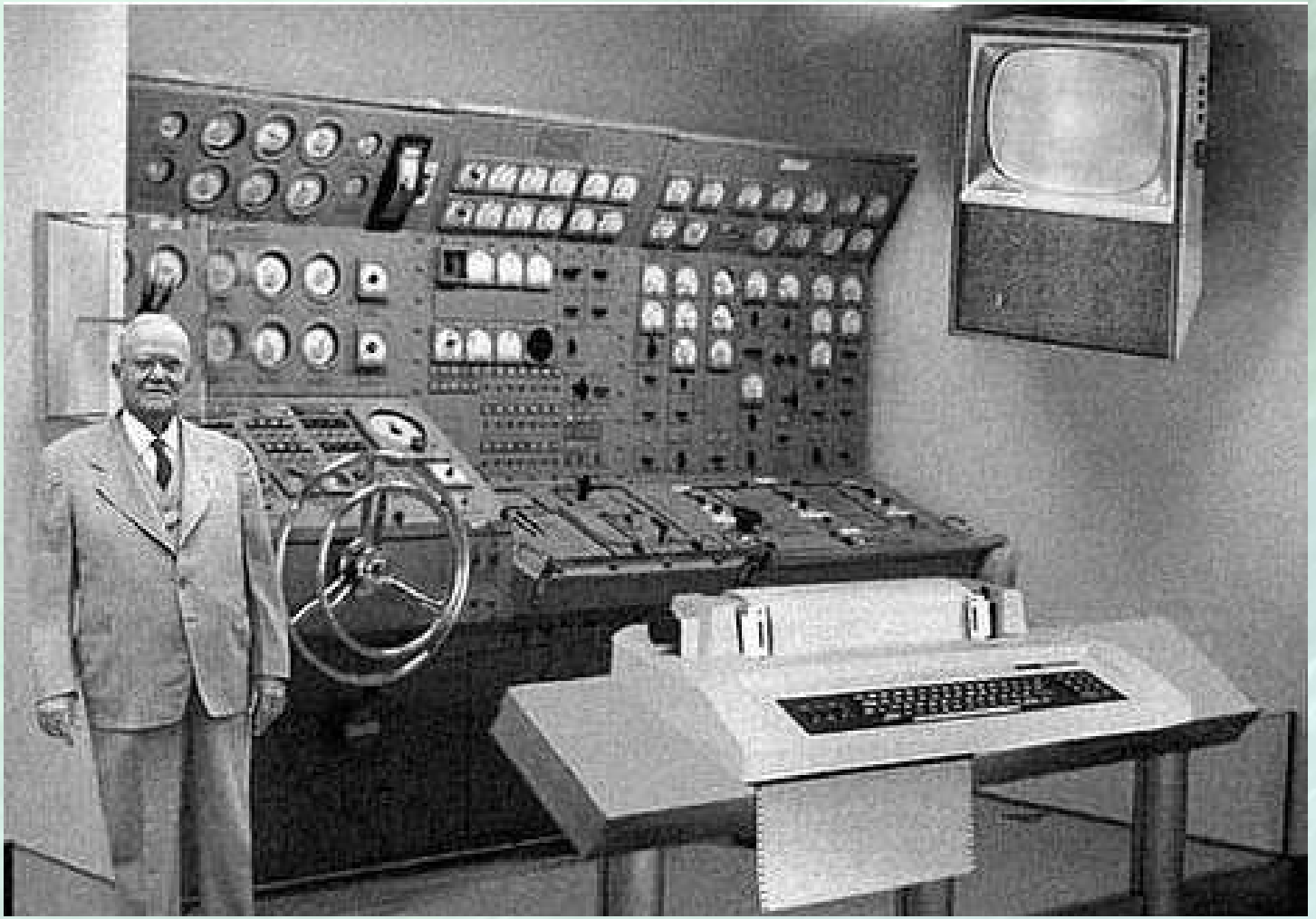
Integrated Data and Tools for Update 2013



Presentation Overview

- Vision for Water Plan Technical Analysis
- Water Plan Update 2013
  - Schedule, foundational components, and proposed enhancements
- Application of Scenarios to Update 2009
- Proposal to Evaluate Resource Management Strategies for Update 2013

Vision & Purpose

for Analytical Tool and Data Improvements

- Support decision making in light of uncertainties
  - Promote collaborative decision making, Shared Vision Planning
- Support integrated water management regionally and statewide
  - Supply reliability, flood management, environmental restoration, water quality, economic efficiency, social equity

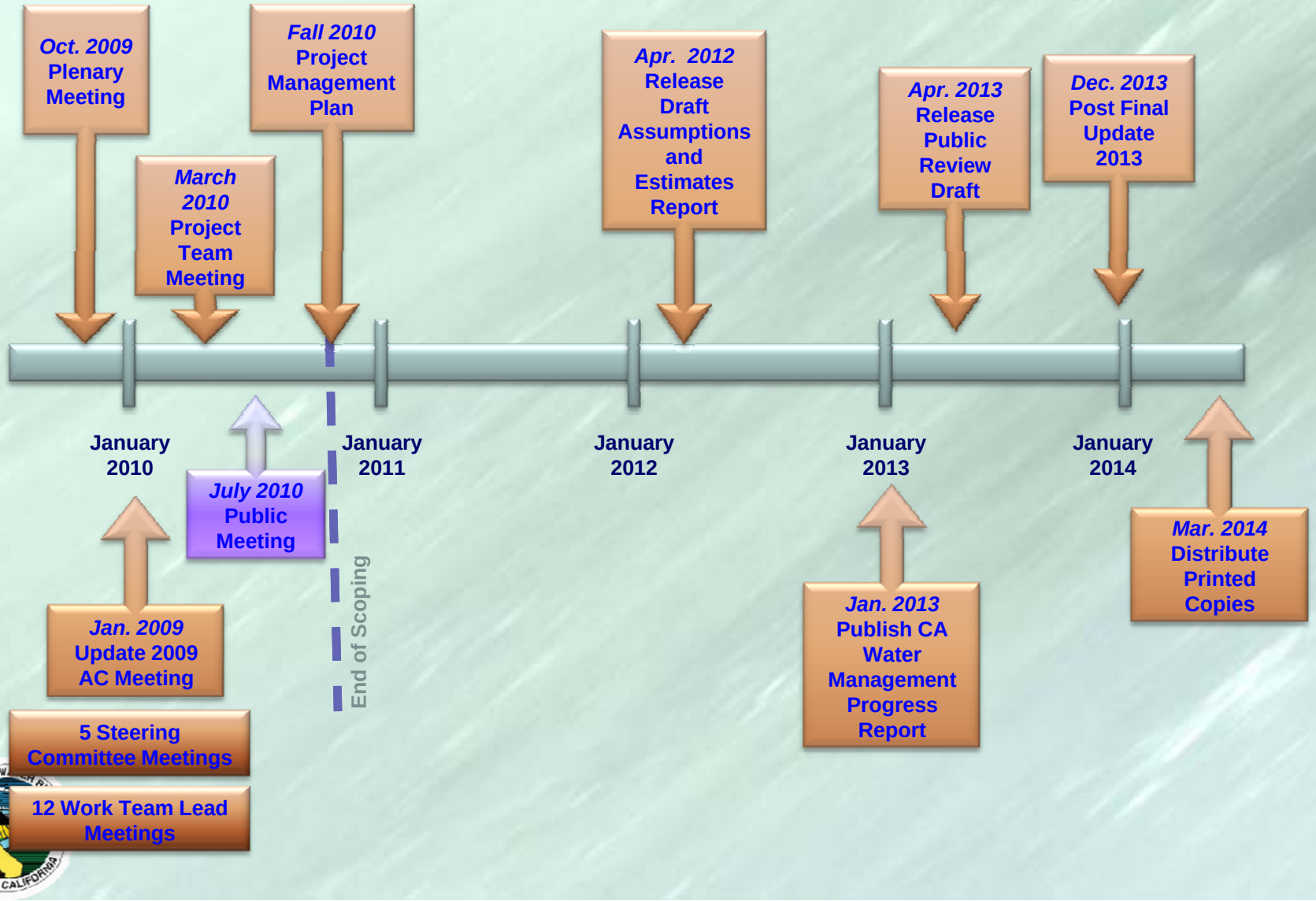
Water Plan
Quantitative Deliverables

- Accurately describe recent water management conditions (Water Portfolios)
- Develop multiple baseline future conditions (Scenarios)
- Identify alternative water management response packages (management strategies)
- Evaluate performance of strategies in terms of benefits, costs, and tradeoffs
- Evaluate interaction between local, regional, and statewide water management
- Support Water Planning Information Exchange

SWAN's Role in Update 2013

- Technical advisory group for the California Water Plan
  - Provide recommendations on improvements to analytical tools and data
  - SWAN recommendations brought to Water Plan policy advisory groups
  - Through Water Plan, recommendations will guide other statewide and regional planning efforts

Water Plan Update 2013
Timeline and Major Deliverables



Foundational Components from Update 2009

- Content
  - Strategic Plan
  - Water Balances and Portfolios
  - Regional Reports
  - Future Scenarios
  - Resource Management Strategies
  - Companion State Plans
  - Reference Guide
  - Technical Guide
  - Assumptions and Estimates Report
- Process
  - Public Advisory Committee
  - State Steering Committee
  - Regional Outreach and Coordination
  - Work Team Matrix
  - Tribal Outreach and Coordination
  - Statewide Water Analysis Network
  - Plenary Meetings

Proposed Enhancements to Update 2013

- Water Resources
  - Expand water quality discussions
  - Continue integration of flood and water planning
  - Expand groundwater discussion
  - Include near-coastal ecosystems and issues
- Regional Planning
  - Expand linkages between land use and water management
  - Incorporate Urban Water Management Plans into regional reports and plans
  - Create an Economic and Financial Planning work team

Proposed Enhancements to Update 2013

- Collaboration
  - Clarify and refine State leadership
  - Increase and coordinate involvement of federal agencies
  - Continue to work with Tribes and refine Tribal involvement
- Adaptive Management
  - Revisit concept of environmental water
  - Implement a “Living Document” approach
  - Incorporate shorter planning horizons
  - Identify and remove outdated codes and laws

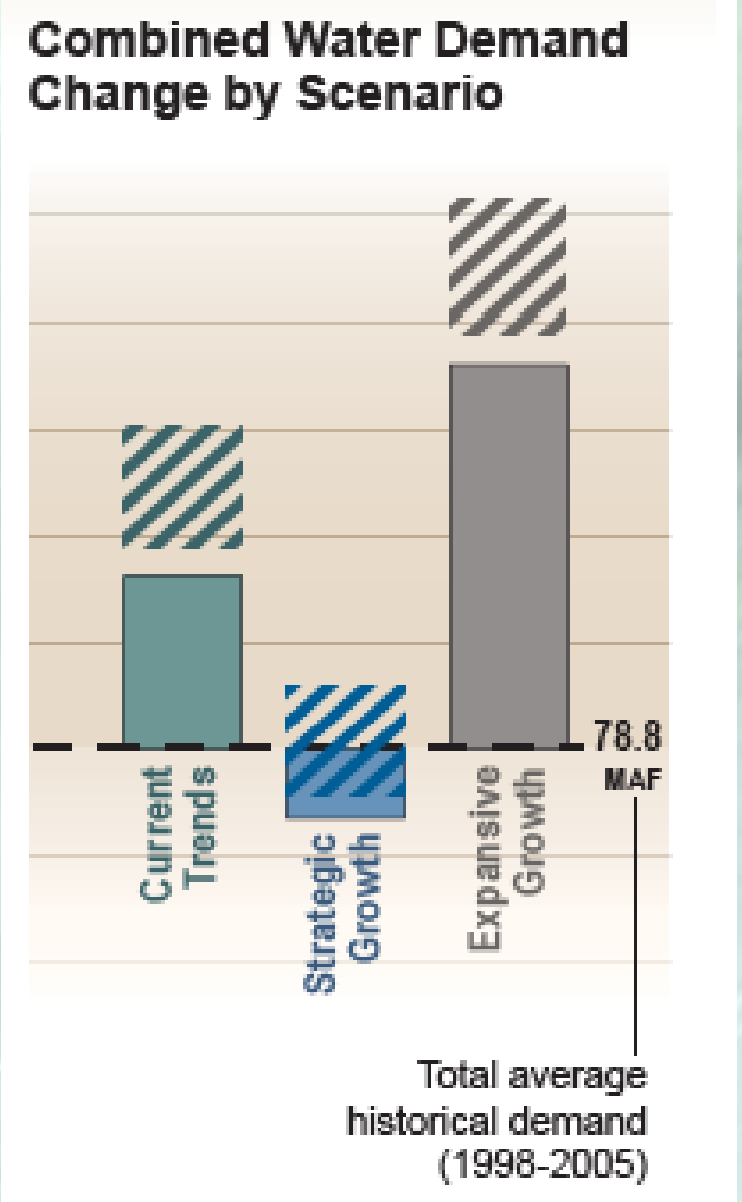
Proposed Enhancements to Update 2013

- <u>Data, Metrics and Analysis</u>
  - o Improve data management and sharing
  - o Enhance inter-disciplinary collaboration of technical analysis
  - o Develop new evaluation metrics and sustainability indicators
  - o Develop California Water Management progress report

Application of Scenarios for Update 2009

Future Baseline Scenarios

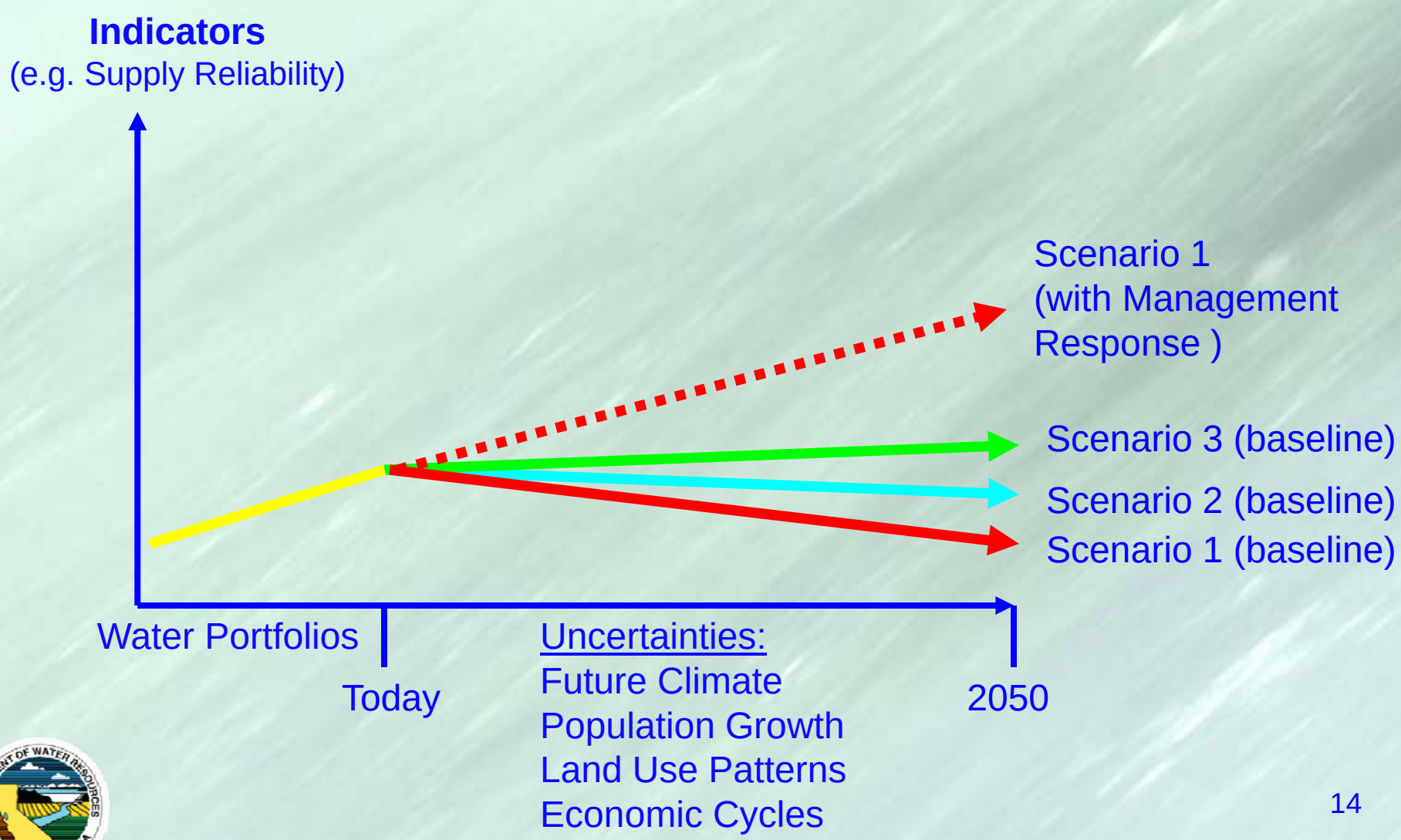
Provide alternative views of how population, land use, climate and other factors can affect future water management



Water Plan Scenarios Used To Consider Future Uncertainty

- Three plausible yet very different conditions during 2050 planning horizon
- Explore key uncertainties facing water community
- Factors water community has little control over
- Not predictions ---- used to evaluate water management responses

Scenarios and Water Management Responses



Technical Outreach for Update 2009

- December 2007 – Scenario proposal
- April 2008 – Shared Vision Planning
- June 2008 – Refinement of scenario proposal
  - Climate change
  - Environmental water
  - Flood management
  - Water quality
- February 2009 – Review of preliminary demands
- June 2009 – Review of revised results & graphics
- July 2009 – Climate Change Technical Advisory Group
- October 2009 – Water management responses

Using WEAP to quantify future scenarios and water management responses

- Successful WEAP applications
  - Sacramento Valley, IEUA, CABY, CEC PIER program, Etc
- Contracting mechanism and expertise in place
- Graphical nature supports collaboration
- Shorter learning curve than alternatives

Two Scales of Analysis for Update 2009

10 Hydrologic Regions

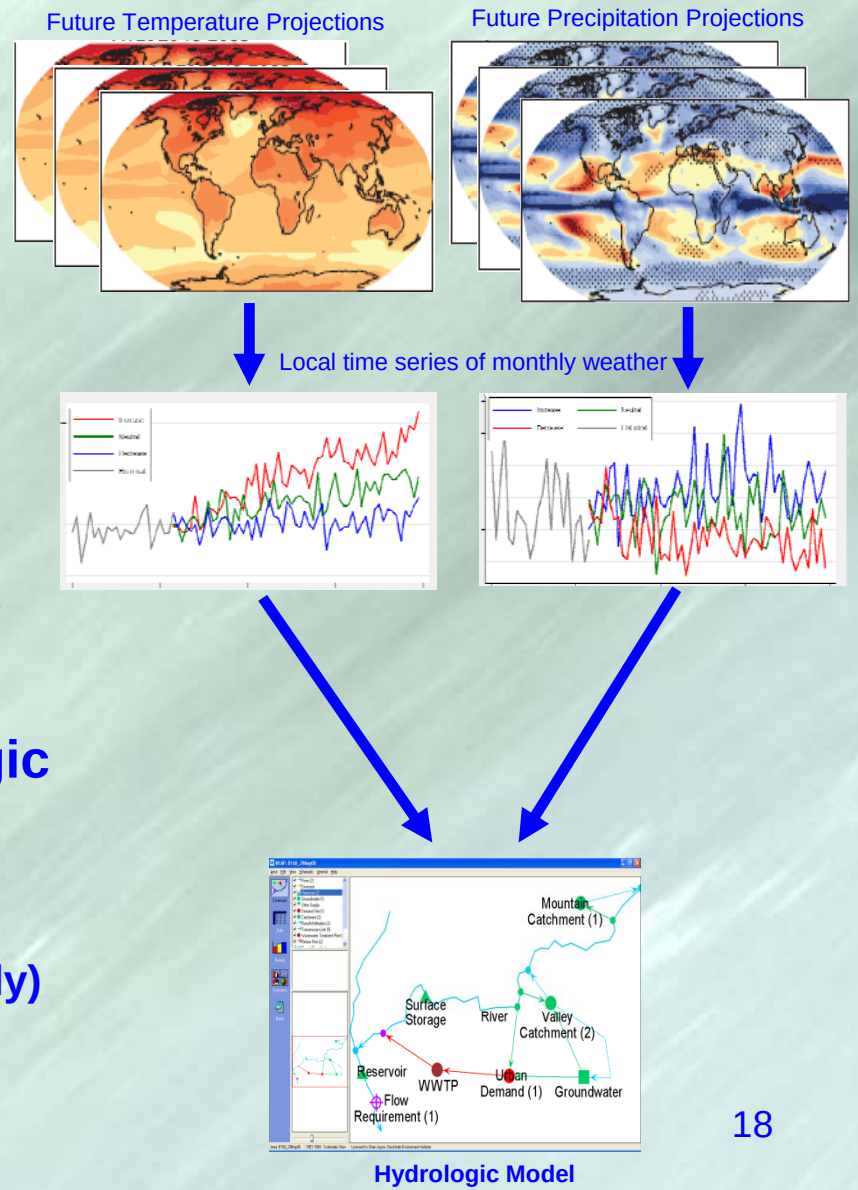
Sacramento River & San Joaquin River Hydrologic Regions

Analysis Considers Possible Climate Change Impacts

- **Global circulation models produce numerous projections of future temperature and precipitation patterns**
  - **Six GCMs**
  - **Two global emissions scenarios**

- **Statistical downscaling methods produce local weather sequences***

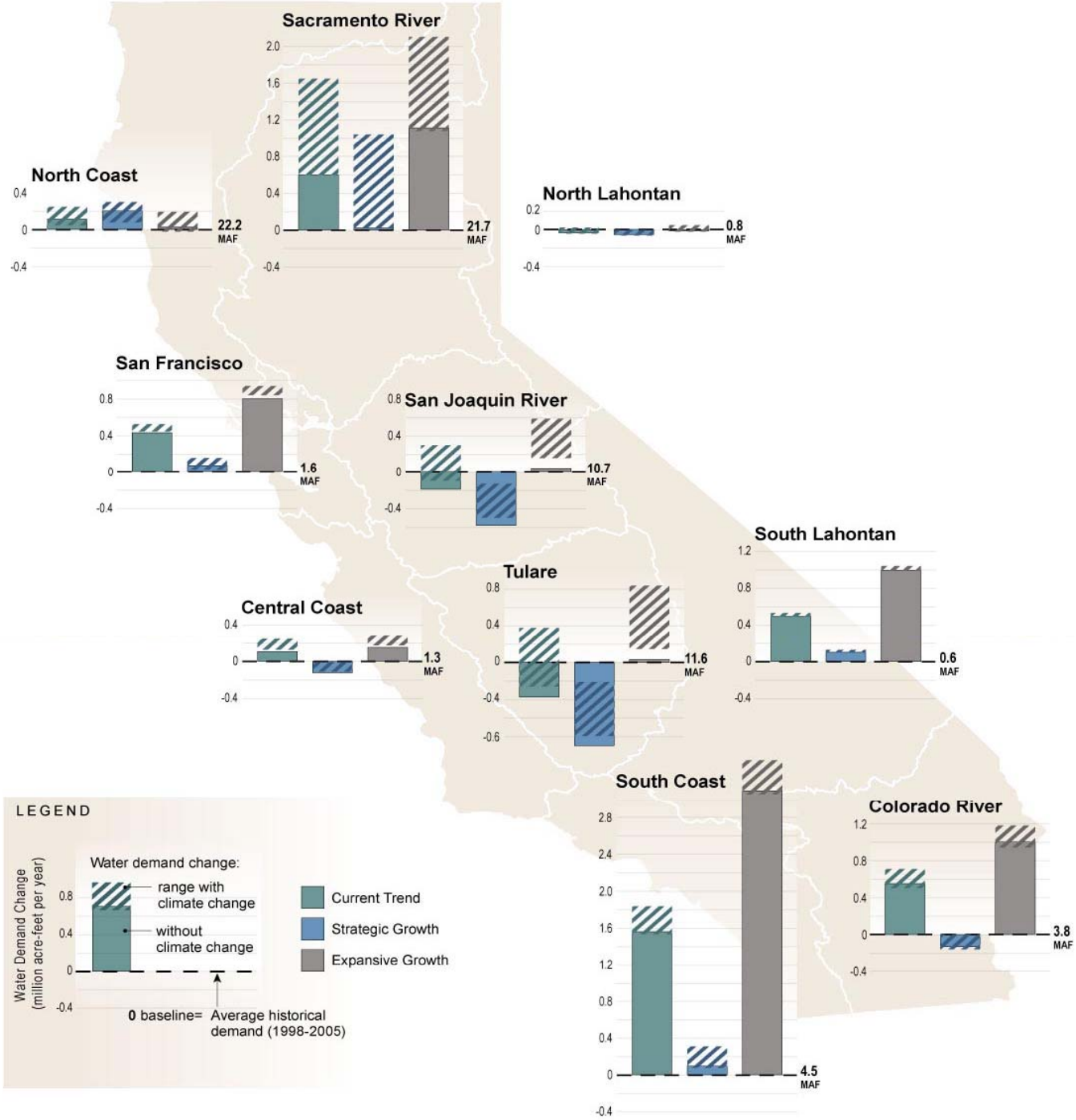
- **Weather sequences drive hydrologic models to calculate:**
  - **irrigation demand (HR and PA)**
  - **hydrologic flows (PA analysis, only)**



Hydrologic Model

*Using the World Climate Research Programme's (WCRP's) Coupled Model Intercomparison Project phase 3 (CMIP3) multi-model dataset

Regional Water Demand Changes by Scenario



Proposal for Update 2013 End-to-End Analysis

DRAFT

California Water Plan Update – Response Package Evaluation Analysis Plan

David Groves, RAND Corporation

Brian Joyce, Stockholm Environment Institute

1 Introduction

The California Water Plan Update is evaluating the impacts of different water management response packages under different future scenarios (reflecting plausible future water management conditions) through the development and use of two new water planning models within the Water Evaluation And Planning (WEAP) modeling environment.

End-to-End Analysis for Central Valley at Planning Area scale

- Sacramento River, San Joaquin River, and Tulare Lake HRs
- Identify and quantify regional water management responses
- Evaluate performance of strategies in terms of benefits, costs, and tradeoffs
- Collaboration with Reclamation to include Tulare Lake HR

Areas Outside of Central Valley

- Apply simpler Hydrologic Region model developed for Update 2009
- Quantify regional water demand
  - 3 growth scenarios
  - 12 climate scenarios
- Ability to include some demand management strategies
- Limited ability to quantify most water management responses

Goals for Today's Workshop

- Recap technical accomplishments of Water Plan Update 2009 & stakeholder input on pressing questions to be answered with quantitative information
- Identify course corrections needed in the analytical approach to get ready for Update 2013
- Discuss a proposal to evaluate water management responses for Update 2013 through multiple scenarios and Robust Decision Making
- Solicit advice from members to prioritize technical work for Update 2013 and provide recommendations to bring to the policy advisory groups for the Water Plan

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