Policy Guidelines for Managing Carryover Storage Supplies and Revisions to the Stored Water Fund Policy

Water Planning Committee Meeting
December 8, 2016

Bob Yamada
Dana Friehauf
Lisa Marie Harris
Presentation Agenda

- Regional Water Storage

- Water Authority Storage
  - Operational
  - Emergency
  - Carryover

- Proposed Carryover Storage Policy Guidelines (Dana)
  - Water Planning Committee recommendation

- Proposed Stored Water Fund Policy (Lisa–Marie)
  - Separate recommendation in A&F Committee
Recent Board Reports on Storage

- April 2016 – *Report on Water Authority Emergency and Carryover Storage*

- August 2016 – *Emergency Storage Project Storage Requirements*

- Monthly – *Water Resources Report on Water Authority and Member Agency storage levels*
Regional Storage

- 24 Reservoirs
- 746,385 acre-feet capacity
- 43% full (as of Nov. 2016)
- 8 Reservoirs connected to Water Authority Aqueduct:
  - San Vicente
  - Lower Otay
  - Sweetwater
  - Olivenhain
  - Miramar
  - Lake Murray
  - Lake Poway
  - Lake Dixon
Water Authority Storage

Olivenhain Reservoir (24,375AF / 19,147AF)

Lake Hodges (20,000AF / 8,178AF)

San Vicente Reservoir (152,100AF / 137,952AF)
# Water Authority Storage Milestones

<table>
<thead>
<tr>
<th>Event</th>
<th>Year(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline 1 Complete to San Vicente Reservoir</td>
<td>1947</td>
</tr>
<tr>
<td>Use of Member Agency Storage Agreements</td>
<td>1965</td>
</tr>
<tr>
<td>Begin Efforts to Develop Increased Regional Storage</td>
<td>1980’s</td>
</tr>
<tr>
<td>Begin Optimal Storage Studies</td>
<td>1990’s</td>
</tr>
<tr>
<td>EIR/EIS Approved Emergency Storage Project</td>
<td>1996</td>
</tr>
<tr>
<td>Master Plan Identifies Carryover Storage Need</td>
<td>2003</td>
</tr>
<tr>
<td>EIR/EIS Approved Carryover Storage Project</td>
<td>2008</td>
</tr>
<tr>
<td>Carryover Storage Project</td>
<td>2010</td>
</tr>
<tr>
<td>Emergency Storage Project</td>
<td>2014</td>
</tr>
<tr>
<td>Olivenhain Dam Completed</td>
<td></td>
</tr>
<tr>
<td>UWMP included use of carryover</td>
<td></td>
</tr>
<tr>
<td>1982 Agreement with City of SD for Pamo Project, Project Terminated</td>
<td>1988</td>
</tr>
<tr>
<td>Drought</td>
<td></td>
</tr>
</tbody>
</table>

**Timeline:**
- 1947: Pipeline 1 Complete to San Vicente Reservoir
- 1965: Use of Member Agency Storage Agreements
- 1980’s: Begin Efforts to Develop Increased Regional Storage
- 1990’s: Begin Optimal Storage Studies
- 1996: EIR/EIS Approved Emergency Storage Project
- 2003: Master Plan Identifies Carryover Storage Need
- 2008: EIR/EIS Approved Carryover Storage Project
- 2010: Carryover Storage Project
- 2014: Emergency Storage Project

**Notes:**
- 1982 Agreement with City of SD for Pamo Project, Project Terminated 1988
- Drought
- Olivenhain Dam Completed
- UWMP included use of carryover
Typical Reservoir Storage Pools

- Dead Storage
- Carryover Storage
- Emergency Storage
- Operational Storage
- Freeboard

* In shared-capacity reservoirs, the Water Authority pools are above Member Agency pools ("spill first")
Operational Storage

- Pre-planned, temporary storage to ensure reliable service during aqueduct shutdowns
  - Water Authority reservoirs/storage capacity
  - Member Agency reservoirs (temporary agreements)

- Maintain minimum reservoir levels in support of pumped storage operations

- Minor storage volumes to maintain safe operation of the aqueduct
Emergency Storage

- Protects region against catastrophic events
- Assures minimum 75% level of service for M&I customers
  - 2-month event is a complete outage of imported supplies
  - 6-month event is a partial outage of imported State/Colorado River supplies
- TSAWR customers cutback at twice the rate of M & I customers
Emergency Water Delivery Plans

- Developed in coordination with member agencies
- *Takes into Consideration:*
  - Outage – 2–month (full) or 6–month (partial)
  - Level of Service during the emergency (75%)
  - Water Authority emergency storage
  - Water Authority available supply (Lewis CDP)
  - Member Agency demands (UWMP)
  - Member Agency supplies (storage, gw, recycled)
  - Reduced LOS to TSAWR customers
## Forecasted ESP Storage Requirements

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original (based on 1996 ESP Final EIR/EIS)</td>
<td>76,700</td>
<td>83,400</td>
<td>90,100*</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Previous (based on 2010 UWMP)</td>
<td>39,571</td>
<td>44,953</td>
<td>49,551</td>
<td>53,474</td>
<td>–</td>
</tr>
<tr>
<td>Current (based on 2015 UWMP)</td>
<td>30,778</td>
<td>35,139</td>
<td>38,115</td>
<td>40,376</td>
<td>43,124</td>
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</tbody>
</table>

* ESP project development based on the 90,100 AF capacity forecasted in 2030 as evaluated in the 1996 ESP Final EIR/EIS
## Emergency Storage Pools

**Status as of November 2016**

<table>
<thead>
<tr>
<th>Location</th>
<th>Capacity – Total (AF)</th>
<th>Volume Stored (AF)</th>
<th>Capacity – Remaining (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emergency Storage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Vicente Reservoir</td>
<td>52,100</td>
<td>38,083</td>
<td>14,017</td>
</tr>
<tr>
<td>Lake Hodges</td>
<td>20,000</td>
<td>8,178</td>
<td>11,822</td>
</tr>
<tr>
<td>Olivenhain Reservoir</td>
<td>18,000</td>
<td>18,000</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>90,100</td>
<td>64,261</td>
<td>25,839</td>
</tr>
</tbody>
</table>

- Current ESP storage is sufficient to meet ESP delivery obligations
- ESP capacity is sufficient to serve the region through 2040 and beyond
Supplement regional water supplies during extended periods of drought or water supply shortages

Storage capacity added to the San Vicente Dam Raise project and secured in ground water basins in Central Valley

Benefits:

- Enhanced reliability
- Increased system efficiency
- Improved supply management
## Carryover Storage Pools

**Status as of November 2016**

<table>
<thead>
<tr>
<th>Location</th>
<th>Capacity – Total (AF)</th>
<th>Volume Stored (AF)</th>
<th>Capacity – Remaining (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carryover Storage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Vicente Reservoir</td>
<td>100,000</td>
<td>99,591</td>
<td>409</td>
</tr>
<tr>
<td>Semitropic–Rosamond Water Bank Authority</td>
<td>40,000</td>
<td>0</td>
<td>40,000</td>
</tr>
<tr>
<td>Semitropic Original Water Bank</td>
<td>30,000</td>
<td>16,117</td>
<td>13,883</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>170,000</strong></td>
<td><strong>115,708</strong></td>
<td><strong>54,292</strong></td>
</tr>
</tbody>
</table>
Policy Guidelines for Managing the Water Authority’s Carryover Storage Supplies
Purpose of Carryover Storage Policy Guidelines

- Provide guidance on managing Water Authority carryover storage supplies during normal and shortage periods
  - Provide additional reliability to M&I customers during shortage periods
  - Allow flexibility to manage differing shortage situations
  - Consider availability of Water Authority and member agencies’ supplies (surface, groundwater, recycled and potential potable reuse)
Preparation of Proposed Guidelines

• Factors considered in preparing guidelines
  • Previous Water Authority Board actions
  • Information from document research
  • Numerous factors that influence managing carryover storage supplies

• Presentations to Member Agency Managers and Finance Officers
  • No concerns raised
  • Member agency managers supported Board consideration of the guidelines and Store Water Fund Policy
Proposed Carryover Storage Policy Guidelines

Supply Withdrawal During Shortage Events

1. **Trigger to Utilize Carryover Storage Supplies**
   Evaluate utilization of carryover supplies when any of the Water Authority supplies are cutback and supplies are insufficient to meet projected demands.

2. **Evaluation Period**
   Initially plan for carryover surface supplies to be utilized over five consecutive dry-years.
Proposed Carryover Storage Policy Guidelines

Supply Withdrawal During Shortage Events

3. Carryover Supply Usage over the Five-Year Period

- Amount of carryover supplies used annually will be handled on a case-by-case basis
- Analysis considers demands, supply availability, hydrologic conditions, storage levels and other factors
- General guideline is to withdrawal surface storage supplies evenly over the five-year period
- Withdrawals may differ from this rule depending upon shortage situation
Proposed Carryover Storage Policy Guidelines

Supply Withdrawal During Shortage Events

4. Regional Supply
Carryover storage deliveries are a regional supply to be combined with Water Authority’s other supplies for delivery to the member agencies’ M&I customers

5. Transitional Special Agricultural (TSAWR) Water Rate Program
Carryover storage supplies will not be available to TSAWR customers per Board approved TSAWR program
6. **Schedule for Evaluation**

- Storage levels will be reviewed:
  - Following a shortage event, and
  - At least annually by May during normal periods.

- Provide Board annual report in May on carryover and emergency storage reserves and operational storage
7. **Target Level During Normal Periods**

Maintain a target of approximately 70,000AF and maximum of 100,000AF in San Vicente during normal periods.

- Initial figure based on a number of factors
  - Current demand trends and supply availability
  - Updated 2015 UWMP demand and supply projections
  - Shortage evaluation under state’s conservative “stress test”

- Target to be re-evaluated periodically
Managing Current Carryover Storage Levels

- Consistent with proposed guidelines, evaluate storage reserve levels in Spring 2017
  - More certainty regarding hydrologic conditions and potential state regulations

- Until evaluation in Spring 2017
  - Do not draw down carryover supplies
  - No storage puts to offset evaporation and seepage losses
Carryover Storage Policy Guidelines

Staff Recommendation

Water Planning Committee

Approve policy guidelines for managing the Water Authority’s carryover storage supplies.
Stored Water Fund Policy
Stored Water Fund Policy Goals

- Make the fund permanent
  - Ensure the ongoing financial management of the Stored Water Fund resources is transparent
  - Funds are only used for intended purpose
  - Inventory cycle cash balance fluctuations don’t impact Operating Fund performance metrics

- Provides sufficient working capital to execute the Carryover Storage Policy Guidelines

- Guides management of emergency stored water inventory sale and purchase
Stored Water Fund Management Summary

• Carryover Target Storage Level
  • Target – Currently set to 70,000 AF

• Carryover Storage Funds Management
  • Maximum Fund Balance
    • Provides the resources to maintain inventory at the Target level
      • Inventory cost escalation, seepage and evaporation included
    • Considers value of inventory held and cash
  • Ongoing fund operation
    • If required, deposits for seepage, evaporation and supply cost escalation will be planned when setting the Storage Charge
    • Revenue from carryover sales used to replenish carryover funds
Inventory Management & Cost Escalation

• Inventory Accounting
  • Value is sum of all inventory purchases
  • Unit Value of Inventory
    • Weighted average cost – all water

• Inventory Cost Escalation
  • Adjusts for cost increases
    • Currently 12.1% (MWD CY 2017 increase)
  • Increase captured in Storage Charge
Overview of Carryover Storage Funds Management

- Funds inventory purchases
- Sales revenue transferred into the SWF
  - Cost of inventory
    - MWD cost of water
- If required, planned deposits made
  - Cost escalation
  - Seepage/evap
Overview of Emergency Storage Funds Management

- Funds inventory purchases
- Sales revenue transferred into the SWF
  - Expected cost of inventory replacement
- Planned deposits to fund seepage/evap losses
Annual Determination of the Maximum Carryover Storage Funds

- Considers the value of inventory and expected cost to buy & maintain 70,000 AF (Target Level)
  - Inventory value is higher than expected cost
    - No additional funds are required - $0 balance and no planned deposits (i.e. no deposit for seepage/evap or cost escalation)
  - Inventory value is less than the expected cost
    - Funds are required – deposits are planned

- Carryover Inventory Value - $58.9M
- Expected Cost $49M
- Expected cost of Target Level in CY 2018 - $46M
Fiscal Impact of Policy Recommendation

- Approximately $9.7 million will be transferred into the Operating Fund
  - Staff is recommending the funds be used for capital projects and reduce future debt issuances
  - Estimated annual savings on debt service is $159,000

- **Staff Recommendation on Stored Water Fund Policy will be considered at today’s A&F Committee**
Carryover Storage Policy Guidelines
Staff Recommendation
Water Planning Committee

Approve policy guidelines for managing the Water Authority’s carryover storage supplies.
State Draft Long-Term Framework on Conservation and Drought Planning

Water Planning Committee
December 8, 2016

Presentation by:
Dana Friehauf, Water Resources Manager
Overview of Content

Chapter 1: Introduction

Chapter 2: Directives implemented within existing authorities

1. 2017 Emergency Water Conservation Regulation
2. Monthly reporting and permanent prohibition of wasteful practices
3. Reduce water supplier leaks and water losses
4. Certification of innovative technologies for water conservation and energy efficiency
Chapter 3: Recommendations that require new and expanded authorities to implement

1. New water use targets based on strengthened standards
2. Water shortage contingency plans
3. Drought planning for small water suppliers and rural communities
4. Agricultural water management plans

Chapter 4: Implementing the Conservation Framework
Water Shortage Contingency Planning

Urban water supplier required to:

1. Update contents of Urban Water Management Plan (UWMP)
   - Include 5-year drought risk assessment

2. Prepare Water Shortage Contingency Plan (WSCP)

3. Submit annual assessment
   - Annual Water Budget Forecast
   - If necessary, appropriate shortage response actions corresponding to shortage level
New Water Use Targets Based on Strengthened Standards

• Single agency-wide target based on efficiency standards for
  • Indoor residential
  • Outdoor irrigation
  • Distribution system water loss

• CII performance measures

• Compliance with target measured in 2025
  • Supplier would decide on actions necessary to comply with target
Summary of Water Use Standards
Development Timeline

- Start with provisional standards based on SBX7-7
  - Indoor: Set at 55 gpcd
  - Outdoor: Set at current Model Water Efficiency Landscape Ordinance requirements

- 2018 – State agencies develop recommended 2025 compliance standards for indoor and outdoor water use

- 2020- State agencies complete rulemaking and adopt final 2025 standards

- Every five years – State agencies review and consider updates to standards
Commercial, Industrial and Institutional (CII) Performance Measures

- No volumetric standard, but requires water suppliers to implement three performance measures:
  1. Install separate irrigation meters for CII landscapes over a specified size
  2. Classify all CII account and where feasible, develop benchmarks in order to identify water use efficiency improvements
  3. Conduct audits or require water management plans for CII accounts over a specified size, volume, or percentage threshold

- State agencies to develop “regulations and guidelines” for CII performance measures by Dec. 2018
  - Public process with CII workgroup
New Water Use Targets
Compliance and Enforcement

• Full compliance will be met when:
  • Supplier’s total water use is less than or equal to target
  • Supplier has implemented CII performance measures

• Water suppliers not in compliance may be provided assistance and/or face enforcement actions from the SWRCB, which could include:
  • Information orders
  • Conservation orders
  • Cease and desist orders
  • Administrative civil liability penalties (such as fines)
New Water Use Targets
Initial Issues and Concerns

- Concern regarding state agencies acquiring authority to continue downward ratcheting of existing SBX7-7 standards
  - Loss of local control in setting water use targets

- State agencies reevaluation of standards must take into account drought resilient supplies
  - Consistent with Governor’s Water Action Plan
  - Balance need for water conservation with need for water suppliers to continue investing in supplies

- State agencies should not use current water use as reference point in developing standards
New Water Use Targets
Initial Issues and Concerns (cont.)

- Target standards based approach may not work for all agencies
  - Provide alternative approach to setting target, similar to SBX7-7 options

- CII Performance Measures
  - Should not negatively impact economic growth
  - Workgroup should develop suitable CII performance measures
    - Determine if proposed CII performance measures are appropriate
  - CII Workgroup should include cross-section of representatives (industry experts, CII customers, water suppliers, etc.)
# Current EO Agencies’ Schedule

Finalizing Conservation Framework Report

<table>
<thead>
<tr>
<th>Activity</th>
<th>TENTATIVE Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Review Draft Report Released</td>
<td>Nov 30</td>
</tr>
<tr>
<td>Public Workshop and UAG/AAG Meeting</td>
<td>Dec 7</td>
</tr>
<tr>
<td>Public Comments Due</td>
<td>Dec 19</td>
</tr>
<tr>
<td>Possible UAG/AAG Workshops, if needed</td>
<td>Early Jan.</td>
</tr>
<tr>
<td>Administrative Draft to Governor’s Office</td>
<td>Jan 20</td>
</tr>
<tr>
<td>Release of Final Report</td>
<td>February</td>
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</table>
Outdoor Target Variables

Outdoor Efficiency Target:

- Evapotranspiration (Eto): averaged across the individual agency service area
- Landscape Area: includes landscape area for the specific agency
- ETAF (Evapotranspiration Adjustment Factor): Sets a water allowance for irrigation based upon a landscape type (in the State’s proposal, age)

<table>
<thead>
<tr>
<th>Plant Water Needs:</th>
<th>Eto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turf (cool season)</td>
<td>100%</td>
</tr>
<tr>
<td>Street Trees</td>
<td>80%</td>
</tr>
<tr>
<td>Fruit Trees</td>
<td>60%</td>
</tr>
<tr>
<td>Mediterranean plants</td>
<td>40%</td>
</tr>
<tr>
<td>Calif. Native plants</td>
<td>20%</td>
</tr>
</tbody>
</table>

Current & New MWELO
- Special Landscapes 1.00
- Existing Residential .80
- Existing Commercial .70
- New Residential .55
- New Commercial .45
State Proposed Initial Application of Evapotranspiration Adjustment Factors

- Applied to individual parcels in a agency’s service area based upon age and aggregated to calculate target:
  - Pre-2010 landscapes 0.8
  - 2010 to 2015 0.7
  - Post-2015 0.55
  - Special Landscapes* 1.0

(*includes play fields, areas irrigated with recycled water, etc.)

Derived From State Model Water Efficient Landscape Ordinances of MWEOs
Drought Response

- Status reports on State Board processes and actions
- Seasonal (monthly) reports on water supply conditions

May 2015:
- Approved M&I and TSAWR allocations and authorized penalties for excess use
- Required member agencies to limit outdoor watering to no more than two days per week

March 2016:
- Rescinded mandatory water use restrictions

May 2016:
- Terminated M&I and TSAWR allocations
Committee engaged on Plan development:

- Reports on Plan development, demand forecast and local/regional supplies
- Received and reviewed Public Review Draft
- Held public hearing and received comments
- June 2016: Adopted 2015 Plan and authorized submittal of the Plan to state
Integrated Regional Water Management and Grants Administration

- Extended the tri-county funding area MOU to proportionally divide Proposition 1 funding
- Extended the IRWM Program MOU with the City of San Diego and the County of San Diego
- Approved applications for:
  - $31.2 million in Prop. 84 funds
  - $5.3 million in Prop. 1 funding for Disadvantaged Communities
Claude “Bud” Lewis
Carlsbad Desalination Plant

- Approved purchase contracts with Carlsbad and Vallecitos
- Held public hearing and certified SEIR for Intake and Discharge Modifications
- Approved Water Purchase Agreement Contract Administration Memorandum
Environmental Management

- Authorized 4-year contract for As-Needed Environmental Consulting Services
- Application of Algaecides at 5 reservoirs in SD County
- Pipeline 4 Relining at Lake Murray
- Hauk Mesa Storage Reservoir Project
- Authorized purchase of wetland/riparian mitigation credits for Carryover Storage Project
Statement of Investment Policy
For Calendar Year 2017

Administrative and Finance Committee
December 8, 2016

David Shank, Financial Planning Manager
San Diego County Water Authority
Recommended Changes

- **Local Agency Investment Fund (LAIF):** Delete reference to a limit of $50 million to allow the maximum permitted by current State Law

- **Medium–Term Notes:** Changing the minimum rating of “AA” by at least one rating agency to “A” or higher by all three rating agencies which is still more stringent than the Code, which requires an “A” by at least one rating agency.
Today’s Action

- Adopt the Annual Statement of Investment Policy, as amended, and continue to delegate authority to the Treasurer to invest Water Authority funds for calendar year 2017.
Stored Water Fund Policy

Administrative and Finance Committee
December 8, 2016

Presentation by:
Lisa Marie Harris, Director of Finance
Water Planning Committee Action

- Approved policy guidelines for managing the Water Authority’s carryover storage supplies
**Stored Water Fund Policy Goals**

- Make the fund permanent
  - Ensure the ongoing financial management of the Stored Water Fund resources is transparent
  - Funds are only used for intended purpose
  - Inventory cycle cash balance fluctuations don’t impact Operating Fund performance metrics

- Provides sufficient working capital to execute the Carryover Storage Policy Guidelines

- Guides management of emergency stored water inventory sale and purchase
Fiscal Impact of Policy Recommendation

- Approximately $9.7 million will be transferred into the Operating Fund
  - Staff are recommending the funds be used to capital projects and reduce future debt issuances
  - Estimated annual savings on debt service is $159,000
1. Make the Stored Water Fund permanent
2. Establish a target for carryover stored water and a maximum calendar year-end balance threshold
3. Utilize surplus funds to pay for existing capital projects
Administration and Finance Work Plan 2015-2016

Final Report

Administration & Finance Committee Meeting
December 8, 2016
Financial Planning

- Approved Member Agency Manager’s recommendations on Fiscal Sustainability
- Adopted the Multi-Year 2016–2017 Budget
- Adopted Long-Range Financing Plan
Initiated major PeopleSoft enterprise software upgrade

Initiated Cyber Security assessment and corrective actions
Workforce Management

- Approved consolidated Memorandum of Understanding (July 2015–June 2019)
Water Planning Committee Action

- Approved policy guidelines for managing the Water Authority’s carryover storage supplies
Store Water Fund Policy Goals

- Make the fund permanent
  - Ensure the ongoing financial management of the Stored Water Fund resources is transparent
  - Funds are only used for intended purpose
  - Inventory cycle cash balance fluctuations don’t impact Operating Fund performance metrics

- Provides sufficient working capital to execute the Carryover Storage Policy Guidelines

- Guides management of emergency stored water inventory sale and purchase
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1. Make the Stored Water Fund permanent
2. Establish a target for carryover stored water and a maximum calendar year-end balance threshold
3. Utilize surplus funds to pay for existing capital projects
Asset Management

- Obtained Board approval of proposed budget, including pipe relining and infrastructure rehabilitation projects, and pipeline condition assessment

Capital Improvement Program

- Completed San Vicente Dam projects and obtained DSOD certification for raised dam

Carlsbad Seawater Desalination

- Achieved commercial operation on December 23, 2015
Facilities Security and Emergency Preparedness

- Coordinated and participated in regional disaster recovery workshops

Operations and Maintenance

- Resolved five right of way enforcement cases
Metropolitan Water District’s Potential Recycled Water Program

Imported Water Committee
December 8, 2016

Liz Mendelson-Goossens, Water Resources Specialist
Current Status

- Demonstration plant design 50% complete (Aug. 2016)
- Nov. 2016 info item:
  - Feasibility studies
  - Finance plan
- Nov. 30 email:
  - Final Feasibility Study available to directors and member agencies
Feasibility Study Key Findings

- Program now limited to 4 basins in Los Angeles and Orange counties
- Requires 60 miles of distribution pipelines
Current Timeline

Nov. 2016: Information Item
Dec. 2016: MWD to seek authorization for full-scale program design

Full-scale program being implemented before demonstration plant is constructed and operated.
Nov. 2016:
Information
Item

Dec. 2016:
MWD to seek
authorization
for full-scale
program design

Jan. 2017:
Info-ration
Item

Early 2017:
MWD to seek
authorization
for construction
agreement for
demo plant

Full-scale program being
implemented before
demonstration plant is
constructed and operated

Timeline graphic from MWD’s August 2016
Presentation
Concerns

- MWD moving fast
- Change in MWD’s business model
- Appears MWD will bear entire capital costs
- **Not** included in MWD’s 2015 IRP
- Member Agencies’ demand for MWD water
  - Fixed treatment charge implications
- Legal and financial exposure
- Water Authority ratepayers do **not** benefit
- No policy discussions
Next Steps

Delegates

- Continue efforts for policy discussions

Water Authority staff

- Monitor and report back to IWC
BENEFITS AND COSTS OF THE CALIFORNIA WATERFIX

Dr. Jeffrey Michael
Center for Business and Policy Research
University of the Pacific

San Diego County Water Authority
December 8, 2016
Outline

- Review of BDCP benefit-cost studies.
- Comments on Brattle Groups November 2015 draft WaterFix analysis, and Dr. Sunding’s October 27 presentation
- August 2015 UOP Benefit-Cost Analysis
  - Overview of statewide benefits and costs
  - Implications for water agencies and financing
 Benefit-Cost Analysis of BDCP

- **UOP, Michael (July 2012)**
  - Evaluates tunnels independently
  - Statewide assessment based on BDCP costs and EIR/EIS.

- **BDCP chapter 9 appendix A (May 2013)**
  - Evaluates benefits and costs from water agency perspective
  - Changes from EIR/EIS baseline to assume tougher environmental regulations without WaterFix, but not with WaterFix. Justified by BDCP No-surprises Assurances under ESA Section 10.
  - Baseline change increases water yields and increase benefits.
Difference in BDCP studies almost entirely due to water yield

<table>
<thead>
<tr>
<th></th>
<th>Michael (7/2012)</th>
<th>BDCP (5/2013)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Export Water Supply</strong></td>
<td>3,916</td>
<td>15,722 to 16,642</td>
<td>11,806 to 12,726</td>
</tr>
<tr>
<td>Export Water Quality</td>
<td>2,328</td>
<td>1,819 to 1,789</td>
<td>-509 to -539</td>
</tr>
<tr>
<td>Earthquake Risk Reduction</td>
<td>866</td>
<td>470 to 364</td>
<td>-396 to -502</td>
</tr>
<tr>
<td>Environmental Benefits/Costs</td>
<td>0</td>
<td>Not Estimated*</td>
<td>NA (0)</td>
</tr>
<tr>
<td>Tunnel Costs (Capital, O&amp;M)</td>
<td>-12,310</td>
<td>-13,328 to -13,343</td>
<td>1,018 to 1,033</td>
</tr>
<tr>
<td>In-Delta and Upstream Impacts</td>
<td>-1,173</td>
<td>Not Estimated*</td>
<td>NA (-1,173)</td>
</tr>
<tr>
<td><strong>Net Benefits ($ millions)</strong></td>
<td>-6,374</td>
<td>4,684 to 5,452</td>
<td>11,058 to 11,826</td>
</tr>
<tr>
<td>Benefit-Cost Ratio</td>
<td>0.53</td>
<td>1.35 to 1.41</td>
<td></td>
</tr>
</tbody>
</table>
November 2015 draft analysis from PRA request
- Assumed taxpayers subsidize 30% of construction cost.
- Found benefits < allocated costs for agriculture even after subsidy.
- But benefits > costs after subsidy for all export water agencies due to high urban values.

October 27, 2016 presentation to SDCWA
- No subsidy: 30% of allocated costs “outside his scope”
- Additional discussion of costs and benefits to water agencies.
Ignores 30% of project cost with no loss of benefits.

What are the benefits of 70% of a project?
Two Views of Cost versus Yield

Water Fix Incremental Cost Versus Yield

- Sunding/Brattle
- Smith/Stratecon

Yield (million acre feet)

Cost (per acre foot)

$7,000

$6,000

$5,000

$4,000

$3,000

$2,000

$1,000

$-
Other Problems With Sunding/Brattle Assumptions

- Shifts no-tunnel baseline from EIR/EIS to boost project yield for water exporters.
  - Does not account for impact of baseline change on environmental values and 3rd party effects in-Delta and upstream. Invalid to differ from EIR/EIS without this.
  - President-elect Trump
- Inflated Agricultural Water Value from land prices.
- Inflated Urban Scarcity Values
  - Aggressive population growth projection.
  - Ignores likely development of alternative water supplies and increased conservation.
Pacific Benefit-Cost Analysis of WaterFix


Released in August 2016
WaterFix Differences With BDCP Affect Benefit-Cost Analysis

- WaterFix is Not A Habitat Conservation Plan.
  - Water agencies lose “no surprise” regulatory assurances.
  - Tunnels no longer bundled with habitat restoration.
    - BDCP Section 10 permit: requires overall improvement in ES
    - WaterFix Section 7 permit: do not jeopardize existence of ES

- Water Yields Are Lower.

- Construction Costs Updated.
- Construction Time Estimate Increased from 10 years to 15 years.
Key Assumptions for WaterFix Benefit-Cost Analysis

- Export Water Yield: annual average of 225,432 acre feet per the January 2016 WaterFix Biological Assessment
- Timeline: Construction 2017-2031, Operation benefits valued from 2032 to 2131 (100 year useful life)
- Real Discount Rate: 3.5%
- Two Scenarios:
  - Optimistic: Values from 2013 BDCP/Sunding Analysis.
  - Base: Values from other state reports.
The Base Scenario Still Includes Some Pro-Tunnel Biases

- No Risk of Cost Escalation.
- Excludes some areas of potential social costs.
  - Delta recreation and upstream reservoirs
- Excludes some areas of environmental costs
  - Risk of algal blooms and construction impacts
- Assumes no technological improvements in alternative water supplies and conservation.
- Valued Delta Water exports 25% higher than current cost of alternatives.
- Long-time horizon and relatively low discount rate.
Valuing Export Water Supply in the Base Scenario

Agricultural Value:
- Difference in Rental Rate of Irrigated and Unirrigated Land
  Implies $124/af. Increase 25% to $150/af.

Urban Value:
- Cost of Alternatives DWR California Water Plan.
- Weighted average is $633/af, but increased 25% to
  $800/af – midpoint cost of recycled water.

<table>
<thead>
<tr>
<th></th>
<th>Low Cost ($/af)</th>
<th>High Cost ($/af)</th>
<th>Midpoint Cost ($/af)</th>
<th>Potential 2030 Supply (million/af)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brackish Groundwater Desalination</td>
<td>500</td>
<td>900</td>
<td>700</td>
<td>.1-.2</td>
</tr>
<tr>
<td>Ocean Desalination</td>
<td>1000</td>
<td>2500</td>
<td>1750</td>
<td>.1-.2</td>
</tr>
<tr>
<td>Municipal Recycled Water</td>
<td>300</td>
<td>1300</td>
<td>800</td>
<td>1.8-2.3</td>
</tr>
<tr>
<td>Surface Storage</td>
<td>300</td>
<td>1100</td>
<td>700</td>
<td>.1-1.1</td>
</tr>
<tr>
<td>Urban Water Use Efficiency</td>
<td>223</td>
<td>522</td>
<td>372.5</td>
<td>1.2-3.1</td>
</tr>
</tbody>
</table>
Valuing Export Water Supply in Optimistic Scenario

Optimistic Scenario from BDCP analysis:

- Assumes very rapid urban population growth.
- Assumes no development of alternative water supplies or growth in conservation.
- Averages $785/af across urban and agriculture uses, compared to $367/af in base scenario.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Tunnels’ Annual Water Yield</th>
<th>Average Value of Water Supply</th>
<th>Annual Value</th>
<th>Present Value over 100 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimistic</td>
<td>225,432 af</td>
<td>$785</td>
<td>$176.9 mil</td>
<td>$2,822.4 mil</td>
</tr>
<tr>
<td>Base</td>
<td>225,432 af</td>
<td>$367</td>
<td>$82.7 mil</td>
<td>$1,319.5 mil</td>
</tr>
</tbody>
</table>
“Optimistic” Scenario: avg. annual value $27.4 mil from BDCP report, present value $436 million. Why so low?
- Low probability event
- Tunnels only protect 50% of exports.
- Worst case scenario is less than ¼ the loss of surface water in recent drought years

Base Scenario: 0
- Vast majority of economic damage is not water exports
- Higher level of flood protection investment will occur without WaterFix
Benefit of WaterFix to Exporters

- Water Quality Improvement is the Biggest Benefit in the Base Scenario (value estimate from BDCP)
- Total Benefit is less than $5 billion in the most optimistic case

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Base scenario</th>
<th>Optimistic Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export Water Supply</td>
<td>$1,319,521,208</td>
<td>$2,822,409,124</td>
</tr>
<tr>
<td>Export Water Quality</td>
<td>$1,677,361,307</td>
<td>$1,677,361,307</td>
</tr>
<tr>
<td>Earthquake Risk Reduction</td>
<td>$0</td>
<td>$435,796,554</td>
</tr>
<tr>
<td>Total Benefits</td>
<td>$2,996,882,515</td>
<td>$4,935,566,984</td>
</tr>
</tbody>
</table>
Cost of WaterFix to Exporters

- $15.7 billion construction/mitigation over 15 year period. O&M $25mil to $38mil annually.
- Present Value Cost is $12.3 billion

<table>
<thead>
<tr>
<th>Costs</th>
<th>Base scenario</th>
<th>Optimistic Scenario</th>
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<tr>
<td>Construction and Mitigation</td>
<td>$11,676,474,531</td>
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<tr>
<td>Operation and Maintenance</td>
<td>$591,658,075</td>
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- For exporters alone, costs exceed benefits by more than $7 billion.
In-Delta Costs

- **Agriculture**
  - Present value cost $294 million to $683 million.

- **In-Delta Transportation Impacts**
  - Present value cost of $132.2 million for state highways evaluated in BDCP EIR/EIS

- **Municipal Water Quality**
  - Mitigation cost present value $37 million to $111 million for Contra Costa WD alone.

- **Total In-Delta Costs could be near $1 billion**
  - Significant locally but not critical to statewide B-C ratio.
Environmental Costs/Benefits

- WaterFix EIR/EIS and biological assessment does not support any claim of environmental benefit.
  - Some species could be negatively impacted.
  - Section 7 permit is for No Jeopardy not Overall Improvement.
  - Other environmental risks.
- $0 Environmental Benefit/Cost seemed most consistent with EIR and BA
  - Using declining baseline scenario would create large environmental costs.
<table>
<thead>
<tr>
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<tr>
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</tr>
<tr>
<td>Ecosystem</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>In-Delta Municipal</td>
<td>$111,279,332</td>
<td>$37,093,107</td>
</tr>
<tr>
<td>In-Delta Agriculture</td>
<td>$682,807,143</td>
<td>$293,953,421</td>
</tr>
<tr>
<td>In-Delta Transportation</td>
<td>$132,205,755</td>
<td>$132,205,755</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$13,194,424,836</td>
<td>$12,731,384,889</td>
</tr>
<tr>
<td><strong>Net Benefit</strong></td>
<td>($10,197,542,281)</td>
<td>($7,795,817,905)</td>
</tr>
<tr>
<td>Benefit/Cost ratio</td>
<td><strong>0.23</strong></td>
<td><strong>0.39</strong></td>
</tr>
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Benefit-Cost Conclusions

- WaterFix is worse than the “status quo” as defined by its EIR/EIS.
  - Net Benefit is -$10 billion, and b-c ratio is 0.23 under base scenario.
  - No Pessimistic Scenario (no consideration of cost escalation or other potential problems)

- Implications for Project Financing
  - Many agricultural agencies are likely to opt-out.
  - Agencies that opt-out will not accept declining baseline.
  - Infeasible without enormous taxpayer subsidy of agricultural cost share.
Adopted the Updated 2015–2016 Bay–Delta work plan
Received regular updates on Bay–Delta issues through Bay–Delta activities reports
Heard presentations related to BDCP and California WaterFix and EcoRestore from:
• John Laird (Secretary, California Natural Resources Agency)
• Karla Nemeth (Deputy Secretary for Water Policy, California Natural Resources Agency)
• Dr. David Sunding (Economist, The Brattle Group)
Approved comment letter on BDCP/California WaterFix Partially Recirculated DEIR/DEIS
Colorado River Supplies

- Held quarterly Colorado River Subcommittee meetings:
  - Status reports on QSA water transfer and canal lining projects
  - Updates on Colorado River basin-wide issues

- Participated in legislative advocacy trips:
  - Sacramento meetings
  - Washington D.C. meetings
  - SWRCB Salton Sea workshops in Sacramento

- Attended tours and conferences:
  - Imperial Valley Farm Tour
  - Imperial Valley Mitigation/Restoration Project Tour
  - Colorado River Symposium
  - ACWA conference
  - CRWUA conference

- Increased outreach to Imperial Valley through board-to-board discussions

- Continued binational discussions with Mexico
MWD Water Supplies & Other Activities

- Received favorable ruling in Rate litigation and was awarded more than $243 million in damages, costs, pre-judgment interest, and attorneys’ fees
  - Filed fourth lawsuit against MWD for adoption of illegal rates for 2017 and 2018
- Received monthly MWD updates, Delegates’ written and oral reports on MWD, and copies of more than 40 letters between the WA Delegates and MWD
- Received update on WA’s two out-of-region groundwater storage programs
- Others:
  - Received updates on MWD’s 2015 Integrated Water Resources Plan
  - Heard presentation from Deven Upadhyay (WRMG Manager, MWD)
Prior Board Action

- On July 28, 2016, the Board approved Water Authority sponsorship of legislation to clarify statutory authority under the County Water Authority Act relative to energy matters.

- Staff will be continuing to pursue Board direction in 2017.
Recommended Sponsorship – Funding for State Settlement Obligations

Issues

- Over many years, the State has entered into contractual, legal, and statutory commitments to enhance, protect, and restore natural resources

- A sustenance level of funding has been provided, but these resources conflicts and the state’s corresponding financial commitments remain largely unresolved
  - Tahoe Regional Planning Compact
  - Salton Sea restoration and QSA implementation
  - San Joaquin River Restoration Settlement Act
  - Klamath Hydroelectric Settlement Agreement
  - Yuba River Accord
  - Central Valley Project Improvement Act implementation
Proposed legislative approach

- With billions of dollars estimated as necessary to resolve the state’s settlement obligations, the current approach of providing piece-meal funding when it is available is only serving to “kick the can down the road”

- Dedicated funding for state settlement obligations through a robust general obligation bond measure would be important to fulfilling the state’s commitments, including Salton Sea restoration and QSA implementation.
Approve sponsorship of legislation to pursue opportunities for a robust state general obligation bond, or similar state financing instrument or approach, to fulfill the state’s settlement obligations, including Salton Sea restoration and QSA implementation
Legislation, Conservation and Outreach Committee
2015-2016 Final Report

Legislation, Conservation and Outreach Committee
December 8, 2016
Water Use Efficiency/Drought Response

- Supported activities to help region meet long-term water efficiency targets ahead of schedule
- Recommended to the Board $1M in funding for drought response outreach and programs
- Gave input, direction on grants and partnerships
Five sponsored bills signed into law

Took positions on nearly 60 state and federal bills

Discussed multiple issues in Sacramento & Washington

- Committee leadership active engagement in legislative briefings

Four Legislative roundtables
Encouraged effective communications
- Achieved 67% of public seeing water as good value

Supported programs
- Met targets for school education outreach
- Set new small-business participation target
Pipeline 3 Relining Lake Murray to Sweetwater Reservoir Resolution of Necessity

December 8, 2016
Project Purpose
Portal in Street
12 of 18 Portals require property acquisitions

Temporary construction easements up to 9 months

All as detailed in the Board Memo with staff recommendation.

One objecting party proposed alternative sites. They were reviewed by staff and are not feasible.
Pipeline 3 Relining Lake Murray to Sweetwater Reservoir Resolution of Necessity

December 8, 2016
Motion

To adopt the Resolution of Necessity and the entire staff recommendation in the Board memorandum pertaining to the acquisition of the listed properties.