OC Water Reliability Study Overview

MWDOC P&O Committee
February 6, 2017

Municipal Water District of Orange County
• Review simple conclusions/observations from the Reliability Study

• Recommendations
  1. Additional modeling & analysis
  2. Consideration should be given to a “selective process” for future local projects to ensure the best investments possible
What did OC learn?

1. Our future reliability depends on a combination of successes:
   - MET, especially the California WaterFix
   - Local projects and improved water use efficiency

2. Without any NEW investments, water shortages will occur in 8 of 10 years by 2040

3. One single investment, the California WaterFix can cut shortages down to 3 in 10 years by 2030
What did OC learn?

4. North Orange County can manage through the level of shortages projected.

5. South Orange County needs to develop NEW supplies and emergency supplies to improve reliability.

6. Under MET’s IRP and Water Shortage Allocation Plan (WSAP):
   A. Local supplies and conservation improve reliability on a 1:1 basis for the MET family.
   B. However, the local agency developing a NEW project does not gain a 1:1 reliability improvement from the project.

7. Adaptive Management is key.
### Orange County Reliability Study, Phase 2 - MET Reliability Portfolio Development

<table>
<thead>
<tr>
<th>New MET/MET Agency Water Supply Projects</th>
<th>New Max Supply Yield (AFY)</th>
<th>OC Formulated Portfolios of MET Reliability</th>
<th>Portfolio A Low Reliability</th>
<th>Portfolio B Used for OC Planning</th>
<th>Portfolio C</th>
<th>Portfolio D Highly Reliable</th>
<th>Portfolio E Highly Reliable</th>
<th>Portfolio F Highly Reliable</th>
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<tbody>
<tr>
<td><strong>New MET Projects</strong></td>
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<tr>
<td>California WaterFix</td>
<td>440,000</td>
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<td>Other SWP</td>
<td>150,000</td>
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<td>CRA Supplies</td>
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<td>Carson</td>
<td>168,000</td>
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<td>New Regional Conservation</td>
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<td>Regional Ocean Desalination</td>
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<td><strong>MET Member Agency Projects</strong></td>
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<td>- Very Likely</td>
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<td>- Full Design with Funds</td>
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<td>- Advanced Planning w/ Environmental</td>
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<td>51,000</td>
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<td>- Feasibility (more certain)</td>
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<td>- Conceptual (less certain)</td>
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<td><strong>Local Projects</strong></td>
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<td>Total from above</td>
<td>1,487,600</td>
<td>246,400</td>
<td>442,400</td>
<td>537,400</td>
<td>847,600</td>
<td>859,400</td>
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<td>Remaining Average Shortage</td>
<td>550,000</td>
<td>303,600</td>
<td>107,600</td>
<td>12,600</td>
<td>-297,600</td>
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<td>Scenario 2 GAP (2040) - Maximum MET Shortage</td>
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<td>Supply Excess</td>
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Balancing of Issues

Under Performing

Over Investing
MET Reliability Under Different Portfolios – 2040

Portfolios D, E & F are Fully Reliable & are plotted on the bottom line.

Numbers are average shortages to MET in 2040 in AF per year.

Direction of MORE NEW Projects

Portfolio B Selected for OC Modeling
Max shortage = 70,000 AF

Demand Management is a local decision

Year 2020: Demand = 377,200 AFY
Year 2030: Demand = 415,900 AFY
Year 2040: Demand = 422,900 AFY

Maximum water shortages with 10% demand curtailment

Remaining shortages less than 3% of demand

Avg shortage = 6,300 AF
Max shortage = 48,000 AF

Avg shortage = 4,400 AF

Maximum water shortages with 10% demand curtailment

Remaining shortages ~ 12% of demand

SOC Reliability Under Portfolio B
Poseidon Yield Example for OCWD

Max shortage = 70,000 AF

Avg shortage = 6,300 AF

Poseidon Yield at 56,000 AF per year would supply more water than needed in most every year.
Theoretical Local Project Example for OCWD

Max shortage = 70,000 AF

Avg shortage = 6,300 AF

A Project with a yield of 6,300 AF per year with storage would theoretically fill the GAP.
Poseidon Project

- Not specifically included or excluded in the modeling as a project to help MET or OC reliability
- Does not mean it could not be developed for such purpose
- Staff believes the majority of benefits from this project accrue to the MET service area
- Additional analysis needed
Carson IPR Project

✓ Modeling assumed the project is developed at 100,000 AF per year; if not included, 100,000 AF per year of an additional source is required

✓ Modeling included 65,000 AF per year from MET or Carson IPR used as groundwater replenishment for OCWD
California WaterFix

✔ Modeling assumed a decline in water supplies without the Fix

✔ A higher supply of 440,000 AF per year was included with the Fix

✔ This Yield may be a moving target
Other Implications

• Planning should attempt to avoid unintended consequences such as lows flows in pipelines that could create water quality problems

• Consideration should be given to a “selective process” for future local projects:
  ✔ Best bang for buck
  ✔ Critical for larger local projects, say in excess of 10,000 AF per year
  ✔ Some projects provide additional benefits to where it is needed as opposed to just filling a “GAP”
  ✔ May be important to differentiate between base loaded, dry year yield and projects involving storage to improve flexibility of future operations
Recommended Work

1. Work with MET and MET member agencies to ascertain future direction of local projects
2. Examine future water quality issues from low flows
3. Work on Poseidon Project and others to better understand who pays and who benefits
4. Rank cost efficiency and attributes of projects
5. Update modeling runs
   a. Colorado River Drought Contingency Plan
   b. Santa Ana River Base Flows
6. Bring back work plan to next P&O
Other Questions?