California WaterFix Update

Imported Water Committee
February 22, 2018

Amy Chen, Director of MWD Program
Unanswered Questions From Last Review

What portion of the costs will San Diego be expected to pay?

How much water will San Diego County receive?

What other agencies will commit to pay for the project?

How will San Diego County ratepayers be protected from paying an unfair share?

What guarantee do participating agencies have of stated benefits?
Cost Assumptions Used by MWD – Twin Tunnels

- Capital: $16.7B*
  - O&M: $64M/yr
- Cost split between CVP/SWP: 45/55
- MWD Share: 25.9%, or $4.3B
  - $207M/yr–$334M/yr (@4% – 8%)
- WaterFix supply benefit: 1.3 MAF for both projects/ MWD Share: 337,000 acre–feet
  - $840/af – $1,218/af at MWD service area
- Oct 2017: MWD Board authorized participation of 25.9%, and Finance JPA

* In 2017$
Staged Approach to WaterFix Announced: February 7, 2018
Stage 1 (Single Tunnel) Summary – Reported by MWD

- Capital: $11.1B*
- O&M: $49.6M/yr
- Largely funded by SWP contractors
  - CVP: up to 1,000 cfs (of 6,000 cfs)
- MWD Share: $4.3B – $5.2B
- Stage 1 supply benefit: 0.9 MAF
  - 400,000 AF less than full WaterFix
- SWP Delivery Capacity
  - ~2.8 MAF (“roughly unchanged between 9,000 cfs and 6,000 cfs”)
- CVP contractors negatively impacted

* In 2017$
Issues: Supply Benefits

- Because CVP and SWP share same waterway, both projects have historically coordinated operations.

- Incorporating WaterFix to existing CVP and SWP facilities will change how projects are currently operated.

- Based on “cost follows water” principle, Stage 1 benefits will be accrued by SWP contractors leaving CVP contractors bearing the burden of reduced exports from existing facilities:
  - Stage 1 benefit is 400,000 af less than full project, according to MWD (1.3 MAF vs 0.9 MAF).
  - Will CVP contractors agree to change in operations that results in reduction of their exports based on regulations that may not occur?

- State Board’s Bay Delta Water Quality Plan update may further impact water exports not addressed by WaterFix.
Natural Flow
Natural Flow

Existing Southern Delivery Systems: SWP & CVP
Natural Flow

Existing Southern Delivery Systems: SWP & CVP

Reverse Flow
Natural Flow

Existing Southern Delivery Systems: SWP & CVP

WaterFix-Original Proposal

Dual Facility helps reduce reverse flow
Natural Flow

Existing Southern Delivery Systems: SWP & CVP

WaterFix (Stage 1 6,000 cfs)

Dual Facility helps reduce reverse flow
Natural Flow

Existing Southern Delivery Systems: SWP & CVP

WaterFix (Stage 1 6,000 cfs)

WaterFix (Stage 2 3,000 cfs)

Dual Facility helps reduce reverse flow
Issues (cont.)

- MWD’s participation level?
  - Stage 1: $4.3B – $5.2B* (1.2x more than previously authorized)
    - Water transfer agreement with SWP ag contractors
  - Full project:
    - MWD to fund CVP share: ~$11.8B (2.7x more than previously authorized)
      - “lease capacity” to CVP contractors

- Finance JPA
  - Alternative financing for WaterFix
  - To-date, only MWD and Zone 7 signed on to participate
  - JPA debt would also be secured by the pledge of revenues from contractors who agree to finance

*4% interest
## Benefits–Costs

### Dr. Sunding’s Analyses

<table>
<thead>
<tr>
<th>Scenario</th>
<th>SWP Urban</th>
<th>SWP Ag</th>
<th>CVP</th>
</tr>
</thead>
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<tr>
<td><strong>California WaterFix (Nov 2015 Draft): assumed life span = 50 years</strong></td>
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<tr>
<td>9,000 cfs (With $3.9B of $13.9B paid for by others)</td>
<td>2.43x</td>
<td>0.71x</td>
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<table>
<thead>
<tr>
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<th>SWP Urban</th>
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<tr>
<td><strong>California WaterFix Stage 1 (6,000 cfs): assumed life span = 100 years</strong></td>
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<td>“No Trading”</td>
<td>1.35x</td>
<td>1.04x</td>
<td>1.08x</td>
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<tr>
<td>1,000 cfs SWP/1,000 cfs CVP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6,000 cfs SWP</td>
<td>1.29x</td>
<td>1.03x</td>
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<table>
<thead>
<tr>
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<tr>
<td>“Trading”</td>
<td>1.33x</td>
<td>1.17x</td>
<td>1.08x</td>
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<tr>
<td>1,000 cfs SWP/1,000 cfs CVP</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6,000 cfs SWP</td>
<td><strong>1.23x</strong></td>
<td>1.17x</td>
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Next Steps

- MWD plans to present cost benefit analysis to its Board
  - 2/27/18

- MWD Board action on cost adjustments, including transfer agreements
  - 3/13/18

- SWP contractors will have to each decide funding contribution
CRB Oroville Site Visit
January 31-February 1
Before
Chute is 178 feet wide by 3050 feet long 
(60% of Football Field by 10 Football Fields) 
Sidewalls vary from 20 to 34 feet high 
Dentates are 23 feet high by 43 feet long
MWD Rate Litigation: 2010–2012 Cases

Imported Water Committee
February 22, 2018

Mark Hattam, General Counsel
Overview

- The 2010–2012 cases cover MWD rate years 2011–2014. These cases went to trial and then to the appellate court
  - We lost SWP issue: ~$242/AF (in 2018 $)
  - We won all other key claims

- We will cover: (a) benefits from the 2010–12 litigation; and (b) what remains to be litigated in those cases
  - Later stayed cases to be addressed at future meeting
2010–2012 Litigation Benefits

- Two kinds of benefits achieved: in-case and beyond-case

- **In-case benefits:**
  - *Water Stewardship Rate invalidated as to Exchange Agreement Water*
    - **Value:** $44.4 million (principal + interest)
<table>
<thead>
<tr>
<th>Member Agency</th>
<th>Est. Cost Savings and/or Reimbursement 2011-14 ($ in Millions)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlsbad M.W.D.</td>
<td>$1.6</td>
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<tr>
<td>Del Mar, City of</td>
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<td>Escondido, City of</td>
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<td>Fallbrook P.U.D.</td>
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<tr>
<td>Helix W.D.</td>
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<tr>
<td>Lakeside W.D.</td>
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<td>National City, City of</td>
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<tr>
<td>Oceanside, City of</td>
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<tr>
<td>Olivenhain M.W.D.</td>
<td>$2.0</td>
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<tr>
<td>Otay W.D.</td>
<td>$3.1</td>
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<tr>
<td>Padre Dam M.W.D.</td>
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<tr>
<td>Pendleton M.C.B.</td>
<td>$0.0</td>
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</tbody>
</table>

*Without deduction for litigation costs. Numbers rounded.

<table>
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<th>Member Agency</th>
<th>Est. Cost Savings and/or Reimbursement 2011-14 ($ in Millions)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poway, City of</td>
<td>$1.1</td>
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<tr>
<td>Rainbow M.W.D.</td>
<td>$1.1</td>
</tr>
<tr>
<td>Ramona M.W.D.</td>
<td>$0.5</td>
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<tr>
<td>Rincon Del Diablo M.W.D.</td>
<td>$0.6</td>
</tr>
<tr>
<td>San Diego, City of</td>
<td>$17.7</td>
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<tr>
<td>San Dieguito W.D.</td>
<td>$0.5</td>
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<tr>
<td>Santa Fe I.D.</td>
<td>$1.0</td>
</tr>
<tr>
<td>South Bay I.D.</td>
<td>$1.2</td>
</tr>
<tr>
<td>Vallecitos W.D.</td>
<td>$1.5</td>
</tr>
<tr>
<td>Valley Center M.W.D.</td>
<td>$0.8</td>
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<tr>
<td>Vista I.D.</td>
<td>$1.7</td>
</tr>
<tr>
<td>Yuima M.W.D.</td>
<td>$0.1</td>
</tr>
</tbody>
</table>

**TOTAL** $44.4
2010–12 Litigation Benefits (Cont’d)

- Preferential rights recalculated: statutory right to a certain percentage MWD water supply at any given time
  - Value: ~100,000 af/year increase (at 1.75 MAF MWD supply)
2010–12 Litigation Benefits (Cont’d)

- **Rate Structure Integrity (RSI Clause) invalidated**
  - MWD can’t force member agencies to forego rate challenges to secure program benefits (i.e. Local Resource Program (LRP) and Conservation Program funding)
  - **Value**: Water Authority & member agencies can apply for conservation and Local Resources Program (LRP) benefits from MWD
    - For example, Conservation Credits Program funding restored ~$800,000 annually
    - Three LRP applications have already been submitted
Beyond-case Benefits:

- *WSR potentially not applied to Exchange Agreement Water*
  
  Value:
  
  - 2015–18: **$42 million** (principal + interest)
  - 2019–20: **$34 million** avoided cost
  - ~$37/AF offset to Water Authority rates per year (2019 dollars)

- *WSR potentially not applied to Exchange Agreement Water (2021–2047)*

  Value: Up to ~$1 billion reduced costs, at up to $18.5 million per year in 2021
  
  - Offset of $42/AF to Water Authority rate (2021)
2010–12 Litigation Benefits (Cont’d)

- *Wheeling law applies to Exchange Agreement*
  - Value: discussed below (offsetting benefits)

- *Proposition 26 applies to MWD*
  - Value: application to stayed cases

- *Validation cases*
  - Value: streamlining of stayed cases; limits MWD “circling back” on decided issues
2010–12 Litigation Status

So what is the current status of 2010–12 cases?
- Remanded back to trial court; no schedule yet

Various issues remain to be tried, as follows:
2010–12 Litigation Status

1. **Offsetting Benefits.** Water Code section 1811(c) requires “reasonable credit for any offsetting benefits for the use of the conveyance system.”
   - Issue not yet decided
   - MWD’s own record shows substantial value if we win
2010–12 Litigation Status (Cont’d)

2. **RSI Lost Contracts.** RSI clause caused various agreements to be canceled/lost  
   - Because trial court never allowed us to try issue (erroneously ruled we had no standing), is still unresolved

3. **Attorney’s Fees.** Trial court must go back and re-look at attorneys’ fees  
   - Water Authority fees at issue: ~$11.5 million
Conclusion:

1. 2010–12 cases provided significant benefits to the Water Authority and its member agencies, even with loss of State Water Project issue
2. There are still important monetary issues the trial court must decide
3. Next month: overview of 2014/16 cases (currently stayed)
BROUGHT TO YOU BY WATER...

Legislation & Public Outreach Committee
February 22, 2018

Denise Vedder, Acting POC Director
Mike Lee, Public Affairs Supervisor
Goals

- Reinforce and strengthen the Water Authority and its member agencies as the region’s trusted leaders on water policy and reliability

- Enhance outreach communications tools for member agencies to help water users understand the need for continued investments in supply reliability and infrastructure
Strategic Approach

- Build up pilot program’s success
- Focus on drivers of our local economy and quality of life
- Collaborate with member agencies and stakeholders
- Promote the value of water
- Re-energize stakeholders
- Expand education
Promote Value of Water

- Microsite
- Advertising
- Social media
- Educational & promotional materials
Re-Energize Stakeholders

- Phase 1 focal industries
  - Manufacturing
  - Tourism
  - Craft brewing
  - Agriculture/Food

- Future focal industries
  - Healthcare
  - Military
  - Universities
  - Life Sciences
Re-Energize Stakeholders

- Quarterly sub-regional event sponsorships
  - Leverage existing events
- Strengthen industry partnerships
  - Partner with industry leaders for videos
  - Cross-promote materials
  - Seek media opportunities
  - Recruit and activate expanded water ambassador program
Expand Education

- Summer of Social Influence
  - Engage dynamic social media “influencer”
  - Provide tips and resources for water-use efficiency
  - June–August
  - Focus on 25 to 38 year-olds
Expand Education

- Water News Network
  - News
  - Features (Project Insider, Innovation Alert, Employee Spotlight)
  - Member agency news releases
  - Conservation Corner
  - For the Record
  - Capitol Update
  - Water Currents (media clips)
  - From the Archives
  - Other
Program Management

- **Staff**
  - Videos
  - Writing and editing
  - Event coordination
  - Promotional items
  - Partnerships
  - Social media

- **Contractors/interns**
  - Photos
  - Videos
  - Writing

- **Member agencies**
  - Ideas
  - Content
  - Videos
  - Coordination
  - Events

- **Southwest Strategies**
  - Branding
  - Connections
  - Events
  - Web content
  - Awards program
  - Media
Timeline

- **February**
  - JPIC, MAGMs, Board
  - Program development
  - Scheduling events, roll-out planning
  - Brand refinement

- **March**
  - Site & content development
  - Outreach material development
  - Advertising development

- **Spring**
  - Program launch
1) Approve the enhanced value of water regional communications program Brought to You by Water;

2) Authorize the General Manager to enter into a 12–month professional services agreement with Southwest Strategies in an amount not to exceed $244,000 for public outreach services to assist in the implementation of the program; and

3) Approve the reallocation of $55,000 from the General Manager’s budget contingency fund to the Public Outreach and Conservation Department’s FY 2018 and 2019 budget to implement the program.
February 16 was bill introduction deadline for 2018
- Approximately 2,200 bills introduced in 2018
- Two-year bills are also carried-over from 2017

Budget subcommittee hearings will begin by the end of February and carry through until mid-May
Sexual Harassment in the Capitol

- **State Assembly**
  - 2 Assemblymembers have resigned as a result of sexual harassment investigations*
    - Raul Bocanegra
    - Matt Dababneh
  - 1 Assemblymember on voluntary unpaid leave
    - Cristina Garcia
  - 10 pending investigations – legislators/staff/lobbyists

- **State Senate**
  - 1 Senator suspended – paid leave – 60 days
    - Tony Mendoza
  - 6 pending investigations – legislators/staff/lobbyists

* A third Assemblymember – Sebastian Ridley-Thomas – has also resigned from office, citing “undisclosed medical reasons.”
Water Authority Sponsored Bills – 2018: AB 2371 (Carrillo)

- AB 2371 is co-sponsored in partnership with NRDC to advance several Independent Technical Panel (ITP) recommendations to improve landscape irrigation efficiency:
  - Irrigation system evaluation as part of home inspection
  - Plant labeling
  - Contractor examination question update
  - Water needs of landscape plants
Water Authority Sponsored Bills – 2018: AB 2064 (Gloria/Weber)

- AB 2064 is intended to fully address cashflow issues for non-profit organizations and DACs participating in IRWM programs
- AB 2064 will allow for a grant payment advance for the second half of the IRWM project cost – with built-in accountability provisions
- AB 2064 is jointly authored by Assemblymembers Todd Gloria and Shirley Weber
SB 1277 is co-sponsored spot bill legislation to create a governance and administrative structure to manage the day-to-day implementation of the 10-year Salton Sea Management Program.

A reliable structure for receiving funding, contract management, invoice processing, and priority project implementation does not yet exist.
Status of Long-Term Water Use Efficiency Legislation – AB 1668/SB 606

- Legislation remains in holding pattern – no action to-date

- Cautious optimism that some progress has been made toward resolving outstanding technical/implementation issues
  - Amendments resulting from sessions have not yet been released or shared

- San Diego region’s remaining issues include:
  - Several technical/implementation issues
  - Substantive policy issues
    - Potable reuse credit
    - Drought resilient supplies
    - Enforcement
Status of SB 623 and Budget Trailer Bill – Water Tax

- SB 623 (Monning) and Budget Trailer Bill
  - Would generate approximately $160 million in annual revenue
    - Water tax: $135.4 million/year (85% of revenue)
    - Fertilizer and dairy tax: $22.5 million/year (15% of revenue)
  - 2/3 vote bill

- Water Authority is part of a strong statewide opposition coalition

- San Diego legislative delegation fully engaged
  - Looking for alternative solution to address drinking water contamination problems
Dam Safety

- AB 1270 (Gallagher) was passed last week by the Legislature and is pending action by the Governor

- Urgency legislation outlining requirements relating to inspection of dams and dam features
  - Requires DWR to inspect dams, reservoirs, and appurtenant structures once per fiscal year
    - Low hazard-potential dams would receive inspections once every two fiscal years
  - Requires dam owners to disclose information to enable DWR to assess dam safety and performance
  - Establishes that dam inspection reports are public records

- Dams within the San Diego region already undergo annual inspections
2018 NEWLY-INTRODUCED LEGISLATION
2018 Introduced Legislation

- **AB 1944 (Garcia)** – Would define the scope of San Luis Rey Valley Groundwater Basin for the purposes of management under SGMA
  - Co-sponsored by Water Authority member agencies and Tribes

- **AB 2050 (Caballero)** – Would establish a governance and service delivery framework for providing safe drinking water within DACs
  - Co-sponsored by Eastern Municipal Water District and CMUA

- **AB 2060 (Garcia)** – Would modify eligibility criteria relating to the existing advance payment program under several Prop 1 grant award programs
  - Sponsored by Rural Community Assistance Corporation
2018 Introduced Legislation

- **AB 2072 (Quirk)** – Would require the SWRCB to maintain a dedicated program to research contaminants of emerging concern relative to drinking water

- **SB 998 (Dodd)** – Would prohibit residential water service from being shut off unless the public water system complies with a rigorous process involving extensive noticing and approval of the local public health department, among other provisions

- **Budget Trailer Bill** – Safe and Affordable Drinking Water Act – Closely mirrors the provisions of SB 623 (Monning), which would impose a water tax to generate funds for groundwater contamination cleanup within disadvantaged communities
Update on
State Water Resources Control Board
Proposed Regulation on
Prohibited Water Uses

Water Planning Committee
February 22, 2018

Presentation by:
Jeff Stephenson, Principal Water Resources Specialist
Recent Activities (2018)

- January 31 - SWRCB released revised final draft of proposed prohibitions
- February 6 - Conference call with member agencies to discuss revised text
- February 8 - Water Authority submitted comment letter to SWRCB & provided copy to member agencies
- February 20 - SWRCB “workshop”
February 20 SWRCB “Workshop”

- No action taken
- Changed from action item to workshop
  - Lengthy report on water supply conditions
- SWRCB staff reported 500+ individual written comments submitted by February 14 deadline
- Approximately 20 stakeholders spoke at workshop
- Comments under consideration by SWRCB
Next Steps

- Revised proposed regulation to be released by SWRCB for 15-day comment period (date TBD)
- April 17, 2018 (tentative) - Proposed regulation to be considered for adoption by SWRCB
- April 26, 2018 – Update at Water Planning Committee meeting
- July 1, 2018 (tentative) – Regulation in effect
Interim Long-Range Water Demand Forecast “Reset”

Water Planning Committee
February 22, 2018
Need for Interim Demand Forecast Reset

- Changes since 2015 UWMP demand forecast development
  - Emergency drought proclamation
  - SWRCB Drought Emergency Regulation
  - Landscape market transformation
  - Behavioral changes in water use
Need for Interim Demand Forecast Reset

- Intended as a provisional update to support on-going Water Authority supply, facility and financial planning activities

- Not a comprehensive update of demand forecast model or underlying economic projections
  - full re-estimation of demand forecast model to coincide with 2020 UWMP preparation
Discontinuity in Total Demand (TAF)

- Actual
- 2015 UWMP

- 2016: 455
- 2017: 477
- 2018: 588
- 2019: 648
- 2020: 677
- 2021: 694
- 2022: 719

111 TAF
Interim Demand Forecast Reset (TAF)

![Graph showing Interim Demand Forecast Reset (TAF) over the years from 2016 to 2040 with data points for 2015 UWMP, Actual, Estimated Transition, and Interim Demand Forecast Reset.]
Impact of Interim Demand Forecast Reset on Normal Year Supply Source Mix - Year 2035

### 2015 UWMP

- **Metropolitan Water District**: 80 TAF (12%)
- **Imperial Irrigation District Transfer**: 57 TAF (8%)
- **All American & Coachella Canal Lining**: 72 TAF (10%)
- **Local Surface Water**: 36 TAF (5%)
- **Groundwater**: 110 TAF (16%)
- **Recycled Water**: 200 TAF (29%)
- **Seawater Desalination**: 110 TAF (16%)
- **Potable Reuse**: 80 TAF (13%)

**Total Supply**: 694,431 TAF

### Interim Demand Forecast Reset

- **Metropolitan Water District**: 80 TAF (13%)
- **Imperial Irrigation District Transfer**: 57 TAF (9%)
- **All American & Coachella Canal Lining**: 72 TAF (11%)
- **Local Surface Water**: 36 TAF (6%)
- **Groundwater**: 110 TAF (17%)
- **Recycled Water**: 51 TAF (8%)
- **Seawater Desalination**: 16 TAF (2%)
- **Potable Reuse**: 200 TAF (32%)

**Total Supply**: 632,418 TAF

*Includes verifiable and additional planned local supply projects from 2015 UWMP*
# Schedule

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<thead>
<tr>
<th>Activity</th>
<th>Date</th>
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<tr>
<td>Initiate discussion with member agency general managers on demand forecast “reset” process</td>
<td>Jan –16</td>
</tr>
<tr>
<td>Present normal year interim demand forecast “reset” and updated supply mix mix to general managers</td>
<td>Feb – 13</td>
</tr>
<tr>
<td>Board presentation on normal year interim demand forecast “reset” and updated supply mix</td>
<td>Feb – 22</td>
</tr>
<tr>
<td>Present single and multiple dry year supply and demand scenarios to general managers</td>
<td>Mar–13</td>
</tr>
<tr>
<td>Board presentation on single and multiple dry year supply and demand scenarios</td>
<td>Mar – 22</td>
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Update on Water Supply Conditions

Water Planning Committee
February 22, 2018

Tim Bombardier
Principal Water Resources Specialist
Monthly Local Reservoir Storage (AF)
October 2016 – February 2018*

Capacity: 743,588 AF

* Estimated month end storage for February 2018
# Total Potable Water Use vs. Rainfall/Temperatures*

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<thead>
<tr>
<th></th>
<th>December 2013</th>
<th>December 2014</th>
<th>December 2016</th>
<th>December 2017</th>
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<tbody>
<tr>
<td><strong>Total Potable Water Use (AF)</strong></td>
<td>37,200</td>
<td>26,100</td>
<td>27,600</td>
<td>39,200</td>
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<tr>
<td><strong>Rainfall (inches)</strong></td>
<td>0.46</td>
<td>4.50</td>
<td>4.22</td>
<td>0.07</td>
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<tr>
<td><strong>Ave. Temp.</strong></td>
<td>+3.8</td>
<td>+2.6</td>
<td>+1.6</td>
<td>+6.1</td>
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*Lindbergh Field Station*
47% Decline in Total Potable Per Capita Water Use
Water Authority Pension Plan
Funding Strategy Discussion

Administrative and Finance Committee
February 22, 2018

Presented by Chris Woidzik, Controller
Water Authority Pension Plan

Pension Funding Strategy Discussion for Water Authority Pension (3-Part Presentation Series)  

*Per Audit Committee Recommendation:*

a) CalPERS and Water Authority Funding Status and Future Funding Assumption

b) Funding Options and Summary of Current Local Government Practices (March)

c) Recommendations for Funding Water Authority Pension Plan (April)
Water Authority Pension Plan

- Total Pension Liability (as of 6/30/16) $221 million
- Total Plan Assets (as of 6/30/16) 150 million
- Net Pension Liability (as of 6/30/16) $71 million
- Percent Funded Ratio (as of 6/30/16) 67.84%

Other Key Facts - Number of Employees

- Total Active and Inactive Employees in Plan: 587
- Total Current Employees: 243
- Classic – 2.5% @ 55 member total 189
- PEPRA – 2% @ 62 member total 54

FY18 Employer Contribution - UAL $3.9 million
Agenda

- Asset Liability Management
- Experience Study
- Amortization Policy
- Valuation Report Schedule
- Contribution Forecast
Asset Liability Management Process

- Fiduciary review of asset allocation
  - Risk/Return trade-off
- Conducted every 4 years
  - Interim review every 2 years
- Capital Market Assumptions (CMAs)
  - Set of expected returns, volatilities, and correlations for each asset class
  - Short term CMAs developed by Investment Office & Financial Office
  - Long term CMAs developed by Actuarial Office
  - Blended discount rate derived from short term and long term CMAs
## Asset Liability Management Process

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<th>Asset Class Component</th>
<th>Portfolio A</th>
<th>Portfolio B</th>
<th>Portfolio C</th>
<th>Portfolio D</th>
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<tbody>
<tr>
<td>Global Equity</td>
<td>34%</td>
<td>42%</td>
<td>50%</td>
<td>59%</td>
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<tr>
<td>Private Equity</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
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<tr>
<td>Fixed Income</td>
<td>44%</td>
<td>36%</td>
<td>28%</td>
<td>19%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>Inflation Assets</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Liquidity</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Expected Compound Return (1-10 yrs.)</strong></td>
<td><strong>5.6%</strong></td>
<td><strong>5.8%</strong></td>
<td><strong>6.1%</strong></td>
<td><strong>6.4%</strong></td>
</tr>
<tr>
<td><strong>Long Term Expected Return (11-60 yrs.)</strong></td>
<td><strong>7.8%</strong></td>
<td><strong>8.0%</strong></td>
<td><strong>8.3%</strong></td>
<td><strong>8.5%</strong></td>
</tr>
<tr>
<td><strong>Blended Return (1-60 yrs.)</strong></td>
<td><strong>6.50%</strong></td>
<td><strong>6.75%</strong></td>
<td><strong>7.00%</strong></td>
<td><strong>7.25%</strong></td>
</tr>
<tr>
<td><strong>Expected Volatility</strong></td>
<td><strong>9.1%</strong></td>
<td><strong>10.2%</strong></td>
<td><strong>11.4%</strong></td>
<td><strong>12.8%</strong></td>
</tr>
<tr>
<td><strong>Cash Yield:</strong></td>
<td><strong>3.1%</strong></td>
<td><strong>3.0%</strong></td>
<td><strong>2.9%</strong></td>
<td><strong>2.7%</strong></td>
</tr>
</tbody>
</table>
Asset Liability Management Process

• Board selected Portfolio C in December 2017
  • Implementation targeted for July 2018
• Discount rate associated with Portfolio C is 7.00%
  • Phase-in of discount rate to 7.00% remains unchanged for determination of contribution requirements
Experience Study

• Review of all demographic and economic assumptions
  - Conducted every 4 years
  - Demographic assumptions include mortality rates, disability rates, early/normal/late retirement rates, leaving service rates
  - Economic assumptions include price inflation, wage inflation, salary scales

• Mortality
  - Slowdown in general rate of mortality improvement
  - 15 year mortality projection replaces 20 year mortality projection

• Retirement
  - Earlier retirements for Public Agency miscellaneous plans
  - Later retirements for Safety plans
Experience Study

- Price Inflation
  - Short term inflation 2.00%
  - Long term inflation 2.75%
  - Blended inflation rate 2.50%
    - Reduced from 2.75%

- Wage Inflation (in excess of Price Inflation)
  - Remains unchanged at 0.25%
  - Payroll growth assumption 2.75%
    - Reduced from 3.00%
### Experience Study

#### Impact on Contribution Rates

<table>
<thead>
<tr>
<th>Category</th>
<th>Estimated Change in Total Normal Cost Rate (% of payroll)</th>
<th>Ultimate Estimated Relative Change in Total Employer UAL Cost (% of UAL$ payment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety CPO</td>
<td>0.3% to 0.4%</td>
<td>(0.3%) to 2.0%</td>
</tr>
<tr>
<td>Safety Fire</td>
<td>(0.5%) to (0.2%)</td>
<td>0.3% to 1.4%</td>
</tr>
<tr>
<td>Safety Police</td>
<td>(0.3%) to 0.0%</td>
<td>0.5% to 2.0%</td>
</tr>
<tr>
<td>Misc 3% at 60</td>
<td>(0.2%) to 0.6%</td>
<td>(2.2%) to (1.3%)</td>
</tr>
<tr>
<td>Misc 2.7% at 55</td>
<td>0.0% to 0.6%</td>
<td>(1.3%) to 4.3%</td>
</tr>
<tr>
<td>Misc 2.5% at 55</td>
<td>(0.2%) to 0.5%</td>
<td>(1.8%) to (1.0%)</td>
</tr>
<tr>
<td>Misc 2% at 55</td>
<td>(0.1%) to 0.4%</td>
<td>(0.9%) to 1.7%</td>
</tr>
<tr>
<td>Misc 2% at 60</td>
<td>(0.3%) to 0.0%</td>
<td>(5.5%) to (3.1%)</td>
</tr>
</tbody>
</table>
## Experience Study

<table>
<thead>
<tr>
<th>Category</th>
<th>Change in Total Normal Cost Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Miscellaneous (2% at 62)</td>
<td>0.2%</td>
</tr>
<tr>
<td>State Industrial (2% at 62)</td>
<td>1.0%</td>
</tr>
<tr>
<td>State Safety (2% at 57)</td>
<td>0.5%</td>
</tr>
<tr>
<td>POFF (2.5% at 57)</td>
<td>0.4%</td>
</tr>
<tr>
<td>POFF (2.7% at 57)</td>
<td>0.7%</td>
</tr>
<tr>
<td>CHP (2.7% at 57)</td>
<td>0.5%</td>
</tr>
<tr>
<td>Schools (2% at 62)</td>
<td>0.3%</td>
</tr>
<tr>
<td>Public Agency Miscellaneous</td>
<td>(0.1%) to 0.0%</td>
</tr>
<tr>
<td>Public Agency Safety</td>
<td>(0.4%) to 0.1%</td>
</tr>
</tbody>
</table>
Amortization Policy

- Currently most plans have a UAL (funded ratio less than 100%)
- SDCWA at 6/30/16, 65.9%

• UAL is remeasured each year as part of the actuarial valuation
  - New layers (“bases”) are established to account for UAL changes
  - A layer can be positive (UAL increase) or negative (UAL decrease)

• Amortization Policy specifies how different components (sources) of UAL are amortized (i.e., recognized over time in required contributions)

• Annual Contribution requirement components
  - Employer Normal Cost Rate, SDCWA 2018-19, 10.267%
  - Payment for the amortization of UAL, SDCWA 2018-19. $3.9 million

Unfunded Accrued Liability (UAL) = Liabilities − Assets
## Current Amortization Policy

<table>
<thead>
<tr>
<th>Driver</th>
<th>(Gain)/Loss</th>
<th>Source</th>
<th>Assumption/Method Change</th>
<th>Benefit Change</th>
<th>Golden Handshake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment</td>
<td>Non-investment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amortization Period</td>
<td>30 Years</td>
<td>30 Years</td>
<td>20 Years</td>
<td>20 Years</td>
<td>5 Years</td>
</tr>
<tr>
<td>Escalation Rate</td>
<td></td>
<td></td>
<td>2.875%*</td>
<td>2.875%*</td>
<td>2.875%*</td>
</tr>
<tr>
<td>- Active Plans</td>
<td>2.875%*</td>
<td>2.875%*</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>- Inactive Plans</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Ramp Up</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ramp Down</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*3.0% for 6/30/2016 valuation  * 2.875% for 6/30/2017 valuation  * 2.75% for 6/30/2018 valuation
Amortization Policy Changes

CalPERS Board adopted new Amortization Policy in Feb 2018

- Effective for June 30, 2019 valuations (2021-2022 rates)
- All changes prospective only; existing bases/payments are unaffected

Drivers for policy change

- Benefit security
- Intergenerational equity
- Alignment with industry policy recommendations
- Alignment with other pension systems
Amortization Policy Changes

Changes

• Shorten amortization period for gains/losses (from 30 to 20 years)
• Eliminate Ramp Up for all bases except investment gains/losses
• Eliminate Ramp Down for all bases
• Replace escalating annual payments with level-dollar payments

Impact

• Faster amortization of gains and losses
• Faster funded ratio improvement
• Less interest paid in total
• Increased contribution volatility
• Improved fund sustainability and benefit security

Effective June 30, 2019 valuations (2021-2022 rates for public agencies)
Prospective only (existing bases not affected)
## New Amortization Policy

<table>
<thead>
<tr>
<th>Driver</th>
<th>Investment</th>
<th>Non-investment</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Gain)/Loss</td>
<td></td>
<td>(Gain)/Loss</td>
</tr>
<tr>
<td>Amortization Period</td>
<td>20 Years</td>
<td>20 Years</td>
<td>20 Years</td>
</tr>
<tr>
<td>Escalation Rate</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>- Active Plans</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>- Inactive Plans</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Ramp Up</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ramp Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Changes from current policy highlighted*
Amortization Policy Changes

Illustrative Impact — Non-Investment Loss

Based on $1 million liability loss, 7.00% discount rate, and 2.75% payroll growth assumption
Amortization Policy Changes

Illustrative Impact — Investment Loss

Based on $1 million investment loss, 7.00% discount rate, and 2.75% payroll growth assumption
Valuation Report Schedule

• Valuation Reports
  - June 30, 2017 valuation reports available end of July 2018
  - Sets contribution requirement for FY 2019-2020
  - Projection of contribution requirements for following 5 fiscal years
    • Investment return of 11.2% for FY 2016-17 will have a downward impact on projected contributions
• GASB Reports
Contribution Forecast

• Most recent projections available in June 30, 2016 Valuation Reports

• Recent developments impacting projections
  - 11.2% investment earnings during FY 2016-17 (4.0% gain versus expectation)
  - Experience Study
    • Demographic assumption changes
    • Inflation rate assumption change
  - New amortization policy has no effect because no gains or losses are assumed for June 30, 2019 and later valuations
**Contribution Forecast**

- Using SDCWA’s additional $1.1 million 7/31/17, 11.2% return for 6/30/17, 7.25% return for 6/30/18.
- Projected discount rate changes

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Normal Cost %</th>
<th>UAL Payment</th>
<th>Total as a % of Payroll*</th>
<th>Projected Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018-19</td>
<td>10.267%</td>
<td>3,897,172</td>
<td>24.0%</td>
<td>28,442,223</td>
</tr>
<tr>
<td>2019-20</td>
<td>10.8%</td>
<td>4,600,000</td>
<td>26.5%</td>
<td>29,295,490</td>
</tr>
<tr>
<td>2020-21</td>
<td>11.8%</td>
<td>5,200,000</td>
<td>29.0%</td>
<td>30,174,355</td>
</tr>
<tr>
<td>2021-22</td>
<td>11.8%</td>
<td>5,900,000</td>
<td>30.8%</td>
<td>31,079,585</td>
</tr>
<tr>
<td>2022-23</td>
<td>11.8%</td>
<td>6,600,000</td>
<td>32.4%</td>
<td>32,011,973</td>
</tr>
<tr>
<td>2023-24</td>
<td>11.8%</td>
<td>7,000,000</td>
<td>33.0%</td>
<td>32,972,332</td>
</tr>
<tr>
<td>2024-25</td>
<td>11.8%</td>
<td>7,400,000</td>
<td>33.6%</td>
<td>33,961,503</td>
</tr>
</tbody>
</table>
Purpose

- September 2013 Board adopted Energy Management Policy
- Evaluate energy savings at Twin Oaks
- Maximize existing solar energy
SAVINGS

MORE SAVINGS
LOWER DEMAND CHARGES
Twin Oaks Battery System

- May 2016 entered into Public Private Partnership
  - 1 MW/ 2 MWh battery system
  - 10 year agreement

- Shared savings agreement
  - Water Authority to receive 46% of the savings
  - Industry standard is 25% – 30%

- May 2017 received $1M incentive from CPUC

- Battery system expected operational in February 2018
Twin Oaks Battery System

• No capital cost to Water Authority

• Cost if purchased by the Water Authority:
  o System: ~$2.0M (does not include grants)
  o O&M: $30K per year
Water Authority savings approximately $100,000 annually