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
Quantifying Future Scenarios for Update 2009

- Using WEAP analytical tool to quantify water demand and supplies for future scenarios and water management responses

- WEAP Hydrologic Region analysis being done for all regions --- high level, coarse representation

- WEAP Planning Area analysis for Sacramento and San Joaquin regions --- more physically based

- Each scenario evaluated with 12 climate sequences (climate change, multiple year droughts, wet years)
Hydrologic Region Analysis

- Monthly, climate-driven demands to 2050
  - reflect global climate change projections
- Inventory current supplies by source
- Coarse representation of response packages
Planning Area Analysis
Sacramento and San Joaquin River Regions

- Hydrologically-based water system simulation by month to 2050
  - reflect global climate change projections

- Estimate environmental flows, system operations, deliveries, and reliability

- More direct representation of response packages
3 Baseline Scenarios for 2050
Plausible Yet Different Futures

- **Current Trends**
  - Recent trends continue into the future for population, agricultural production, environmental water, and background water conservation

- **Blueprint Growth**
  - More coordinated planning & infill
  - Lower population growth
  - More agricultural prod. -- 2000 level
  - New environment water -- High
  - More background water conservation

- **Expansive Growth**
  - Less coordinated planning & sprawl
  - Higher population growth
  - More agricultural prod. -- 2000 level
  - New environment water -- Low
  - Less background water conservation
## Scenario Assumptions for Key Factors

### South Coast Hydrologic Region

<table>
<thead>
<tr>
<th>Scenario Factors Affecting Water Demand</th>
<th>Year 2005 Observed</th>
<th>2050 Current Trends</th>
<th>2050 Blueprint Growth</th>
<th>2050 Expansive Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (millions)</td>
<td>19.3</td>
<td>27.1</td>
<td>21.5</td>
<td>32.1</td>
</tr>
<tr>
<td>Irrigated Crop Area (thousand acre)</td>
<td>242</td>
<td>192</td>
<td>222</td>
<td>160</td>
</tr>
<tr>
<td>Background Water Conservation (% Incr.)</td>
<td>-----</td>
<td>10%</td>
<td>15%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Scenario Water Demand Changes
HR Results for 1 Climate Sequence

- Change in urban water demand
- Change in irrigated agriculture water demand
- Change in environmental water
- Net Change in regional water demand
Change in 2041-2050 Average Applied Urban Water Demand from 1998-2002 Historical Average by Scenario
South Coast Region, Climate Sequence 1

- **Current Trends**
  - 2005 Population = 19.3 Million
  - 2050 Population = 27.1 Million

- **Blueprint Growth**
  - 2050 Population = 21.5 Million

- **Expansive Growth**
  - 2050 Population = 32.1 Million

Urban Water Demand Changes – 2005 to 2050
South Coast HR
Farm Water Demand Changes – 2005 to 2050
South Coast HR

Change in 2041-2050 Average On Farm Applied Water Demand from 1998-2002 Historical Average by Scenario
South Coast Region, Climate Sequence 1

- **Current Trends**
  - 2005 Irrigated
    - Crop Area = 242,000 Acres
  - 2050 Irrigated
    - Crop Area = 192,000 Acres

- **Blueprint Growth**
  - 2050 Irrigated
    - Crop Area = 222,000 Acres

- **Expansive Growth**
  - 2050 Irrigated
    - Crop Area = 160,000 Acres
Net Water Demand Changes – 2005 to 2050
South Coast HR

Change in 2041-2050 Average Applied Water Demand
from 1998-2002 Historical Average by Scenario
South Coast Region, Climate Sequence 1

- **Current Trends**
  - 2050 Irrigated Crop Area = 192,000 Acres
  - 2050 Population = 27.1 Million

- **Blueprint Growth**
  - 2050 Irrigated Crop Area = 222,000 Acres
  - 2050 Population = 21.5 Million

- **Expansive Growth**
  - 2050 Irrigated Crop Area = 160,000 Acres
  - 2050 Population = 32.1 Million
Technical Outreach for Scenario Work

- 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
Steps for Scenario Work

- **December 2008 – February 2009**
  - Develop scenario water demands

- **February – May 2009**
  - Develop scenario water supplies
  - Test future water management responses

- **Mid-June 2009**
  - Workshop on Regional and Planning Area results