Analytical Tools, Data & Scenarios Workshop
July 29, 2004

California Water Plan
Update 2004

Meeting Goals

• To present an approach for improving analytical tools and data used for the Water Plan
• To present a scenario evaluation tool for estimating 2030 urban and agricultural water demands
• To present initial estimates of 2030 water demands for three scenarios
Improving Analytical Tools and Data used for the Water Plan

- Background and Context
- Goals for Tools and Data
- Proposed Framework
- Proposal for Update 2008
- Discussion

DWR’s First Proposal for Update 2004

Diagram showing the relationship between DWR-MAIN, Hydrology 2030, CALAG, Urban water use, Ag water use, CALSIM, LCPSIM, and Cost of conservation.
What has Happened Since?

• Advisory committee didn’t accept proposed approach
  – Didn’t fully support or understand some of the models and modeling
  – Disagreed with using a single vision of future conditions
• We lacked resources to address concerns within schedule
• We decided to take a more deliberate, consensus based approach rather than disregard feedback

Goals for Analytical Tools and Data

• Develop a conceptual analytical framework that clearly describes what people want the Water Plan to evaluate.
• Inventory and document existing and potential data and analytical tools that could be applied in the short-term (for Water Plan Update 2008) using a consistent approach and format.
• Develop a short-term plan to apply existing data and tools for Water Plan Update 2008 consistent with the conceptual framework.
• Coordinate with technical experts to develop a long term plan for improving data and tools.
• Coordinate data and tool activities with the CALFED Bay-Delta Program and other planning efforts.
What people want from the Water Plan

• We have held several public workshops to hear what people want from the Water Plan
• People want CWP to offer a more complex assessment of water management (beyond supply and demand)
• Tools and data do not exist to provide all the answers
Conceptual Framework for Assessing Water Resources and Management

- Demand Drivers
- Geophysical Parameters
- Human and Environmental Water Demands
- Water Management System
- Management Options
- Evaluation Criteria (Economic, Management, Societal)

Overview  Organization  Definitions

Demo

Conceptual Framework
Purpose of Conceptual Framework

• Describes complex system using simple categories
• Describes required Input and output
• Shows what is being calculated and what is just input data
• Provides common approach for comparing output to existing tools

Proposal for Update 2008

• Using a generic analytical environment (Stella, Extend, Analytica, etc)
• Water management system to be represented by Water Flow Diagram
• DWR will work with advisory committee to use existing analytical tools to quantify specific components of flow diagram
• Analysis to include at minimum 3 scenarios with evaluation of water management system and evaluation criteria
Using a Generic Analytical Environment

- Staff are evaluating several software packages (see handout)
- Features
  - perform screening level analysis
  - use relationships from more complex models
  - suitable for evaluating scenarios
  - easy to scale up/down complexity
  - suitable for stakeholder participation

Using the Flow Diagram
Use of existing analytical tools
(see handouts)

• Staff have started an inventory of potential tools for use in Update 2008
• Staff have developed a template for describing existing tools using the “Anatomy of Analytical Tool”

Anatomy of Analytical Tools

• Scope and Application
• Conceptual basis
• Theoretical basis
• Numerical basis
• Data
• Data management
• Software
Definitions

- **Conceptual Basis** - Description or analogy used to help visualize a complex system (For example, a flow diagram)
- **Theoretical Basis** - System of postulates, data, and inferences presented as a description of an entity or state of affairs (Mathematical representation)
- **Numerical Basis** - Quantitative approximations used to solve mathematical problems

Summary of Proposal

**Conceptual Framework**
- What people want
  - Mind Map

**Analytical Environment**
- Mass balance for Water Flow Diagram
- Evaluate system response for each scenario
- Quantify evaluation criteria

**Analytical Tools**
- Estimates for Water flow Diagram
- Scenario evaluation tools
Discussion

- Proposed conceptual framework
- Using a generic analytical environment
- Using the Water Flow Diagram
- List of analytical tools
- Documentation of tools

Next Agenda Items

- Demand Drivers
- Geophysical Parameters
- Water Management Objectives
- Human and Environmental Water Demands
- Water Management System
- Management Options
- Evaluation Criteria (Economic, Management, Societal)

Overview  Organization  Definitions
Next Steps – Short term

- Initial scenario estimates for Update 2004
- Complete documentation of existing analytical tools
- Develop pilot application of Water Flow Diagram using a generic analytical environment
- Propose analytical tools for quantifying components of Water Flow Diagram and evaluation criteria for each scenario

Next steps – Beyond Update 2008

- Improve existing tools based on Conceptual Framework and work by the California Water and Environmental Modeling Forum
- Fill data gaps
- Develop Water Plan Information Exchange (Water PIE)