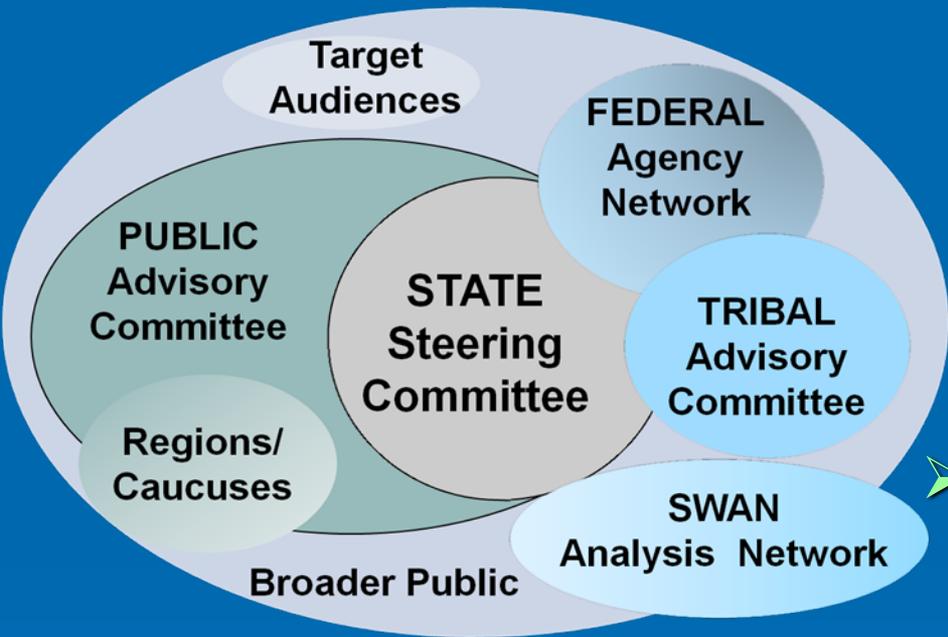


# Improving Coordination & State Leadership

## Chapter 2 – Imperative to Act

- **Coordinating Government Planning & Management**  
California's water management system is large and complex. Its water governance is very decentralized. Therefore, we need greater cooperation and collaboration among decision-makers at all levels of State, federal, Tribal, regional, and local entities.
- **Recommendation 4 – Improving Role of State Gov't**  
State government should leverage existing governance like the SGC and new governance like the Delta Stewardship Council to provide leadership and to develop and implement consistent water policy across all State agencies and departments.

# Preparing for Update 2013



## ➤ 18 Content Enhancements

- Integrated Water Management
- Regional Planning
- Collaboration
- Data, Metrics & Analysis
- Adaptive Management

## ➤ Process Improvements

- *Expand* Steering Committee
- *Mod* Public Advisory Committee
- *Add* Tribal Advisory Committee
- *Add* Federal Agency Network
- *Add* Regional Forums
- *More* Topic Caucuses
- *Cont* SWAN Analysis Network

# Ways to Access Water Plan Information

- Visit the *Water Plan Web Portal* [www.waterplan.water.ca.gov](http://www.waterplan.water.ca.gov)

**California Water Plan eNews**  
Special Edition  
March 30, 2010

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**California Water Plan Update 2009**  
Integrated Water Management  
Bulletin 160-09 Department of Water Resources

**California Water Plan Update 2009 released**

Today, the California Department of Water Resources released the California Water Plan Update 2009 – a product of four years of collaboration. It's a water plan for the entire state and is available online. Integrated water management and sustainability is the thread of continuity throughout Update 2009. It gives all Californians a new direction for water decisions about such challenges as threatened ecosystems, the uncertainties of climate change and a rising sea level, and population growth. It speaks out the urgencies that demand

- [Read Press Release](#)
- [Read Special File](#)

The Water Plan came from a steering committee representing 21 State agencies, a 45-member public advisory committee, nearly 40 regional workshops held around the state, about 150 meetings with more than 20,000 person-hours of conversations about our water. Update 2009 is the State's blueprint for sustainability and integrated water management and marks a significant new chapter in the way California manages its water resources.

**Secretary's Message**  
Secretary of California Natural Resources Agency Lester Snow delivers his message about Update 2009.

**Highlights**  
The Highlights section of Update 2009 provides an easy-to-read overview of the document.

**Strategic Plan, Volume 1**  
Update 2009 includes a strategic plan with a vision, mission, goals, recommendations, and implementation plan.

**Resource Management Strategic, Volume 2**  
Think of these strategies as tools in a tool kit. There are nearly 30 strategies for attaining integrated water management.

**Director's Message**  
Director of California Department of Water Resources Mark Cowan writes the foreword to Update 2009.

Click on links below for more information.

Upcoming Meetings | Water Plan Web site



- Subscribe to *Water Plan eNews* a weekly electronic newsletter [www.waterplan.water.ca.gov/enews](http://www.waterplan.water.ca.gov/enews)

California Home | Governor Home | Amber Alert | Tuesday, April 27, 2010

Welcome to *California*

**DEPARTMENT OF WATER RESOURCES**  
PLANNING AND LOCAL ASSISTANCE

California Water Plan

Home > Update 2009 - Integrated Water Management

**California Water Plan Update 2009**  
Integrated Water Management  
Bulletin 160-09 Department of Water Resources

Products: Update 2008, Update 2005, Previous Reports, Brochures & Briefings, Water P.E. Data sheets, Subjects, Analysis of Tools, Climate Change, Management Strategies, Regional Reports, Scenarios, Water Quality, Participative: Calendar and Materials, Steering Committee, Advisory Committee, Administrative Contact, Regional Outreach, SWAR, Tribal Communication, Contacts and Comments

HOURLY REPORTS | VOLUME 1 | VOLUME 2 | VOLUME 3 | VOLUME 4 | VOLUMES

**Release and Contact Information**

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**Secretary's Message**

The strategies outlined in these pages provide the means to manage resources comprehensively, from snowmelt to estuary, from field to tap, and all of the uses within the watershed.

0.2 MB  
[View of former Director Snow giving his address at the Primary meeting of](#)