Bay–Delta Conservation Plan (BDCP): Overview and Supply and Demand Reliability Assessment

Presented by:
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Ken Weinberg, Director of Water Resources
Dana Friehauf, Principal Water Resource Specialist

Special Meeting of the Imported Water Committee
November 14, 2013
Today’s Agenda

- Review Objectives
- Demand and supply analysis
- BDCP Update
- Presentation by Resources Secretary John Laird
Water Authority Multi-Disciplinary Internal Review

- Commenced in June
- Objective: Provide Water Authority Board with assessment of which Delta fix proposal most consistent with and best advances
  - Board’s Bay–Delta Policy Principles
  - Reliability and diversification goals in Water Authority’s 2010 UWMP
- Four options
  1. BDCP preferred alternative (9,000 cfs)
  2. BDCP Plus (DVF) (6,000 cfs)
  3. Portfolio Alternative (NRDC) (3,000 cfs)
  4. No action
Water Authority Multi-Disciplinary Internal Review (cont.)

- Scope of review driven by BDCP timeline and available resources
- High-level review based on perspective of a recipient and purchaser of Delta exports
  - Review based on available published data with professional judgment
  - Not intended to recreate modeling results

- Deliverables:
  1. Comment letter through BDCP environmental review process
  2. Assessment of project reliability, financing and impact on rates, including risk assessment for Board consideration
Supply and Demand Reliability Assessment
## Pumping Flexibility Reduced
Window restricted even during wet years

### Regulatory Pumping Restrictions

<table>
<thead>
<tr>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
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<th>DEC</th>
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- **Salmon**
- **Delta Smelt**
- **Longfin Smelt**

- **Spring salinity**
- **Fall salinity**

- **No Restrictions**

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*San Diego County Water Authority*
Two Major Elements that Influence Delta Export Yields

Conveyance Option + Operating Scenario
Correlation between Delta Outflow Criteria and resulting Supply Export Yield

High-Outflow Criteria = Decrease in Export Yield
Combines differing spring and fall outflow criteria to derive four possible outcomes

- Permit would cover all four outcomes
- One would be selected for initial operations

<table>
<thead>
<tr>
<th>Delta Outflow</th>
<th>Water Operations Scenarios</th>
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<tbody>
<tr>
<td></td>
<td>H1 (low outflow scenario)</td>
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<tr>
<td>Spring</td>
<td>D–1641</td>
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BDCP Alternatives – Estimated Export Yields under High Outflow Scenario

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Average Annual Exports (MAF)</th>
<th>South Delta</th>
<th>North Delta</th>
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</thead>
<tbody>
<tr>
<td>Proposed Action High-Outflow Scenario</td>
<td>4.7</td>
<td>2.4</td>
<td>2.3</td>
</tr>
<tr>
<td>9,000 cfs</td>
<td>4.7</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>6,000 cfs Alt (High-Outflow)</td>
<td>4.4</td>
<td>2.6</td>
<td>1.8</td>
</tr>
<tr>
<td>6,000 cfs</td>
<td>4.4</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>3,000 cfs Alt (High Outflow)</td>
<td>4.2</td>
<td>3.0</td>
<td>1.2</td>
</tr>
<tr>
<td>3,000 cfs</td>
<td>4.2</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>Existing Conveyance High-Outflow</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario</td>
<td></td>
<td></td>
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<tr>
<td>Average Annual Exports Early Long-Term (2025)</td>
<td>Source: BDCP Chapter 9, Table 9–3</td>
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</tbody>
</table>
Comparison of SWP Estimated Average Deliveries to 2001–2010 Avg

- Proposed Action 9,000 cfs
- 6,000 cfs Alt 3,000 cfs Alt
- Existing Conveyance

10-Year Average SWP Deliveries

MAF
- 3
- 2.5
- 2
- 1.5
- 1
- 0.5
- 0

Historic benchmark for comparison
- Weighted to pre–2008 Smelt restrictions
- One way to compare future yields to less restrictive operation
Estimating SWP Contractor Demand

- BDCP forecasted demand
  - 36 urban agencies using econometric model
    - Considered UWMP local supplies and storage
  - Agricultural water use
    - UC Davis SWAP Model
    - Economic, land values, market conditions and supply availability and price linked to water use

- CUWA Agency Survey
  - 2010 to 2030
  - Increasing imported water demand and local supplies

BDCP Estimate of Urban Demand

- 2012: 5 Million Acre-feet
- 2050: 6 Million Acre-feet (20% Increase)

1 BDCP Chapter 9 Appendix 9A
Estimated MWD SWP Deliveries – Percent Frequency (High Outflow Scenario)

Probability of Exceedence

- Proposed Action
- 6,000 cfs
- 3,000 cfs
- Existing Conveyance

Dry Years:
- Little Sip
- 100%, 94%, 88%, 81%, 75%, 69%, 63%, 57%, 51%, 44%, 38%, 32%, 26%
- ~1% probability

Wet Years:
- Big Gulp
- 1.0 MAF, 1.2 MAF, 1.3 MAF, 1.5 MAF
- ~30% probability
Balancing Supply and Demand

The Importance of Storage

- Key to managing hydrologic cycle
- Regulates inflow to demand

Dry year imported reliability = \( \text{yield} + \text{stored water} \)

- MWD Storage
- WA Carryover storage
- New SWP storage?
MWD Storage Reserve Levels
With Range of 2013 Uncertainty

Source: October 7, 2013  MWD Water Planning and Stewardship Committee
Water Authority’s 2010 UWMP Reliability Planning Process

1. Reliability Assessment
   • Required under UWMP Act
   • Identifies resource mix to meet forecasted demands
   • Resource mix includes verifiable local projects

2. Scenario Planning
   • Develop “what if” supply scenarios based on risks
   • Identify adaptive management strategies to manage risks
   • Strategies include additional planned projects

- Water Authority’s BDCP supply reliability analysis takes similar approach
  - Reliability assessment w/verifiable supplies – “big gulp, little sip” (today’s report)
  - Scenario planning risk assessment (early 2014)
2010 UWMP Verifiable Supplies

- Utilized in supply reliability assessment
- Help ensure compliance with laws linking water availability and land-use approval (SB 610/221)
  - Adequate documentation and substantial evidence
  - Planning decisions cannot be based on “paper water”
- Used for supply, facilities, environmental and financial planning
  - Reduces implementation risks that could jeopardize future supply reliability or adversely affect other planning efforts

<table>
<thead>
<tr>
<th>Category</th>
<th>Project Example</th>
</tr>
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<tbody>
<tr>
<td>Verifiable</td>
<td>Carlsbad Seawater Desalination</td>
</tr>
<tr>
<td>Planned</td>
<td>Proposed Camp Pendleton Seawater Desalination</td>
</tr>
<tr>
<td>Conceptual</td>
<td>City of San Diego San Pasqual Basin Proposal</td>
</tr>
</tbody>
</table>
## Reliability Assessment – MWD Service Area
Estimated Local Supplies and Demands on MWD (2025)

<table>
<thead>
<tr>
<th></th>
<th>Normal (MAF)</th>
<th>Dry (MAF)</th>
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<tbody>
<tr>
<td>Regional Demands w/ Conservation</td>
<td>4.36</td>
<td>4.39</td>
</tr>
<tr>
<td>“Verifiable” Local Supplies(^1)</td>
<td>2.68</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td><strong>MWD RUWMP</strong></td>
<td><strong>2.52</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Plus MWD Member Agencies’ UWMPs</strong></td>
<td><strong>0.16</strong></td>
</tr>
<tr>
<td>Resulting Demands on MWD</td>
<td>1.68</td>
<td>1.89</td>
</tr>
</tbody>
</table>

\(^1\)Includes Water Authority’s QSA transfer supplies (280,000AF)

Note: MWD 2010 RUWMP and MWD’s member agencies 2010 UWMPs also identified potential and conceptual local projects, that if implemented, could result in a much greater amount of local supply development.
Dry-Year Supply Reliability Planning: Combine Core and Flexible Resources (Illustration)

- **Flexible supplies (carryover storage and dry-year transfers)**
- **Core supplies (imported)**
- **Core supplies (local)**

Demands

- **Average**
- **Dry**
- **Wet**

Puts to Storage
BDCP Alternative Supply Reliability Assessment: “Big Gulp, Little Sip”

- Addresses one of Board’s Policy Principles that the Delta solution should:
  
  “Improve the ability of water-users to divert water from the Delta during wet periods, when impacts on fish ecosystem are lower and water quality is higher”

- From the perspective of best managing shortage risk
  - Inability to model MWD system puts and takes to storage
  - Evaluated frequency and volume of wet-year deliveries for puts into storage

MWD’s Diamond Valley Lake
Dry–year Scenario MWD Service Area: “Little Sip” SWP Supplies

- Similar scenario for all Delta alternatives
- Estimated dry–year SWP yield
- Utilize approximately 450,000 dry–year supplies
  - Storage and dry–year transfers
  - Meet MWD dry–year demands of 1.9 MAF without allocations
Estimated Frequency of 1.5 MAF of SWP Deliveries to MWD: “Big Gulp”

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Proposed Action (9,000 cfs)</td>
<td>30% (3 out of 10 years)</td>
</tr>
<tr>
<td>6,000 cfs</td>
<td>20% (2 out of 10 years)</td>
</tr>
<tr>
<td>3,000 cfs</td>
<td>10% (1 out of 10 years)</td>
</tr>
<tr>
<td>Existing Conveyance</td>
<td>1% (1 out of 100 years)</td>
</tr>
</tbody>
</table>

- “Big gulp” critical to replenishing storage reserves
- 1.5 MAF is an indicator of wet–year delivery
  - Allows MWD and Water Authority to put supplies into storage
- Delta conveyance facility improves ability to provide wet–year deliveries into storage compared with existing conveyance
Water Authority’s 2010 UWMP Dry-Year Analysis: Assumes Allocations from MWD

- Use of 2010 UWMP consistent with Delta Policy Principles
- MWD allocating supplies based on preferential rights
  - Assume 1.8 MAF available for allocation
- Verifiable local supplies
- Use of Water Authority’s carryover storage
- No shortages anticipated
Water Authority’s 2010 UWMP Dry-Year Scenario – Reliability Assessment (cont.)

<table>
<thead>
<tr>
<th>Supplies (AF)</th>
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<tbody>
<tr>
<td>MWD Total Dry-Year Supplies</td>
</tr>
<tr>
<td>Projected MWD Core Supplies</td>
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<tr>
<td>\textit{Colorado River Aqueduct}</td>
</tr>
<tr>
<td>\textit{Estimated SWP (90% exceedence)}</td>
</tr>
<tr>
<td>MWD Flexible (Dry-Year supplies)</td>
</tr>
</tbody>
</table>

- MWD would require approximately 350,000 AF or more from dry-year supplies
  - Less than 350,000 AF could result in Water Authority shortages
- Dry-year supplies consist of storage and transfers
- Multiple dry-years increase likelihood of shortages
Reliability Assessment Summary

- Adequate MWD and Water Authority dry-year supplies are key to supply reliability
  - Dry year reliability of SWP supplies needs to be seen as relationship between yield and stored water

- Frequency and volume of wet-year SWP deliveries is critical to replenishing storage

- A North Delta conveyance facility provides best opportunity to ensure “big gulp”
  - Addresses Water Authority’s policy principle
  - Larger conveyance size provide more opportunities to put SWP supplies into storage
BDCP Update

- New release date for public draft BDCP and EIR/EIS
  - December 13, 2013 for 120 days of formal review
  - Public meetings to be held during January and February

  “No final decisions have been made regarding going forward with the BDCP or in selecting an alternative; those decisions will only occur after completion of the EIR/EIS processes”
Revised Capital Costs

- November 12, Resources revised capital costs (2012$), reflective of alignment change announced in August
  - 3,000 cfs, single tunnel: $8.6B
  - 3,000 cfs, dual tunnel: $10.8B
  - 9,000 cfs, dual tunnel: 14.5B
- September 16 – corrected version (present value)
  - 3,000 cfs – $9.2B
  - 9,000 cfs – $12.2B
- September 11 (2012$)
  - 3,000 cfs– $8.5B
  - 9,000 cfs – 14.5B
Area of Concern – Who Pays?

- Public financing and cost allocation among beneficiaries not yet finalized
- Cost allocation negotiations under way – wide range of possible outcomes
- Cost impact to MWD could range widely – for example:
  - 25% of the cost under status quo cost sharing
  - > 50% of the cost based on “$1.5 B Agricultural Partner”
  - Additional risk exposure if there are cost overruns, poor participation, defaults or public financing does not materialize
# BDCP Alternatives Review & Analysis: Completed Activities

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Imported Water Committee/Board Activity</th>
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<tbody>
<tr>
<td>7/25/2013</td>
<td>Provide input on scope of proposed Water Authority analysis of BDCP alternatives; provide input on policy questions to be addressed</td>
<td>✓</td>
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<tr>
<td>8/8/2013</td>
<td>Overview of Bay–Delta and proposals for Delta fix, including description of alternatives</td>
<td>✓</td>
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<tr>
<td>8/22/2013</td>
<td>Review of technical analysis – demand assumptions; alternative project yield assumptions; projected costs</td>
<td>✓</td>
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<tr>
<td>9/12/2013</td>
<td>BDCP economic study on cost–benefit of BDCP preferred alternative</td>
<td>✓</td>
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<tr>
<td>9/26/2013</td>
<td>Review of technical analysis (cont.), including yield review</td>
<td>✓</td>
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<tr>
<td>10/24/2013</td>
<td>Information: Review of technical analysis (cont.), including baselines; BDCP timeline and processes impacting implementation</td>
<td>✓</td>
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# BDCP Alternatives Review & Analysis: Upcoming Activities

<table>
<thead>
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<th>Meeting</th>
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<tr>
<td>11/14/2013</td>
<td>Supply and demand evaluation and analysis</td>
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<td>Special Meeting</td>
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<tr>
<td>1/9/2014</td>
<td>Identification of BDCP Physical features, facilities, and geotechnical issues; supply/demand scenario planning risk assessment; BDCP governance</td>
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<tr>
<td>Special Meeting</td>
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<td>1/23/2014</td>
<td>Preliminary cost estimates and risk assessment to Water Authority; cost allocation negotiations status; highlights of substantive changes to EIR/EIS; preliminary issue identification</td>
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<tr>
<td>2/13/2014</td>
<td>Engineering assessment of BDCP cost estimates; risk assessment to Water Authority</td>
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<tr>
<td>Special Meeting</td>
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<tr>
<td>2/27/2014</td>
<td>Identification of issues to be addressed in the EIR/EIS comment letter – present draft comment letter</td>
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<tr>
<td>3/13/2014</td>
<td>Continuing review of draft EIR/EIS comment letter</td>
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<tr>
<td>Special Meeting</td>
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<tr>
<td>3/27/2014</td>
<td>Action: Consider action on final EIR/EIS comment letter</td>
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<tr>
<td>4/24/2014</td>
<td>Revise BDCP schedule; discuss outstanding policy issues; timeline for future board meetings</td>
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