Business Plan
2017-2021 Final Performance Report
2019-2023 Update

Administrative & Finance Committee
October 25, 2018

Maureen A. Stapleton
General Manager
Business Planning Process

- Water Supply
- Water Facilities
- Business Services

Monitor and Communicate Performance
Update every 2 years
Business Plan History

- Guiding document to achieve objectives:
  - Flexible
  - Adaptive
  - Accountable
  - Continuously improved
  - Responsive to change
Business Plan History

- 14 years of proven success
- Awarded 2012 ICMA Certificate of Achievement for Performance Measurement in Strategic Planning

Goal Success Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Success Rate</th>
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<tbody>
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<td>2004</td>
<td>74%</td>
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<tr>
<td>2008</td>
<td>63%</td>
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<td>2012</td>
<td>79%</td>
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<td>2015</td>
<td>81%</td>
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<tr>
<td>2016</td>
<td>84%</td>
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<tr>
<td>2017</td>
<td>84%</td>
</tr>
<tr>
<td>2018</td>
<td>87%</td>
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</table>
2017-2021 Business Plan Key Focus Areas

- **Water Supply**
  - Imported Water
  - Local Water
  - Resource Planning

- **Water Facilities**
  - Infrastructure/Capital Improvement Program
  - Sustainability
  - Water System Management

- **Business Services**
  - Communication and Messaging
  - Financial Management
  - Technology
  - Workforce Management
2017-2021 Business Plan Performance

- **1 Objective** was completed by the target date.
- **2 Objectives** are on track to be completed by the target date.
- **3 Objectives** are not on track to be completed by the target date.
- **4 Objectives** are deleted or delayed due to decision of the Board.
- **5 Objectives** are deleted or delayed due to factors outside the Water Authority's control.
Highlights

- Completed
  - Nob Hill Improvements Project
  - Amendments to the East County Agreements
  - Internal Operations of the Hodges Pump Storage Facility
  - Partnership agreement with the City of San Diego for San Vicente Energy Storage Facility, Phase 3
  - Water Storage and Drought Response Plan Updates
Highlights

- Completed
  - Developed organization-wide mentoring program
  - Developed an Operational IT Resource Development Plan
  - Secured $2.5 million in external funding
  - Cost of Service Study
  - Communications outreach for WaterSmart participation
Highlights

- Delayed
  - Reservoir Floating Solar
  - Shortage Contingency Analysis Amendments to comply with state requirements
  - Camp Pendleton Desal Intake Testing
  - Complete the ESP North County Pump Station Project
Updated Business Plan

- Three Key Focus Areas
- Updated Management Strategies
- New Objectives and Tactics
- New and Updated Key Performance Indicators
2019-2023 Business Plan Key Focus Areas

Water Supply
- Imported Water
- Local Water
- Resource Planning

Water Facilities
- Infrastructure/Capital Improvement Program
- Sustainability
- Water System Management

Business Services
- Business Support
- Communication and Messaging
- Financial Management
- Workforce Management
Programs and Management Strategies reflect continued emphasis on the following:

- Water System Management
- System Reliability
- Regulatory Compliance
- Financial Stability

Installation of 54-inch steel pipe
Objectives and Tactics

106 Objectives and Tactics for the next 5 years

Continued emphasis in:
- Asset Management
- Cybersecurity
- Debt and Financial Management
- Imported Water
- Workforce Development
Updated Key Performance Indicators

- Tracking continuous improvement
- Identified for each program

*Ensure compliance with 2020 and 2035 greenhouse gas emission targets identified in the Water Authority’s Climate Action Plan.*

Reduce energy use of the Kearny Mesa Headquarters from the Fiscal Year 2018 baseline of 991,235 Kilowatt hours by 7 percent by the end of Fiscal Year 2023.
Water Supply Key Issues

- Ensuring appropriate cost allocation and long term viability of imported supplies
- Supporting regulatory efforts for potable reuse
- Advancing long-term water use efficiency practices
Water Supply Objectives

- Environmental mitigation implementation at the Salton Sea
- Develop a Basin Plan amendment supporting potable reuse
- Advocate for state and federal funding opportunities
- Prepare annual water supply and demand assessment
- Update Water Shortage Contingency Plan
Water Supply Key Performance Indicators

Exceed the Claude “Bud” Lewis Carlsbad Desalination Plant Water Purchase Agreement minimum demand commitment of 48,000 acre-feet annually.
Implement regional conservation programs demonstrated by expending 95 percent of grants and external funding portfolio in accordance with the terms of each award.
Ensure full amount of scheduled QSA water is delivered to the San Diego Region each fiscal year.
Water Facilities Key Issues

- Controlling facility capital and operating costs
- Balancing facility growth with demands
- Managing facility operations, maintenance, and security
- Implementing cost effective sustainability practices

Magnetic Flux Leakage Pipeline Inspection
Water Facilities Objectives

- Complete additional 6 miles of priority pipeline relining
- Complete the Carlsbad 5 Flow Control Facility Project
- Complete the Hauck Mesa Storage Reservoir and Pipeline Surge Protection Project
- Meet 2020 Climate Action Plan emission targets
- Develop 3 acres of wetland mitigation at the San Luis Rey Kendall site
- Develop a maintenance and replacement plan for Lake Hodges Hydroelectric Pumped Storage Facility
Maintain 90 percent of all Capital Improvement Program projects within four months of their baseline schedule.
Ensure compliance with 2020 and 2035 greenhouse gas emission targets identified in the Water Authority's Climate Action Plan.
Minimize non-revenue water by managing system water loss within established standards 100 percent each fiscal year.
Business Services Key Issues

- Continue effective communications with external stakeholders
- Implement long-term financial plans
- Adopt pioneering technology
- Protect against cybersecurity threats
- Attract, retain, and develop a high performing workforce
Business Services Objectives

- Reduce energy use of the Kearny Mesa Headquarters
- Grow social media audience
- Upgrade water billing software
- Update the Financial Rate Model Program
- Complete Pipeline Refunding Transaction
- Implement Wellness initiatives
- Develop Workforce Management Strategic Plan

2016 Citizen’s Water Academy
Implement at least 50 additional information security measures based on Center for Internet Security's CIS-20 security framework by the end of fiscal year 2023.
Monitor the Water Authority's short-term investment portfolio performance using the Bank of America Merrill Lynch 0-3 Year US Treasury & Agency Index as a performance benchmark.
Reduce the number of workplace injury/illness incidents by achieving 100 percent hazard identification and remediation each calendar year.
Summary

- In the 2019-2023 plan there are 106 objectives and 22 Key Performance Indicators for the next five years
- Progress will be tracked each quarter
- Business Plan and latest update are published on the Water Authority's website
  - [https://www.sdcwa.org/mission-vision-values-strategies](https://www.sdcwa.org/mission-vision-values-strategies)
Business Plan on the Internet

http://www.sdcwa.org/mission-vision-values-strategies
Municipal Bond Market Update

Administrative and Finance Committee
October 25, 2018

Presented by: Lisa Marie Harris, Director of Finance
Board approved Pipeline Bonds refinancing

Market conditions less favorable, refinancing placed on hold

Market conditions improved suggesting significant potential savings, resumed refinancing

- May 2017
- Summer 2017
- Fall 2017
- Fall 2018
- January 2019

Bond team formed to execute refinancing

Anticipated bond pricing
Municipal Bond Market Update

John Houlberg - JP Morgan

- Executive Director & Head of Western Region Utility Practice with JP Morgan’s Finance practice.
- 14 years of experience servicing clients across the western United States.
- Specializes in Water/Wastewater, Transportation, School District and general government finance.
- Served the SFPUC as Structuring Agent on securing its first WIFIA loan in the amount of $699 million.
San Diego County Water Authority

Market Update | October 25, 2018
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In October 2018, both 20-year UST and MMD rates rose above their 10-year averages.
UST curves have flattened significantly YTD, while tax exempt rates have steepened

Medium and long-term MMD yields have risen from their YTD lows
Over the last three months, rates have been volatile in the municipal market.

**MMD yields over the last 3 months**

- **5Y MMD**: +37 bps
- **10Y MMD**: +40 bps
- **20Y MMD**: +43 bps
- **30Y MMD**: +31 bps

Source: Thomson Reuters Municipal Market Data, J.P. Morgan; as of 10/22/2018
2018 Municipal net supply is forecasted to be -$119 billion, with gross supply forecasted at $315 billion.

Municipal gross supply was muted in the first few months of 2018 as deals accelerated into December 2017.

2018 forecasted gross supply of $315 billion is considerably lower than historical levels after the elimination of tax-exempt advance refundings.

Municipal bond funds have received $9.33 billion of net investment YTD

Cumulative YTD Municipal Bond Fund Flows

Cumulative Equity, Municipal, and Taxable Fund Flows

Municipal bond funds experienced outflows of $636 million last week

Source: Lipper FMI; iMoneyNet, as of 10/17/2018

Source: Lipper FMI; iMoneyNet, as of 10/17/2018
Despite general market rate movements, California bonds are being offered with tighter spreads to MMD, particularly on the short end of the yield curve.

- While tax-exempt yields have generally drifted higher this year, the demand for California bonds and notes has dramatically tightened credit spreads.
  - Ability to price with yields lower than national AAA bonds (MMD) for 10-15 years.
- The Authority can leverage this dynamic given its name recognition and credit ratings.
  - Better pricing.
  - Strategic use of couponing.
  - Potential diversification of offering.
- The Authority has more flexibility today to implement strategies that can reduce costs, increase capacity and meaningfully increase future optionality.

**Current California vs AAA GO Municipal Yield Curves**

Source: TM3 as of 10/23/2018
The spread between ‘BBB’ and ‘AAA’ MMD has tightened substantially since 2012

Spreads between ‘BBB’ and ‘AAA’ MMD Yields (2012-2018YTD) (bps)

July 22, 2018 to Oct. 22, 2018

<table>
<thead>
<tr>
<th>BBB MMD ▲ (bps)</th>
<th>10-Year</th>
<th>20-Year</th>
<th>30-Year</th>
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<tr>
<td>Current</td>
<td>3.57%</td>
<td>4.15%</td>
<td>4.28%</td>
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<td>1 Week</td>
<td>1</td>
<td>1</td>
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<tr>
<td>1 Month</td>
<td>13</td>
<td>17</td>
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<tr>
<td>3 Month</td>
<td>32</td>
<td>44</td>
<td>48</td>
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<tr>
<td>Avg. Spread to AAA MMD</td>
<td>82 bps</td>
<td>83 bps</td>
<td>82 bps</td>
</tr>
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</table>

Change represented above is from July 22, 2018 to Oct. 22, 2018

Source: Thomson Reuters TM3 as of October 22, 2018
J.P. Morgan Research forecasts a moderate flattening in the UST and MMD curves, with a total of four rate hikes in 2018.

J.P. Morgan expects a flattening UST curve in 2018

Range of 10-year UST forecasts

J.P. Morgan U.S. Treasury Interest Rate Forecast (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Current</th>
<th>1m ahead Forecast</th>
<th>4Q18 Forecast</th>
<th>1Q19 Forecast</th>
<th>2Q19 Forecast</th>
<th>3Q19 Forecast</th>
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<tr>
<td>10/22/18</td>
<td>2.19%</td>
<td>2.15%</td>
<td>2.40%</td>
<td>2.65%</td>
<td>2.90%</td>
<td>3.15%</td>
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<tr>
<td>11/19/18</td>
<td>2.49%</td>
<td>2.70%</td>
<td>2.70%</td>
<td>3.10%</td>
<td>3.25%</td>
<td>3.40%</td>
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<tr>
<td>12/31/18</td>
<td>3.05%</td>
<td>3.05%</td>
<td>3.10%</td>
<td>3.20%</td>
<td>3.35%</td>
<td>3.55%</td>
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<tr>
<td>3/31/19</td>
<td>3.22%</td>
<td>3.20%</td>
<td>3.20%</td>
<td>3.30%</td>
<td>3.40%</td>
<td>3.50%</td>
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<tr>
<td>6/30/19</td>
<td>3.40%</td>
<td>3.35%</td>
<td>3.25%</td>
<td>3.30%</td>
<td>3.40%</td>
<td>3.45%</td>
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<td>9/30/19</td>
<td>3.40%</td>
<td>3.35%</td>
<td>3.25%</td>
<td>3.30%</td>
<td>3.40%</td>
<td>3.45%</td>
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J.P. Morgan Tax-Exempt Yield Forecast (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>AAA MMD</th>
<th>Current</th>
<th>1m ahead Forecast</th>
<th>4Q18 Forecast</th>
<th>1Q19 Forecast</th>
<th>2Q19 Forecast</th>
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<td>2.05%</td>
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<td>2.30%</td>
<td>2.35%</td>
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<tr>
<td>11/19/18</td>
<td>2.30%</td>
<td>2.30%</td>
<td>2.30%</td>
<td>2.45%</td>
<td>2.50%</td>
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<td>12/31/18</td>
<td>2.75%</td>
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<td>2.70%</td>
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<td>2.90%</td>
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<tr>
<td>3/31/19</td>
<td>3.45%</td>
<td>3.40%</td>
<td>3.25%</td>
<td>3.35%</td>
<td>3.40%</td>
<td>3.50%</td>
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<tr>
<td>6/30/19</td>
<td>85.40%</td>
<td>85.94%</td>
<td>84.38%</td>
<td>86.36%</td>
<td>85.29%</td>
<td>87.14%</td>
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<td>9/30/19</td>
<td>101.47%</td>
<td>101.49%</td>
<td>100.00%</td>
<td>101.52%</td>
<td>100.00%</td>
<td>101.45%</td>
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Source: J.P. Morgan Research, US Fixed Income Markets Weekly, 10/19/2018, jpmm.com; Rates as of 10/19/2018

Source: J.P. Morgan Research, US Fixed Income Markets Weekly – Municipals, 10/19/2018, jpmm.com; Rates as of 10/19/2018

Median Fed “dots” imply one additional Fed hike this year, in line with J.P. Morgan Research forecasts.

**FOMC dots vs. market expectations**

- **FOMC Forecast**
- **JPM's Forecast**
- **Market Forward Curve**

**FOMC year-end Fed Funds Target Rate projections**

- **Med:** 2.375%
- **Med:** 3.125%
- **Med:** 3.375%
- **Med:** 3.875%
- **Med:** 3.000%

**Number of Fed hikes implied by OIS rates***

**Market Implied Fed Rate Hike Probability**


*One participant did not submit a longer run projection.


* Implied number of hikes out to end of year 2019

Source: J.P. Morgan, Bloomberg, as of 10/22/2018

* Implied number of hikes out to end of year 2019

Source: Bloomberg, World Interest Rate Probability – Fed Effective, as of 10/19/2018
# Next Steps: Pipeline Revenue Refunding Bonds

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<thead>
<tr>
<th>Activity</th>
<th>Date</th>
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<tbody>
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<td>Rating Agency Presentations</td>
<td>Week of December 3</td>
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<tr>
<td>Bond Document Approval from Board</td>
<td>December 6</td>
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<tr>
<td>Bond Document Approval from CPCFA</td>
<td>December 21</td>
</tr>
<tr>
<td>Receive Ratings from Fitch &amp; Moody’s</td>
<td>December 21</td>
</tr>
<tr>
<td>Investor Meetings</td>
<td>January 9 - 22</td>
</tr>
<tr>
<td>Bond Pricing</td>
<td>Week of January 22</td>
</tr>
<tr>
<td>Bond Closing</td>
<td>Week of February 4</td>
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Water Authority Unfunded Pension Liability Funding Strategy & Recommendations

Administrative & Finance Committee
October 25, 2018

Presented by: Lisa Marie Harris, Director of Finance
Christopher Woidzik, Controller
and David Gore, Senior Management Analyst
Pension Funding Discussion

Board Meetings:

November 14, 2017 - Audit Committee recommendation

February 22, 2018 - Initial discussion, recap Water Authority liability & funding status and presentation from CalPERS actuary

March 22, 2018 - Presented a range of funding options and had a presentation from 115 Trust provider PFM Asset Management, LLC

August 23, 2018 - Follow up discussion on funding options and impact on unfunded actuarial liability and rates

October 25, 2018 - Staff recommendation on unfunded pension liability policy

MAFO Meeting:

September 18, 2018 - Present pension framework options, contribution sources, and funding options
Water Authority Pension Plan - What we have done...

History:

1. Inception to present day - have always made the actuarial determined pension plan payments to CalPERS.

2. Recently started making supplemental payments:
   - **May 2017 (FY2017)** - Contributed $9.6M supplemental payment
     - $6.3M future interest expense savings
   - **July 2017 (FY2018)** - Completed $1.1M budgetary pension excess payment
     - $2.9M future interest expense savings
   - **July 2018 (FY2019)** - Completed $828K budgetary pension excess payment
     - $1M future interest expense savings

3. Making annual UAL payments in July will have saved $136K of interest in FY19 and $116K in FY18.
Water Authority Pension Plan - Key Data

Measurement Date - June 30, 2017

Total Pension Liability: $246 million
Total Plan Assets: 176 million
Net Pension Liability (UAL): $70 million
(UAL payoff is set at 30 years)

Percent Funded Ratio: 71.55%
(67.84% previously; increase aided by 11.2% FY2017 return & May 2017 supp. payment)

FY2018-19 UAL Payment: $3.9 million
(saved $400K by prepaying in July, otherwise payment would have been $4.3M)

Rate effect: $1M = $2.40 per acre foot
The Water Authority's Funded Ratio has been in an approximate 70% band for the past 9 years.

Sources: CalPERS Annual Valuation Report and CalPERS CAFR. MVA utilized beginning in 2003.
Establish the Policy Funding Framework

- Determine the Funding Source(s)
- Select the Funding Vehicle(s)
Policy Funding Framework

First

Set a pension plan target funded percentage (presently @ 71.55%)

1. Range 70%-80%
   • Considered below average by ratings agencies & investors
   • Minimal investment and time required to achieve

2. Range 75%-85%
   • Middle of this range achieves an above average funding level
   • Moderate investment and time required to achieve

3. Range 80%-90%
   • Bottom of this range achieves an above average funding level
   • Additional investment and time required to achieve
Second Set the time frame to reach the target funded percentage

1. 10 years
   - Requires the highest contribution level to achieve
   - Achieves the highest interest savings
   - Achieves greatest immediate rate impact

2. 15 years
   - Requires a moderate contribution level to achieve
   - Achieves a moderate level of interest savings
   - Achieves moderate immediate rate impact

3. 20 years
   - Requires the lowest contribution level to achieve
   - Achieves lesser interest savings
   - Achieves lowest immediate rate impact
### Additional Discretionary Payment (ADP) Chart

Estimated Time Frame to Achieve Target Funded Ratio, Presently @ 71.55%

<table>
<thead>
<tr>
<th>Funded Ratio</th>
<th>Annual ADP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$.5M</td>
</tr>
<tr>
<td>70% to 80%</td>
<td>11 Years</td>
</tr>
<tr>
<td>75% to 85%</td>
<td>22 Years</td>
</tr>
<tr>
<td>80% to 90%</td>
<td>28 Years</td>
</tr>
</tbody>
</table>

Above amount in addition to approx. $3-4M estimated annual base UAL payment.
Benefits of Additional Discretionary Payments (ADP’s)

Required Minimum Payments vs. Payments plus 20 years of $1M ADP’s

Source: CalPERS Actuarial ADP Calculator

$1M in annual savings corresponds to $2.40/AF in rate savings
Rate increases are not guaranteed as other factors could lower rates
Pension Funding Framework Recommendation

- Achieve a 75% to 85% funded ratio
  - No funded ratio exists at which a pension becomes “healthy”, but ratings agencies consider 80% and up to be above average.

- Achieve the target funded percentage in 20 years
  - Setting the desired timeframe at 20 years minimizes the impact to ratepayers.
  - Achieves lowest immediate rate impact.
Pension Funding Policy Parameters

- Establish the Policy Funding Framework

- Determine the Funding Source(s)

- Select the Funding Vehicle(s)
Specifically budgeting an additional amount each year
  ▪ A $1M ADP for 20 years achieves a 85% funded ratio
  ▪ A $2M ADP for 20 years achieves a 100% funded ratio

Use of annual budgetary savings

Apply unanticipated one-time revenues, i.e.
  ▪ Lake Hodges settlement
  ▪ Mitigation bank credit sales
  ▪ Debt service savings from bond refinancing
Funding Source Recommendation

- Budget an additional $1M annual pension payment until desired funding level is achieved
  - $1M per year is enough to realize moderate interest savings while being low enough to minimize the impact on rates
- Make additional one-time contributions
  - Unexpected savings and budgetary savings rolled into additional contributions results in further interest savings without increasing rates
Pension Funding Policy Parameters

- Establish the Policy Funding Framework
- Determine the Funding Source(s)

Select the Funding Vehicle(s)
Potential Funding Vehicles

1. Create and fund a Section 115 Pension Trust

2. Create a pension reserve with annual or periodic deposits to soften employer pension rate ramp increases

3. Make additional discretionary payments to CalPERS (i.e., supplemental payments)
A 115 Pension Trust segregates capital for the purpose of funding a pension. These funds are held by a trust provider and may be invested, but are irrevocably committed to the pension obligation.

Pros:
- Hedges CalPERS exposure and allows for investment diversification
- Allows portfolio customization & a rapid response to changing markets
- Assets in the trust will offset unfunded pension liabilities (no claw back)

Cons:
- Does not lower the CalPERS reported unfunded pension liability per governmental accounting rules
- Additional expenses and staff time involved to set up and administer
- Same exposure to market volatility as CalPERS
Option 2: Create a Pension Reserve

Pros:
- If anything happens to CalPERS, the monies placed in reserves would not be sacrificed
- Public/member agency/employee/rating agency favorable perceptions

Cons:
- Does not lower the CalPERS reported unfunded pension liability
- Assets in the reserve could be drawn for unforeseen expenses by Board decision
- Limited investment selections and inhouse experience
Option 3: Supplemental payments to CalPERS

Pros:
- Immediate reduction to pension liability
- Can make payments when funds are available
- Can select how to apply payment (i.e., annual payment reduction, interest savings or both)

Cons:
- If anything happens to CalPERS, the additional funded amounts could be sacrificed
- Public/member agency perception, is there a better use for monies
### Funding Vehicle Return Comparison

**Average Annual Performance Comparison as of 2017**

<table>
<thead>
<tr>
<th>Entity</th>
<th>1 Year</th>
<th>3 Year</th>
<th>5 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CalPERS*</td>
<td>11.2%</td>
<td>4.7%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Section 115 Trust PFM – Multi-Asset 30:70 Composite</td>
<td>9.1%</td>
<td>4.7%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Water Authority OPEB Trust (CERBT)*</td>
<td>8.4%</td>
<td>5.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Water Authority Investment Portfolio</td>
<td>1.4%</td>
<td>1.1%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

*CalPERS and OPEB data is fiscal year, the NYSE data is calendar year. All numbers are net of fees.*
Funding Vehicle Recommendation

- Make ADP’s to CalPERS to maximize the Water Authority’s pension interest savings

- Additional discretionary payments to pay our CalPERS liability maximizes the Water Authority’s returns as CalPERS uses a 7.0% to 7.5% discount rate when calculating our liability interest.
Staff Recommendations

- Establish the Policy Funding Framework
  - 75% to 85% in 20 years

- Determine the Funding Sources
  - Budget an additional $1M annually for pension beginning in FY 2020 until desired funding level is achieved
  - Make additional one-time contributions

- Select the Funding Vehicle
  - Make additional discretionary payments to CalPERS

- Present the Updated Funded Percentage to the Board Annually
Agreement with VCMWD & YMWD for ESP Improvements

Engineering & Operations Committee
October 25, 2018
Emergency Storage / Carryover Storage Projects

- Olivenhain
  - Reservoir
  - Pump Station
- San Vicente
  - Pipeline/Tunnel
  - Pump Station
  - Dam Raise
- Lake Hodges
  - Pipeline/Tunnel
  - Pumped Storage
- North County
  - Pump Stations
North County ESP Pump Stations Project

- Rainbow Municipal Water District
- Fallbrook Public Utilities District
- Yuima Municipal Water District
- Valley Center Municipal Water District
Project Components

- Red Mountain Pump Station
- East Mission Road Pump Station
- Pipeline 4 Turnout and Meter Structure
- Valley Center
  - Infrastructure Improvements
  - Flow Control Facility
Project Delivery

- Member Agency Agreements
  - Design
  - Construction
  - Operation & Maintenance

- Water Authority Services
  - Environmental
  - Right of Way
Agreement Benefits Each Agency

- Member Agencies
  - Available for daily use by Member Agency
  - Offers operational benefits and flexibility beyond emergency events.
  - Provides water during emergency events

- San Diego County Water Authority
  - Fulfills ESP commitments to its member agencies
Project Schedule

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA Environmental &amp; Right of Way</td>
<td>WA Design &amp; Construction</td>
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<td></td>
</tr>
<tr>
<td>VCMWD / YMWD Design</td>
<td>VCMWD / YMWD Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMWD Design &amp; Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPUD Design &amp; Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VCMWD/YMWD Agreement

- Improvements
  - Pump Stations
  - Pipeline

- Flow control facility for YMWD deliveries
Authorize the General Manager to execute a funding agreement with Valley Center Municipal Water District and Yuima Municipal Water District for the design of infrastructure improvements providing emergency water supplies to Valley Center and Yuima Water Districts for an amount not-to-exceed $580,000.
Vallecitos Water District 11/
Vista Irrigation District 12
Flow Control Facility

Engineering and Operations Committee
October 25, 2018

Kirk Whitaker
Senior Engineer
CONSTRUCT NEW FLOW CONTROL FACILITY

EXISTING FLOW CONTROL FACILITY
# Bid Results

<table>
<thead>
<tr>
<th>NO.</th>
<th>CONTRACTOR</th>
<th>TOTAL BID PRICE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>COST ESTIMATE</td>
<td>$3,900,000 - $4,800,000</td>
</tr>
<tr>
<td>1.</td>
<td>Orion Construction Corporation</td>
<td>$4,573,000</td>
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<tr>
<td>2.</td>
<td>SCW Contracting Corporation</td>
<td>$4,967,496</td>
</tr>
<tr>
<td>3.</td>
<td>Kiewit Infrastructure West</td>
<td>$4,977,000</td>
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<tr>
<td>4.</td>
<td>Weir Construction</td>
<td>$5,831,469</td>
</tr>
<tr>
<td>5.</td>
<td>TechCom International Corporation</td>
<td>$5,898,173</td>
</tr>
</tbody>
</table>
Recommendations

- Determine the bid protest is valid, and Orion Construction Corporation and SCW Contracting Corp.’s bids are non-responsive.

- Authorize the General Manager to award a construction contract to Kiewit Infrastructure West, Inc. in the amount of $4,977,000 for the Vallecitos Water District 11/Vista Irrigation District 12 Flow Control Facility project.
San Vicente Energy Storage Facility

Engineering & Operations Committee
October 25, 2018

Gary Bousquet
Senior Engineering Manager
Project Purpose: Provide revenues for City and Water Authority to offset water rates.

Project Description

Background

California Energy Landscape

Project Activities and Budget

Next steps
San Vicente Energy Storage Facility

- Generate revenues
- Use San Vicente reservoir for lower reservoir
- Build small new upper reservoir
- Build pumping and generating facilities
- Build transmission and substation
Key Stakeholders

- **Owners:** City of San Diego and Water Authority
  - Owners’ Representative: Black & Veatch

- **Regulators**
  - Federal Energy Regulatory Commission (FERC)
    - Preliminary Permit and License
  - California Independent System Operator (CAISO)
    - Interconnection Application
  - California Public Utility Commission (CPUC)
    - Rulings related to potential revenue
How Does a Closed-Loop Pumped Energy Storage Work?

Upper reservoir

Turbine/Pump

Lower reservoir
Regional Storage Benefits

- Provides long-term revenue stream to stabilize City and Water Authority water rates
- Fully use renewable energy (i.e. less curtailment)
- Generate carbon free or “clean” energy when renewable energy is not available
- Increase electrical grid reliability
- Reduce greenhouse gases by using more renewables
- Provide “on call” power
Governor Brown signs SB 100

- Increases from 50 percent to 60 percent renewable energy requirement in 2030
- 100% carbon free goal by 2045
California Renewable Portfolio Standard (RPS)

State policy requires 60% of electrical utilities’ energy portfolios come from renewable energy resources, such as solar, by 2030.
## 2017 California Energy Generation

<table>
<thead>
<tr>
<th>Generation Type</th>
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<td>11,745</td>
<td></td>
</tr>
<tr>
<td>Small Hydro (&lt;30mw)</td>
<td>6,413</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>24,331</td>
<td></td>
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<tr>
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<td><strong>Total</strong></td>
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<td>442</td>
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Source: California Energy Commission Statistics
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Total carbon free about 56%
How to meet carbon free, renewable energy needs at night?
## 2017 California Energy Generation

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</table>
On Sunday, March 4, 2018 the maximum 3-hour upward ramp was 14,777 MW

3-hr, 14,777MW ramp met by:
- Import ~ 36%
- Hydro = 15%
- Thermal = 49%

- The CAISO markets economically optimized resources both internally and externally to meet demand
- Imports may or may not be available when needed to meet evening ramps
- Internal resources makes up about 64% of ramp
- Cannot rely on wind to meet ramps
Energy Storage: Pumped Storage and Batteries

- Complementary in nature
- Distributed Energy Storage: Batteries
  - 1 to 4 hours storage
  - Quickly deployed
  - Recapitalization at 10 - 12 years
- Bulk Energy Storage: Pumped Storage
  - 8+ hours storage
  - Cost effective
  - Long term investment
- Together, batteries and pumped storage support the Renewable Portfolio Standard goals
TOWTP Battery Installation - 1 MW/2 mwh
SDG&E Battery Installation - 30 MW/120 mwh

SDG&E Escondido Lithium Ion Battery Installation - 24 (640 SF) containers which house 400,000 Samsung batteries in almost 20,000 modules the size of a kitchen drawer wired together in racks. Located on 1.5 Acres
San Vicente - 500 MW/4,000 mwh storage

- Required space for batteries - 50 acres

- 1 football field = 1.3 acres so:
San Vicente - 500 MW/4,000 mwh storage

- Required space for batteries 50 acres
- 1 football field = 1.3 acres so:
- 50 acres/1.3 acres = 38.5 football fields
Project Activities

- City San Vicente Reservoir modeling
- Black and Veatch Feasibility Study
- FERC Permit/Pre-application Document Preparation
- State Water Resources Control Board
- CAISO Interconnection Application
- Owners’ representative selection
  - Letters of interest
  - RFP for development partner
- Subject matter experts
- Term sheet negotiations
Regulatory Activities

- FERC Preliminary Permit
  - Submitted May 1, 2018
  - Comment review period closed August 27, 2018
  - Pending FERC issuance of permit
  - Federal Water Resources Development Act

- CAISO Interconnection Application
  - Submitted April 6, 2018
  - Kick off Meeting - June 18, 2018
  - Preliminary Report - January 2019
Budget

- Current Budget - $7 million
- Expended - $4.6 million
- 50 percent of non-labor/overhead costs are reimbursed by the City - Currently $1.5 million
Timeline

- FERC Preliminary Permit (pending) (2020)
- CAISO Interconnection Study (2018)
- Secure PPA (2021)
- Term Sheet (2019)
- PDA
- Water Authority Board Approval (2022)
- CEQA (2023)
- Engineering (2024)
- FERC License (2025)
- COD (2026)
- Construction (2027-2030)

4 year extension, if needed
Next Steps

- Finalize Term Sheet
- October 29th Energy Storage Task Force meeting
- November 8th E&O Workshop
- Begin Project Development Agreement negotiations
Water Quality Improvements
Mission Trails Chlorine Injection Project

Engineering & Operations Committee
October 25, 2018

Chris Castaing
O&M Manager
Treated Water Demand

Historical Average Treated Flows

Legend:
- Pipeline Capacity
- Peak Day Demand
- Average Flow

Our Region’s Trusted Water Leader
San Diego County Water Authority
Treated Water Delivery - Nitrification

Levels of Nitrification

- Low
- Moderate
- High
Adaptation Strategies

- Flushing
- Adjust treatment process
- Reduce detention time
- Online water quality monitoring
- Increase demand
- Transition to free chlorine
- Or, boost chlorine
System Monitoring

- Online water quality analyzers
- Control room staffed 24/7
- Critical water quality parameters
Pilot Test

- **Objectives**
  - Boost chloramine residual
  - Oxidize nitrites
  - Reduce flushing
  - Identify location

- **Results**
  - Able to boost chloramine residual
  - Reduced nitrites by more than 75%
  - Minimized the need for flushing
  - Identified Mission Trails as the optimal location
Mission Trails Chlorine Injection System

- Design and construction of permanent system located at Mission Trails Flow Regulatory Structure
Sodium Hypochlorite

- Allows for operation of chlorine injection system
- Oxidize nitrites
- Combine with free ammonia
- Reduce need for operational flushing
- Perform large scale disinfection activities
Authorize the General Manager to award a service contract to Univar USA Inc., for the purchase and delivery of sodium hypochlorite for a period of one year, with an option to extend for two additional years for a total not-to-exceed amount of $465,000.
Colorado River Issues Update
Part 3
Imported Water Committee
October 25, 2018
Drought in the Colorado River Basin

Worst Drought Period In Recorded History

- Prolonged drought conditions since 2000 have caused the system to continuously rely upon storage reserves to meet annual demands.
- As a result, Lake Mead storage has dropped to record low levels.
- If elevation continues to decline a “shortage” will be triggered, which would result in cutbacks to certain water users.

The Water Authority’s QSA supplies on the Colorado River are tied to senior California water rights which are largely insulated from cutbacks under the state’s priority water rights system.
Drought Contingency Plan (DCP)

date: 2007 Interim Guidelines

- **Objective**: Prevent/delay shortages by building Lake Mead elevation through “extraordinary conservation” measures
- **Focuses**: “voluntary” reductions by water users and Intentionally Created Surplus program (ICS)
- **Comprised of**: Upper and Lower Basin Interstate and Intrastate agreements and Companion agreement

*Water Authority has not been involved in DCP discussions despite being in possession of tools that could help mitigate a severe economic and hydrologic situation*
DCP Achieved Through ICS

ICS = Conserved Water Stored in Lake Mead

Advantages

• Builds up elevation in Lake Mead
• Adds operation certainty through interim period
• Adds flexibility of use of CO River water supplies
• Facilitates:
  • Interstate sharing of CO River water supplies
  • Mexico shortage sharing
• Enhances security of power generation

Disadvantages

• Includes certain limitations to ICS recovery
• Requires initial assessment/evaporation of stored supplies
• Opens potential environmental (legal) challenges if Salton Sea impacts
• Adds CA’s commitment which is not currently required under Law of the River
Proposed Lower Basin DCP (LBDCP)

Main Elements

DCP Contributions
- Outlines DCP contributions for Lower Basin states and Secretary (BOR)

DCP ICS Recovery
- Establishes conditions for DCP ICS delivery, borrowing, and repayment

DCP ICS Flexibility
- Permits DCP ICS delivery and interstate banking at lower elevations, increases storage limits, revises evaporation rules, etc.

1,020’ Backstop
- Commits parties to consultation at 1,030’ to avoid 1,020’
Proposed LBDCP Total Annual Contribution

Annual Contribution By State Based on Elevation in that Year

CA Contribution 200 to 350 TAF/year < 1045 FT

Lake Mead Elevation (FT)

Thousand Acre-Feet

CA
AZ
NV

Our Region’s Trusted Water Leader
San Diego County Water Authority
Proposed LBDCP Contributions

Cumulative State Contribution through 2026 (Stress Test)

- **AZ**: 1455 Thousand Acre-Feet (Average), 1776 Thousand Acre-Feet (90th Percentile)
- **CA**: 550 Thousand Acre-Feet (90th Percentile)
- **NV**: 61 Thousand Acre-Feet (Average), 74 Thousand Acre-Feet (90th Percentile)
Proposed LBDCP Contributions

Cumulative California Contribution through 2026 (Stress Test)
The Rules of DCP ICS Recovery
Near-Term (Through 2026)

DCP ICS Delivery
1,219.6 ft

DCP ICS Borrow with 1 Year Repayment
1,110.0 ft

No DCP ICS Delivery
1,025.0 ft

Min Power Pool = 1,050.0 ft

Not to scale
The Rules of DCP ICS Recovery

Long-Term (2027 to 2057)

DCP ICS Delivery

Min Power Pool = 1,050.0 ft

DCP ICS Borrow with 5 Year Repayment or 20% Deduction

1,110.0 ft

DCP ICS Borrow with 1 Year Repayment

1,075.0 ft

No DCP ICS Delivery

1,025.0 ft

Not to scale

895.0 ft
Salton Sea

Environmental Compliance

- The State Water Board requires extensive “mitigation” of the QSA transfers:
  - Extensive environmental analysis
  - Memorialized in state legislation
- State has a separate Salton Sea “restoration” obligation - pre-dates QSA
- Nearly $500M has been obtained legislatively
- The DCP could cause additional impacts at the Sea
  - No environmental analysis is being conducted or funding considered
ICS Program Participation

Water Authority ICS Account

- Water Authority
  - Has contractual right to participate
  - Has QSA supplies
  - Has 2007 MOA with MWD for creation of subaccount
  - Does not have an account with BOR

- Water Authority participation would benefit the Basin States, California, and region

- Current lobbying efforts at state and federal level
Next Steps

Basin States and Water Authority

October 2018
- BOR released draft Upper and Lower Basin DCPs

November 2018
- Intrastate agreements finalized

December 2018
- CRWUA - Upper and Lower Basin DCPs finalized
- Agency Board meetings

Early 2019
- Arizona Legislative approval
- Congressional approval of entire package
- Minute 323

Water Authority ICS Account and IWC Updates
M Strategic Communications

Imported Water Committee
October 25, 2018

Amy Chen
Director of MWD Program
M Strategic Communications

- Retained in May 2014:
  - Support “MWD Team’s” communication, education and outreach efforts in Los Angeles
  - MWD Team: Board Officers, MWD Delegates, Water Authority Management Staff & MWD Program Special Counsel
- Complement the Water Authority’s overall outreach program
- Principals: Chris Modrzejewski; Shannon Murphy
- Opened and maintain lines of communications
  - LA Mayor’s Office
  - LA City Councilmembers
  - Other influential key LA stakeholders
Board members expressed desire to increase education and outreach activities in Southern California at April 2018 Special Board meeting

Increased M Strategic education outreach effort in October
  - Add subconsultant resources
  - Expand outreach to Greater Los Angeles region

Positive messaging
  - Build from common ground
  - Solution oriented
Recommendations

- Amend the agreement with M Strategic Communications for continued consulting services to the Water Authority through June 30, 2019 by $140,000, for a period of six additional months with total contract funding not to exceed $1,012,000
Legislative Policy Guidelines

Legislation and Public Outreach Committee
October 25, 2018

Glenn Farrel
Government Relations Manager
Legislative Policy Guidelines

- Annual update for 2019 under way
- Legislative Policy Guidelines provide guidance on policy issues of importance and a framework to evaluate legislative and regulatory issues
- During 2017, a small member agency working group completed a structural reorganization of the LPG document to make it more user-friendly
Proposed Substantive Content Changes to LPGs

- Under Biological and Habitat Preservation, add new LPG regarding eradication and prevention of nutria in the Delta
- Under Energy, add new LPG regarding the value of pumped hydropower storage projects
- Under Imported Water Issues: Bay-Delta, substantially modify the LPGs to reflect the Board’s August 9, 2018 Bay-Delta policy principles
Proposed Substantive Content Changes to LPGs

- Under Imported Water Issues: Metropolitan Water District, modify LPG to eliminate policy guidance relative to take-or-pay contracts and replace it with long-term financial planning and transparency guidance.

- Under Imported Water Issues: Colorado River, add new LPGs regarding Salton Sea restoration governance and alternative conveyance of the Water Authority’s Colorado River supplies.

- Under Imported Water Issues: Bay-Delta, add new LPG regarding storage of Colorado River water supplies.
Proposed Substantive Content Changes to LPGs

- Under State Administrative and Regulatory Agencies, add new LPG regarding open and transparent regulatory processes
- Under Water Facilities and Facility Operations, add new LPGs regarding leak loss control requirements and meter testing
- Under Water Planning, add new LPG regarding consolidation of water systems serving disadvantaged communities
Proposed Substantive Content Changes to LPGs

- Under Water Quality Issues, add new LPGs regarding:
  - Management and prevention of emerging contaminants
  - Financial and legal responsibility related to issues on private property or on-site plumbing systems

- Under Water Use Efficiency, add new LPG regarding retention of local control in implementation of long-term water use efficiency legislation and regulations
Next Steps on Legislative Policy Guidelines

- Staff is requesting suggestions for revisions from Board members and member agencies.
- Please return to Glenn Farrel by November 16.
- Final proposed Legislative Policy Guidelines to be presented for Board’s consideration of approval on December 6.
Covers Water Essentials

Three sessions teach historic perspective, planning and operations
Continuous Program Improvements

- 96% of participants ranked program speakers as very good or excellent
- 94% of participants would recommend the academy to someone else
Continuous Program Improvements

- Review feedback from presenters and participants through anonymous evaluations
- Implement program improvements
  - Program
  - Budget
  - Logistics
Alumni Program Continues to Grow

- 543 alumni
- Greater detail on topics not covered in class
- 235 alumni continue to be engaged
- 12 alumni-only events
  - City of San Diego
  - Padre Dam MWD
  - Sweetwater Authority
  - San Diego County Farm Bureau
Water Legacy Awards
On the Horizon

- Develop plan, schedule for 2019
- Ambassador Program
- Water Legacy Awards
Sacramento Update

Legislation and Public Outreach Committee
October 25, 2018

Glenn Farrel
Government Relations Manager
Legislature

- On September 30, the Governor completed action on 1,217 bills sent to him during 2018

- Following November 6 general election, newly-constituted Legislature will convene on December 3
Governor’s Action on Bills

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<th>Bills Considered</th>
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## Final Disposition of Water Authority Position Bills

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Sponsored Bills: AB 2064 (Gloria)

- AB 2064 was intended to fully address cashflow issues for non-profit organizations and DACs participating in IRWM programs
- AB 2064 was jointly authored by Assemblymembers Todd Gloria and Shirley Weber
- Vetoed by Governor
  - Veto message: “…the additional financial risk and administrative costs associated with the advanced payment process, as proposed in this bill, are unwarranted.”
Sponsored Bills: AB 2371 (Carrillo)

- Co-sponsored with NRDC to advance several Independent Technical Panel (ITP) recommendations to improve landscape irrigation efficiency

- Key provisions
  - Landscape contractors examination
  - WUCOLS updates
  - Home inspections
  - Consumer information working group

- Signed into law
  - Chapter 867, Statutes of 2018
Final Disposition of Other Key Measures

- **AB 2050 (Caballero)**
  - Small system water authority act
  - Addresses structural deficiencies in service delivery by failing/non-compliant water systems
  - Vetoed by Governor
  - Water Authority Board position: Support

- **SB 998 (Dodd)**
  - Water service shut-offs
  - Prescribes new processes and standards relative to retail water service shut-off authority
  - Signed into law - Chapter 891 - Statutes of 2018
  - Water Authority Board position: Oppose Unless Amended
Carlsbad Desalinated Water Quality Integration (Presentation)

Water Planning Committee
October 25, 2018

Nathan Faber
Operations and Maintenance Manager
Carlsbad Desal Water Quality

- Reduction in:
  - Total Dissolved Solids (TDS)
  - Disinfection By-Products
  - Nitrification Potential

- Careful Management of:
  - Disinfectant Residual
  - Corrosion Potential

Carlsbad Desal Plant Reverse Osmosis Filters
Water Research Foundation Study

- Gather Water Quality Data
  - Water Authority
  - Member Agencies

- Limited
  - Time (1 year)
  - MWD Blends

- Confirmed Original Assumptions
Resolution Establishing Preliminary Informal Terms and Conditions for the Yuima Municipal Water District’s Proposed Rancho Corrido Annexation

Water Planning Committee
October 25, 2018

Alexi Schnell
Water Resources Specialist
Proposed Rancho Corrido Annexation

- Yuima Municipal Water District requesting concurrent annexation to Water Authority and MWD
- 31.29 acre parcel
- Operated as Rancho Corrido RV Resort
  - 20 mobile homes
  - 100 RV spaces
- Projected demands of annexing area: 16.8 acre-feet
- Annexation to address water quality issues
Proposed Rancho Corrido Annexation

Rancho Corrido Annexation

31.29 Acres

Yuima MWD

Valley Center MWD

Rancho Corrido Annexation
Health and Safety Issues - Water Quality

- Water currently served from two on-site wells
- Ongoing water quality issues related to elevated nitrates
- County Department of Environmental Health
  - Violations issued since 2012
  - Recommendation to consolidate with a near-by public water system
- State Water Board
  - Strongly encouraged a voluntary consolidation with Yuima MWD
Board Adopted Annexation Policies and Procedures

- Set of 13 policies utilized to evaluate proposed annexations

- Procedures for implementation of Annexation Policy #2: *Protection of Member Agency Supply Reliability*
  - *Procedures allow Board to waive provisions of this policy when the annexation is for health and safety purposes*

- Policies not yet satisfied form basis for conditions included in the resolution
  - Annexation Policy #8: *Environmental Compliance*
Staff Recommendation

- Adopt Resolution No. 2018-___, establishing preliminary, informal terms and conditions for the Yuima Municipal Water District’s proposed Rancho Corrido Annexation, and requesting that the Metropolitan Water District of Southern California set formal terms and conditions.
Aqueduct Seismic Assessment Strategy

Water Planning Committee
October 25, 2018

Jeremy Crutchfield
Principal Engineer - Water Resources
San Diego is Seismically Active

- Rose Canyon
- Elsinore
- San Jacinto
- San Andreas

Water Authority’s Aqueduct System
Results of 1993 Study Desktop Review

- Significant changes in earthquake science and engineering
  - Regional seismology more extensive
  - Earthquake size/magnitude potential is greater
  - Ground shaking and liquefaction characterization updated

- Differences in quantifying and analyzing seismic hazards

- Underestimation of pipeline vulnerability due to changes in industry standards
MWD Regional Efforts

- Evaluation of Regional Storage Portfolio (ERSP)
- Update Pipeline Seismic Fragility Curves for Large Diameter Pipelines
- Potential Adjustment to Emergency Storage Reserves

* Source: Dr. Ken Hudnut (USGS)
Next Steps

- Continue to participate in MWD’s ESRP efforts and technical review of pipeline vulnerability to seismic hazards

- Secure necessary funding to conduct an updated seismic hazard analysis on the Aqueduct System

- Evaluate the need to revise the ESP model for longer potential outage periods

- Report to the Board at the next annual update on storage reserves anticipated in May 2019