Resiliency Planning for the San Diego Region

WUCA Decision Support Training
August 8, 2018
Agenda

- Agency Overview
- Regional Planning Process
- Uncertainty Analysis
- Scenario Planning Process
  - Steps
  - Scenarios
  - Strategies
Agency Overview

- 24 member agencies
- 36-member board of directors
- Serve 3.3 million people and region’s $220 billion economy
- Provide 80-90% of water used in San Diego County
Major Infrastructure
- 300–miles of pipelines
- Reservoir
- Water Treatment Plant
- Hydroelectric Generation

$2.75 billion Capital Improvement Program
Departure from normal monthly temperature at Lindbergh Field: 53 of last 56 months hotter than normal
California has Largest Year-to-Year Variability in Precipitation

Coefficient of variation (standard deviation divided by the average) of total precipitation (Dettinger et. Al., 2011)
Applies to urban water suppliers serving over 3,000 customers or delivering more than 3,000 acre-feet annually
Prerequisite for eligibility to receive state grant funding
25-year planning horizon
Requires analysis of supplies not available at a consistent level of use due to:
- Legal
- Environmental
- Water quality or
- Climatic factors
Forecast of regional water demands

Identifies projected water resources mix for the San Diego region

Foundational document for other Water Authority planning efforts

Includes Scenario Planning to address uncertainties
2010 WUCA Decision Support Planning Methods:
  - Approaches to incorporating uncertainty into supply and facility planning

Range of approaches
  - Classic decision analysis
  - Traditional scenario planning
  - Robust decision making
  - Real options
  - Portfolio planning
Standard planning method to address uncertainty

Highly transparent and avoids “black box” perception

Uses concepts familiar to stakeholders

Small but wide range of future scenarios to test and make planning decisions more robust

Does not require extensive computer analysis
Major Steps in Scenario Planning

- Assess risks to the potential resource mix
- Identify management strategies to deal with uncertainties
- Track development of supply sources
- Identify potential adaptive strategies
In this climate of supply uncertainty and scarcity, how will the Water Authority and its member agencies adaptively provide a water supply that is reliable and drought-resilient over the next 25 years?
Getting Started

- Internal stakeholder group convened
- Multiple workshops conducted
Critical Uncertainties for Implementing Resource Mix

- Growth and Economy
- Recurring Drought
- Climate Change
- Imported Supply Reliability
- Local Supply Project Development
Scenarios to Encompass Identified Uncertainties

- Demographic Shift
- Climate Change
- Drought
- Drought with Further Limitations on Metropolitan Supplies
- Drought with Limited Metropolitan Supplies and Member Agency Local Supplies
Demographic Shift Scenario

- Residential development differs from local jurisdictions’ land use plans
- Continuation of lower density development
- Gradual change in water demands
Primary areas of concern impacting the San Diego Region

- Loss of snowpack
- Seal level rise
- Changes in precipitation and surface runoff
- Changes in frequency and intensity of droughts
- Higher temperature resulting in increased water demand
Drought Scenario

- Single dry-year demands from UWMP
- MWD allocating supplies based on preferential right methodology
- Local surface and groundwater yields below normal
- Member agencies' recycled water and brackish groundwater projects developed as planned
- SDCWA QSA and Carlsbad Desalination Plant supplies delivered in accordance with agreements
Drought with Further Supply Limitations Scenario

- Drought with Further Limitations on Metropolitan Supplies
  - MWD supplies further limited due to multi year drought

- Drought with Limited Metropolitan Supplies and Member Agency Local Supplies
  - Member agencies' recycled water and brackish groundwater not developed as planned
Extreme Drought Scenario Planning Results
(Year 2035, for Illustrative Purposes)

Demands without Conservation

- Carryover Storage
- Metropolitan Water District
- Water Efficiency Savings
- Local Supply (2015 Levels)
- WA Desalination
- Quantification Settlement Agreement

Gap
Foundational strategy
• Ensure resource mix is reliable and drought resilient

Member Agency Local Projects
• Technical assistance
• Advocate for regulatory constraints
• Advocate for state and federal funding

Water Use Efficiency
• Programs encouraging long-term behavioral change

Climate Change
• Encourage research to identify local impacts
Member Agency Potential Strategies

- Implement planned local projects
  - Potable reuse
  - Recycled water and brackish groundwater
  - Groundwater recharge and recovery
  - Desalination

SDCWA’s Potential Strategies

- Implement potential regional projects
  - Carlsbad desalination plant additional capacity
  - Shortage management actions
Key Tracking Metrics

Progress on project implementation

- Annual Water Supply Report
  - Progress on projects identified in UWMP

- UWMP update every 5–years
  - Supply–demand balance
  - Projected resource mix

- Report to Board as needed
  - Update on issues impacting project implementation
The Water Authority's future planning program focuses on long-term water resources planning. Through this program, the Water Authority works with other agencies to estimate future water demands and identify necessary facilities and supplies to meet these demands.

To assist in accomplishing this program, the Water Authority engages in a variety of supply planning efforts. Every five years, the Water Authority prepares an Urban Water Management Plan that identifies the projected water resource mix. Preparation of the Plan involves updating the regional water demand forecast and conservation savings projections, documenting the supplies, and coordinating with member agencies on local supply projections.
QUESTIONS ?