General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Budget Overview
June 11, 2019
Fiscal Years 2020 & 2021 Recommended Budget

- Colorado River Initiatives
- Water Supply Management
- System and Asset Management
- Legislative and Regulatory Advocacy
- Cyber and Facility Security
- Critical plan updates
- Innovation and Business Services
- Energy
- Workforce Planning
- Enhanced Member Agency Engagement
Factors Impacting FYs 2020 & 2021
Overall Budget

- Water Supply and Demand
  - Water Sales, Purchases, and Treatment
  - Decrease in projected Water Sales
- Usage of Rate Stabilization Fund
- Capital Improvement Program
- Asset Management
Historical Spending

Expenses (in Millions $)

FY00 FY01 FY02 FY03 FY04 FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19 FY20 FY21

Cost of Water Sales  Capital Improvement Program  Debt Service  Operating Depts  Other
Historical Staffing

<table>
<thead>
<tr>
<th>FY</th>
<th>Full-Time Equivalents (FTEs)</th>
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<tbody>
<tr>
<td>FY00</td>
<td>175.00</td>
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<td>FY01</td>
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<tr>
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<td>575.00</td>
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<tr>
<td>FY21</td>
<td>595.00</td>
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</table>
Managing Staff Resources

- Current budget increased 1.00 FTE
  - 1 additional FTE in O&M

<table>
<thead>
<tr>
<th></th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
<th>FY 16</th>
<th>FY 17</th>
<th>FY 18</th>
<th>FY 19</th>
<th>FY 20</th>
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<tr>
<td>2010</td>
<td>289.55</td>
<td>285.25</td>
<td>259.33</td>
<td>254.50</td>
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</table>
## FYs 2020 & 2021 Sources of Funds

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<thead>
<tr>
<th>Source</th>
<th>Amount</th>
<th>Percentage</th>
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<tr>
<td>Water Sales</td>
<td>$1,306,919</td>
<td>77%</td>
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<tr>
<td>Net Fund Withdraws</td>
<td>$143,581</td>
<td>9%</td>
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<tr>
<td>Infrastructure Access Charges</td>
<td>$81,656</td>
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<tr>
<td>Capacity Charges</td>
<td>$33,220</td>
<td>2%</td>
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<tr>
<td>Build America Bonds &amp; Investment Income</td>
<td>$32,605</td>
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<tr>
<td>Property Taxes &amp; In-Lieu Charges</td>
<td>$28,304</td>
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<tr>
<td>Water Standby Availability Charges</td>
<td>$22,221</td>
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<tr>
<td>All Other Revenue Sources</td>
<td>$39,060</td>
<td>2%</td>
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<td><strong>Total</strong></td>
<td><strong>$1,687,566</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Totals may not foot due to rounding.
FYs 2020 & 2021 Recommended Budget

- Water Purchases & Treatment: $1,083,174 (64%)
- Debt Service: 297,432 (18%)
- CIP Expenditures: 162,222 (10%)
- Operating Departments: 108,503 (6%)
- Equipment Replacement: 6,024 (<1%)
- Other & Grants: 30,211 (>1%)

Total: $1,687,566 (100%)

92% of TOTAL BUDGET
Factors Impacting FYs 2020 & 2021 Operating Departments Budget

- Complexity of water supply and delivery systems
- CalPERS Employer Contribution Rate
- Utility Increases
- Increased costs for cost share of O&M and capital costs at San Vicente, Lake Hodges, and Levy Treatment Plant
### FYs 2020 & 2021 Operating Departments Recommended Budget

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Operating Labor &amp; Benefits</td>
<td>$74,068</td>
<td>64%</td>
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<tr>
<td>Services</td>
<td>$28,771</td>
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<tr>
<td>Supplies</td>
<td>$3,422</td>
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<tr>
<td>Utilities</td>
<td>$3,387</td>
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<td>Insurance</td>
<td>$2,131</td>
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<td>Lease/Rents</td>
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<tr>
<td>Other</td>
<td>$3,761</td>
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<td>Fixed Assets</td>
<td>$185</td>
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<td><strong>Total</strong></td>
<td><strong>$116,504</strong></td>
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<tr>
<td>Capitalized Overhead</td>
<td>(8,000)</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$108,503</strong></td>
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</tbody>
</table>
FYs 2020 & 2021 Operating Departments

- Operating Departments
  - 6% of total Water Authority Budget
Workshop Schedule

- Water Sales
- Capital Improvement Program
- Debt Service
- Cyber and Facility Security
- Equipment Replacement Fund
- Grants
- Enhanced Member Agency Engagement
- Operating Departments
  - Engineering, Operations & Maintenance, Water Resources, Colorado River Program, MWD Program, Administrative Services, Finance, Public Outreach & Conservation, General Manager & Board of Directors, and General Counsel
General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Water Sales
Budget Document Pages 14-15, 26, 31

San Diego County Water Authority
Our Region’s Trusted Water Leader

Kelley Gage,
Director of Water Resources

Pierce Rossum,
Rate and Debt Manager
Background - Two Types of Forecasts

- Long Range Demand Forecast
  - Used in water resource planning, facility planning, Environmental Impact Reports and long range financial planning
  - Based on SANDAG Regional Demographic and Economic Forecast
  - Basis for compliance with Growth and Water legislation
  - Updated every five years with Urban Water Management Plan
Background - Two Types of Forecasts

- Short-term Budgetary Forecast
  - Projections used in multi-year budget document and annual rate setting process
  - Basis for near-term operational planning
  - Reflects a “snapshot in time”
    - Considers what's actually occurring and current conditions
  - May vary from the long-term forecast
    - Influenced by multiple current factors
      - Member agency local supplies
      - Hydrology effects
Local Surface Storage* (as of April each year)

* San Vicente Dam raise completed in 2014
Historical/Forecasted Water Sales*

Projections account for long-term impacts of water use regulations, near-term increased levels of local supplies and local supply development.

* Based on the Interim Demand Forecast Reset
Water Supply Sources

Two-Year Water Purchases of 804,500 Acre-Feet

- MWD 20%
- Canal Lining 19%
- Desalination 11%
- IID Transfer 49%

Operational Storage Utilization 1%

Two-Year Water Supply Purchases of $878 million

- MWD Tier 1 19%
- MWD Transportation 29%
- IID Transfer 29%
- Desalination 23%
- Canal Lining <1%

1) Excludes MWD fixed RTS and CRC charges
2) Canal & IID costs exclude debt service for capital projects and recovery of settlement expenditures
3) Desalination costs include Water Authority supply costs only
Melded QSA Costs in FY 2020 and FY 2021

- 531,000 AF
- Supply Cost: $257 M
- MWD Wheeling Cost: $254 M
- Melded Rate: $1,036/AF
Water Purchase Price - Poseidon WPA

* Assumes a 2.5% increase in CPI and SDG&E rates. Does not reflect savings from 2019 Pipeline Refunding.
## “All-In” MWD Cost Calculations

<table>
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<tr>
<th>Description</th>
<th>CY 2020</th>
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<tbody>
<tr>
<td>Projected Tier 1 Purchases</td>
<td>75,100 AF</td>
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<tr>
<td>MWD Supply</td>
<td>$56.7 M</td>
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<tr>
<td>Total Readiness-to-Serve ¹</td>
<td>25.7 M</td>
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<tr>
<td>Capacity Charge</td>
<td>8.0 M</td>
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<tr>
<td>Ad Valorem Taxes</td>
<td>23.9 M</td>
</tr>
<tr>
<td><strong>Total MWD Cost</strong></td>
<td><strong>$114.3 M</strong></td>
</tr>
</tbody>
</table>

### 2020 MWD “All-In” Supply Cost

$1,522 / AF

¹ The RTS Charge Pass Through is net of gross Standby Charge revenues collected on property tax rolls. Standby Charge amounts ($12.8M) collected are applied as a credit against the participating member agency’s Total RTS Charge obligation.
Supply Unit Cost by Source (CY2020)

MWD
$1,522/AF

- 32% Property Tax
- 18% Fixed/Pass Through
- 50% Volumetric

Water Authority
$1,190/AF

- 36% Variable
- 64% Take-or-Pay

- Ad Valorem & Standby
- RTS and Capacity
- Full Service Supply
- MWD Transportation
- QSA Supply
- Carlsbad Desal

Operating and Facility Costs
General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Capital Improvement Program
Budget Document Pages 109-162
Agenda

- FYs 2018 & 2019 Accomplishments
- Construction Cost Escalation
- Changes to the CIP
- FYs 2020 & 2021 Recommended Appropriation
- CIP Budget for FY2022 and Beyond
- Regional Conveyance System Study
FYs 2018 & 2019 Projects

- Asset Management Pipeline Condition Assessment/Inspection
- Demolition of Several Abandoned Flow Control Facilities
- Carlsbad 6 Flow Control Facility Replacement (Apr 2018)
- Pipeline 3 - Lake Murray to Sweetwater Reservoir (Oct 2018)
- San Vicente Post Construction (Dec 2018)
- Pipeline Structure Rehabilitation (Dec 2018)
- Moosa Canyon Erosion Control (Jan 2019)
- Kearny Mesa Headquarters Roof (Mar 2019)
- San Diego 28 Flow Control Facility (Contract award - Jul 2019)
- Pipeline 5 Relining – Delivery Point to Sage Road (NOC – Jul 2019)
- Vallecitos 11/Vista 12 Flow Control Facility (In Construction)
- First Aqueduct Structure Rehabilitation Phase I (In Construction)
Carlsbad 6 Flow Control Facility
20 Miles of Pipeline Inspection

SPECIAL DISTRICTS
West/2017

TECHNOLOGY INNOVATION AWARD

OPERATIONS CATEGORY

Pipeline Risk Visualization
San Diego County Water Authority
6.6 Miles of Pipeline Relining
Rehabilitated 15 Critical Structures

Before
Rehabilitated 15 Critical Structures

After

2018/09/18
Moosa Canyon Erosion Control
Kearny Mesa Headquarters Roof Repair
San Vicente Energy Storage Facility Study

- Selected Owners’ Representative
- Negotiated with Full Service Team
- Signed Term Sheet with Brookfield Renewables
- FERC issued new 4-year Preliminary Permit
FYs 2018 & 2019 Awards

- **Technology Innovation Award** - 2017 Government Technology/AT&T Special Districts Program “Technology Innovation”

- **Miramar Pump Station Rehabilitation** – 2018 APWA “Outstanding Award”

- **Nob Hill Improvements** – 2018 APWA “Outstanding Award”

- **Pipeline 3 Relining: Lake Murray to Sweetwater Reservoir** – 2019 CMAA “Project of Merit” and APWA “Honor Award”

- **San Vicente Marina Facilities** – 2019 ASCE “Outstanding Project of the Year” for Parks and Recreation
Agenda

- FYs 2018 & 2019 Accomplishments
- Construction Cost Escalation
- Changes to the CIP
- FYs 2020 & 2021 Recommended Appropriation
- CIP Budget for FY2022 and Beyond
- Regional Conveyance System Study
Materials, Equipment, & Labor

Annual Percent Change in Indices

Percent Change from Previous Year

-15% -10% -5% 0% 5% 10% 15% 20% 25% 30%


ENR Tunnel Pipeline Relining Concrete Vault Pipeline Pump Station

Our Region's Trusted Water Leader
San Diego County Water Authority
Construction Cost Escalation Issues

- Strong construction market
- Higher overall construction costs
- Increasing material prices, impacting both maintenance and capital projects
- Greater competition in the labor market
- Escalating wages
- How do we mitigate these issues and develop our recommended CIP budget?
Mitigation Measures

- Monitor Material Prices
- Value Engineering
- Cost Estimate Preparation
- Tracking Technology
- Build Priority Projects
Recommended FYs 2020 & 2021 CIP Budget

- Prioritize projects
- Adjust project budgets
  - Update estimates, as needed
  - Reflect current cost trends
Agenda

- FYs 2018 & 2019 Accomplishments
- Construction Cost Escalation
- Changes to the CIP
- FYs 2020 & 2021 Recommended Appropriation
- CIP Budget for FY2022 and Beyond
- Regional Conveyance System Study
Reduction to the CIP Lifetime Budget

<table>
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<tr>
<th>In $ Millions</th>
<th>CIP Lifetime Budget</th>
<th>FYs 2020 &amp; 2021</th>
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<tbody>
<tr>
<td>FYs 2018 &amp; 2019</td>
<td>Reduction</td>
<td>FYs 2020 &amp; 2021</td>
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<td>$2,452.5</td>
<td>-$458.9</td>
<td>$1,993.6</td>
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FYs 2020 & 2021 Lifetime Project Budget Adjustments

In $ Thousands

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<td>New Projects (6)</td>
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<tr>
<td>Adjustments to Existing Projects (11)</td>
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<tr>
<td>Savings from Completed Projects (10)</td>
<td>-$14,009</td>
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<tr>
<td>Total Net Change</td>
<td>$76,090</td>
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</table>

*From Table 2: Recommended budget changes by project (p.123).*
New Project—
Operations & Maintenance Department Facility

Recommended Budget: $10 million
New Project-
Regional Conveyance System Study

Recommended Budget: $3.9 million
Budget Increases to Existing Projects

- Infrastructure Rehabilitation: $46.1 million
- Hauck Mesa Reservoir: $10.1 million
- ESP – N. County Pump Station: $8.8 million
- San Vicente Energy Storage Facility Study: $3.7 million
## Infrastructure Rehabilitation

<table>
<thead>
<tr>
<th>Project Segment</th>
<th>Budget Increase</th>
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<tbody>
<tr>
<td>First Aqueduct Structures s/o Hubbard Hill</td>
<td>$19.5</td>
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<tr>
<td>San Diego 28 Flow Control Facility</td>
<td>7.4</td>
</tr>
<tr>
<td>Rancho Peñasquitos Hydroelectric Facility Improvements</td>
<td>6.9</td>
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<tr>
<td>First Aqueduct Condition Assessment – Reinforced Concrete Pipe</td>
<td>3.9</td>
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<tr>
<td>San Luis Rey Slope Erosion</td>
<td>3.2</td>
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<tr>
<td>Asset Management Program – Programmatic Support</td>
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<tr>
<td>Other</td>
<td>3.0</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$46.1</strong></td>
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</table>
Hauck Mesa Reservoir

- Budget Increase: $10.1 million
- Escalation of construction costs
- Increases in project scope, including:
  - Larger reservoir to accommodate hydraulic design issues
  - Contaminated soils
  - Additional on-site drainage improvements
ESP – North County Pump Stations

- Budget Increase: $8.8 million
- Increased/Modified Scope
- MWD Turnout and piping
- Facilities to be built by affected member agencies
- Escalation in construction costs
San Vicente Energy Storage Facility Study

- Budget increase: $3.7 million
- On-going legislative and regulatory support
- Negotiate a project development agreement with a private developer
Agenda

- FYs 2018 & 2019 Accomplishments
- Construction Cost Escalation
- Changes to the CIP
- FYs 2020 & 2021 Recommended Appropriation
- CIP Budget for FY2022 and Beyond
- Regional Conveyance System Study
CIP Spending (FYs 2000-2021)

- FY 2000: $50
- FY 2001: $100
- FY 2002: $150
- FY 2003: $200
- FY 2004: $250
- FY 2005: $300
- FY 2006: $350
- FY 2007: $310
- FY 2008: $131.4M
- FY 2009: $162.2M
- FY 2010: $162.2M
- FY 2011: $131.4M
- FY 2012: $100
- FY 2013: $75
- FY 2014: $50
- FY 2015: $25
- FY 2016: $0
- FY 2017: $0
- FY 2018: $0
- FY 2019: $0
- FY 2020: $0
- FY 2021: $0

*Recommended Appropriation Funded by PAYGO
Recommended FYs 2020 & 2021
CIP Appropriation

$162.2 Million

- New Facilities: $49.7M
- ESP: $32.2M
- Master Planning and Studies: $9.9M
- Other: $4.0M
- Asset Management: $66.4M
FYs 2020 & 2021 CIP - Projects

- Complete SD 28 Flow Control Facility in FY 2020
- Complete First Aqueduct Structures & Lining Rehabilitation – Hubbard Hill North in FY 2021
- Begin construction of Alvarado Hydro in FY 2021
- Complete ESP – North County Pump Stations FY 2022
- Complete Mission Trails FRSII in FY 2022
- Complete Hauck Mesa Storage Reservoir in FY 2022
FY's 2020 & 2021 CIP – Planning Studies

- Complete planning for the **Pipeline Seismic System Vulnerability Assessment and Repair Time Estimate** in FY 2021
- **San Vicente Energy Storage Facility Study** to focus on preparation of project development agreement
- **Regional Conveyance System Study** to build upon past studies and explore potential multi-use and partnership opportunities
- **Operations and Maintenance Department Facility study** to identify the recommended project to meet the O&M Department facility needs
Agenda

- FYs 2018 & 2019 Accomplishments
- Construction Cost Escalation
- Changes to the CIP
- FYs 2020 & 2021 Recommended Appropriation
- CIP Budget for FY2022 and Beyond
- Regional Conveyance System Study
Pipelines – 310 Miles

4 Types of Pipe
- Welded Steel
- Prestressed Concrete Cylinder
- Reinforced Concrete
- Bar-wrapped Concrete

1,358 Line Structures
- Air Valves
- Blowoffs
- Manholes
- Pumpwells
- Vents, bifurcations, etc.

“All line structures are assessed by Asset Management staff every 4 years”
Facilities

96 Service Connections

Olivenhain Reservoir

1 Treatment Plant – 100 million gal./day

2 Hydroelectric Facilities – 44.5 Megawatts

4 Flow Regulatory Structures – 56 million gal.

7 Pump Stations – 81,550 HP
CIP Budget for FY2022 and Beyond

- Perform enhanced facility assessments
- Update long-term Asset Management Program
- Monitor market trends - adjust individual project budgets as required
- Complete new Long Range Financing Plan
- Master Plan Update
Agenda

- FYs 2018 & 2019 Accomplishments
- Construction Cost Escalation
- Changes to the CIP
- FYs 2020 & 2021 Recommended Appropriation
- CIP Budget for FY2022 and Beyond
- Regional Conveyance System Study
New Project – Regional Conveyance System Study

- Part of longstanding technical analysis to directly convey 280,000 AF of QSA supplies to the San Diego region
- New two-phase study would expand upon previous “single-use” concepts with intent to capture regional benefits through multi-purpose system configuration
- As part of the study, Water Authority staff and consultant would:
  - Engage potential partners with compatible needs
  - Evaluate partnership structures that reduce risk to the Water Authority and our member agencies
  - Pursue funding opportunities
Southern Alignments To Be Studied Further

- Salton Sea
- Existing Canal
- Option 5A
- Option 5C
- SV Reservoir
- Operational Storage
- Renewable Energy
- Regional Storage
- Bi-National Projects
- TOVWTP
- AA Canal

Our Region’s Trusted Water Leader
San Diego County Water Authority
Northern Alignment To Be Studied Further

- Northern Option
- Groundwater Storage
- Salton Sea
- Operational Storage
- Lake Henshaw
- Storage/Recreation
- Renewable Energy
- Regional Storage
- SV Reservoir
- Existing Canal
- AA Canal
- Bi-National Projects

Our Region’s Trusted Water Leader
San Diego County Water Authority
## Revised Scope Based on Input Received

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<th>Scope Item</th>
<th>Revised Phase A</th>
<th>Revised Phase B</th>
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<tr>
<td>Demands Forecast Update</td>
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<tr>
<td>Cost Update and Economic Analysis</td>
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<td>Environmental/Permits</td>
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<td>Power Supply Alternatives</td>
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<tr>
<td>Treatment and Blending Options</td>
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<tr>
<td>Brine Disposal Options</td>
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<td>Risk Analysis</td>
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<td>System Integration</td>
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<td>Agreement Review</td>
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<td>Public Outreach</td>
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<td>Legal Analysis</td>
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<td>Partnership Structures</td>
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<tr>
<td>Land Acquisition</td>
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</tbody>
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Proposed Budget

- Proposed two-phase study
  - Build upon past studies
  - Take regional approach
  - Include technical, legal and economic analyses, and public outreach
- Offramp after Phase A
- Colorado River Work Group Recommendation

<table>
<thead>
<tr>
<th>Phase/Scope</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Phase A</td>
<td>$2.6M</td>
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<tr>
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<td>$1.3M</td>
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<tr>
<td>Total</td>
<td>$3.9M</td>
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</table>
General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Debt Service
Budget Document Pages 17-18 & 33-34
FYs 2020 & 2021 Debt Service - $297 Million

Water Purchases & Treatment $1,083,174 64%
Debt Service 297,432 18%
CIP Expenditures 162,222 10%
Operating Departments 108,503 6%
Equipment Replacement 6,024 <1%
Other & Grants 30,211 >1%

Total $1,687,566 100%

= 92% of TOTAL BUDGET
2015 Long Range Financing Plan

- Long-term Target CIP Financing Mix
- Long-term debt funded (57%)
- Pay-As-You-Go/Cash Funded (30%)
- Short-term debt funded (13%)
San Diego County Water Authority Debt Mix
$1.938 Billion

- **Long Term**: 78% ($1,505.6M)
- **Short Term**: 22% ($432.7M)

*Annual short-term debt service approximately $14 million, and annual long-term debt service $135 million*
Annual Long-term Debt Service

2019 Pipeline Refunding provides $18 million in savings long-term
Financial Performance Metrics

Current Board Policy - Cash Balances by Fund
(Excludes Debt-Related Funds)

<table>
<thead>
<tr>
<th>Fund</th>
<th>FYE 2019</th>
<th>FYE 2020</th>
<th>FYE 2021</th>
<th>FYE 2022</th>
<th>FYE 2023</th>
<th>FYE 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canal Maintenance Reserve</td>
<td>$-</td>
<td>$0.09</td>
<td>$0.29</td>
<td>$0.49</td>
<td>$0.71</td>
<td>$0.93</td>
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<tr>
<td>Equipment Replacement Fund</td>
<td>$0.93</td>
<td>$0.94</td>
<td>$0.95</td>
<td>$0.97</td>
<td>$0.98</td>
<td>$0.99</td>
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<tr>
<td>PAYGO Fund</td>
<td>$83.16</td>
<td>$28.19</td>
<td>$8.10</td>
<td>$6.20</td>
<td>$8.48</td>
<td>$8.78</td>
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<tr>
<td>Rate Stabilization Fund</td>
<td>$132.95</td>
<td>$96.59</td>
<td>$66.84</td>
<td>$56.75</td>
<td>$62.52</td>
<td>$79.37</td>
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<tr>
<td>Operating Fund</td>
<td>$94.81</td>
<td>$108.28</td>
<td>$116.45</td>
<td>$117.56</td>
<td>$122.45</td>
<td>$125.57</td>
</tr>
</tbody>
</table>

- PAYGO funds are projected to be utilized to pay for the CIP
Senior Lien Coverage Meets Board Policy Target

Meeting coverage target is important to maintain AAA/Aa2/AA+ ratings

*Forecasted. Includes subordinate debt (i.e., commercial paper) and excludes super-subordinate Desal Pipeline debt
General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Cyber and Facility Security
Agenda

- 2018/2019 Update
- Cybersecurity Approach
  - NIST Cybersecurity Framework
  - Critical security controls
- Facility Security
Recent Public Agency Threats

22 public-sector ransomware attacks since January 2019

Victims include:

- 01/2019 Lamar County, Texas
- 01/2019 City of Akron, Ohio
- 03/2019 Fisher County, Texas
- 03/2019 Jackson County, Georgia
- 04/2019 Garfield County, Utah
- 04/2019 City of Stuart, Florida
- 04/2019 City of Augusta, Maine
- 04/2019 Genesee County, Michigan
- 04/2019 City of Albany, New York
- 04/2019 Imperial County, California
- 04/2019 City of Greenville, North Carolina
- 05/2019 City of Baltimore, Maryland
- 05/2019 City of Lynn, Massachusetts
- 05/2019 City of Cartersville, Georgia

Ransomware incidents are suspected of being under-reported
IT Resource Deployment Plan

- **Goals:**
  - Increase strategic focus on cybersecurity
  - Maintain OT/IT excellence

- **Main elements:**
  - Hire Information Security Officer
  - Enhance SCADA support capabilities
  - Contract key cybersecurity services
Organizational Changes

- Information Security Officer Appointed

- SCADA Team Assembled
  - SCADA Supervisor
  - Sr. SCADA Specialist
  - SCADA Specialist
  - SCADA Specialist
24/7 Monitoring and Assessments

- 24/7 monitoring and alerting
- Currently conducting our annual security assessment
Improvements

- Authentication
- Logging & Analysis
- Vulnerability Assessment
- Computer Patching
- Mobile Device Management
- Network Security
- End User Awareness Training
Approach

- **Best Practices**
  - NIST Cybersecurity Framework
  - NIST 800-53 Publication
  - Center for Internet Security (CIS) CIS20
NIST Cybersecurity Framework-Functions

- Identify
- Protect
- Detect
- Respond
- Recover
## NIST Cybersecurity Framework-Core

<table>
<thead>
<tr>
<th>Function</th>
<th>Category</th>
<th>ID</th>
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<tbody>
<tr>
<td>Identify</td>
<td>Asset Management</td>
<td>ID.AM</td>
</tr>
<tr>
<td></td>
<td>Business Environment</td>
<td>ID.BE</td>
</tr>
<tr>
<td></td>
<td>Governance</td>
<td>ID.GV</td>
</tr>
<tr>
<td></td>
<td>Risk Assessment</td>
<td>ID.RA</td>
</tr>
<tr>
<td></td>
<td>Risk Management Strategy</td>
<td>ID.RM</td>
</tr>
<tr>
<td></td>
<td>Supply Chain Risk Management</td>
<td>ID.SC</td>
</tr>
<tr>
<td>Protect</td>
<td>Identity Management and Access Control</td>
<td>PR.AC</td>
</tr>
<tr>
<td></td>
<td>Awareness and Training</td>
<td>PR.AT</td>
</tr>
<tr>
<td></td>
<td>Data Security</td>
<td>PR.DS</td>
</tr>
<tr>
<td></td>
<td>Information Protection Processes &amp; Procedures</td>
<td>PR.IP</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td>PR.MA</td>
</tr>
<tr>
<td></td>
<td>Protective Technology</td>
<td>PR.PT</td>
</tr>
<tr>
<td>Detect</td>
<td>Anomalies and Events</td>
<td>DE.AE</td>
</tr>
<tr>
<td></td>
<td>Security Continuous Monitoring</td>
<td>DE.CM</td>
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<tr>
<td></td>
<td>Detection Processes</td>
<td>DE.DP</td>
</tr>
<tr>
<td>Respond</td>
<td>Response Planning</td>
<td>RS.RP</td>
</tr>
<tr>
<td></td>
<td>Communications</td>
<td>RS.CO</td>
</tr>
<tr>
<td></td>
<td>Analysis</td>
<td>RS.AN</td>
</tr>
<tr>
<td></td>
<td>Mitigation</td>
<td>RS.MI</td>
</tr>
<tr>
<td></td>
<td>Improvements</td>
<td>RS.IM</td>
</tr>
<tr>
<td>Recover</td>
<td>Recovery Planning</td>
<td>RC.RP</td>
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# NIST CSF-Subcategories & References

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<td>Communications</td>
<td>RC.CO</td>
</tr>
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</table>

## Subcategory

**ID.BE-1:** The organization's role in the supply chain is identified and communicated  
Informative References:  
- COBIT 5 APO08.01, APO08.04, APO08.05, APO10.03, APO10.04, APO10.05  
- ISO/IEC 27001:2013 A.15.1.1, A.15.1.2, A.15.1.3, A.15.2.1, A.15.2.2  
- NIST SP 800-53 Rev. 4 CP-2, SA-12

**ID.BE-2:** The organization's place in critical infrastructure and its industry sector is identified and communicated  
Informative References:  
- COBIT 5 APO02.06, APO03.01  
- ISO/IEC 27001:2013 Clause 4.1  
- NIST SP 800-53 Rev. 4 PM-8

**ID.BE-3:** Priorities for organizational mission, objectives, and activities are established and communicated  
Informative References:  
- COBIT 5 APO02.01, APO02.06, APO03.01  
- ISA 62443-2-1:2009 4.2.2.1, 4.2.3.6  
- NIST SP 800-53 Rev. 4 PM-11, SA-14

**ID.BE-4:** Dependencies and critical functions for delivery of critical services are established  
Informative References:  
- COBIT 5 APO10.01, BAI04.02, BAI09.02  
- NIST SP 800-53 Rev. 4 CP-8, PE-9, PE-11, PM-8, SA-14

**ID.BE-5:** Resilience requirements to support delivery of critical services are established for all operating states (e.g. under duress/attack, during recovery, normal operations)  
Informative References:  
- COBIT 5 DSS04.02  
- NIST SP 800-53 Rev. 4 CP-2, CP-11, SA-14
NIST Cybersecurity Framework-Functions

- Identify: 9 Outcomes
- Protect: 35 Outcomes
- Detect: 21 Outcomes
- Respond: 21 Outcomes
- Recover: 45 Outcomes

Total Outcomes: 131
Outcome to Implementation

- DE.CM-4: Malicious code is detected
- CIS 8
  - Utilize Centrally Managed Anti-malware Software
  - Ensure Anti-Malware Software and Signatures are Updated
  - Enable Operating System Anti-Exploitation Features/Deploy Anti-Exploit Technologies
  - Configure Anti-Malware Scanning of Removable Devices
  - Configure Devices Not To Auto-run Content
171 CIS Critical Controls

- Inventory and Control of Hardware Assets
- Inventory and Control of Software Assets
- Continuous Vulnerability Management
- Controlled Use of Administrative Privileges
- Secure Configuration for Hardware and Software
- Maintenance, Monitoring and Analysis of Audit Logs
- Email and Web Browser Protections
- Malware Defenses
- Limitation and Control of Ports, Protocols, and Services
- Data Recovery Capabilities
- Secure Configurations for Network Devices
- Boundary Defense
- Data Protection
- Controlled Access Based on the Need to Know
- Wireless Access Control
- Account Monitoring and Control
- Implement a Security Awareness and Training Program
- Application Software Security
- Incident Response and Management
- Penetration Tests and Red Team Exercises
Budget Impact

- Increases to Administrative Services budget
  - Information Security Officer
  - Two-year implementation of contracted services

- Net decreases to Operations & Maintenance
  - Transfer of vacant senior manager position
  - Net savings from cancelled contract
Facility Security - Field

FY 18/19 Accomplishments

- Internal and DHS facility security assessments completed
- Installation of new access card system
- Security camera upgrades and new installations at various WA facilities
- Various facility security improvements
Facility Security - Field

FY 20/21 Planned Efforts

- Continue implementing facility security assessment recommendations (Business Plan objective)
  - Fencing, gate, signage improvements
- Vegetation control
- Intrusion alarms installation
Facility Security - Kearny Mesa

- Changes from 2018 Security Review
  - Shatterproof window film
  - Additional access card readers
  - Additional surveillance cameras and upgraded software
  - New building access policies
- Reviewing feasibility of additional measures in FYs 2020 and 2021
Equipment Replacement Fund

- Equipment Replacement Fund Review
- Fiscal Years 2020 & 2021 ERF
Equipment Replacement Fund Review

Objectives

- **Fund**
  - Stabilize Fund Balance
  - Future Planning
  - Transparency
  - Accountability

- **Policy**
  - Document
  - Consistency
  - Procedures

Example Equipment: Valve Service Truck
Equipment Replacement Fund Review

ERF Historical Balances

Fiscal Year


$12 M $11 M $882 K

$ M $2 M $4 M $6 M $8 M $10 M $12 M
Equipment Replacement Fund Review

Agency Practices

- Researched 43 Agencies

Findings

- 67% have a Specific Fund

Basis

1. Forecast ~ 50% of agencies
2. Depreciation ~ 50% of agencies
3. % of Assets 1 agency

Method of Funding

1. Annual Transfers (General Fund) ~ 60%
2. Department Transfers ~ 40%
Equipment Replacement Fund Review

Industry Guidance

American Water Works Association (AWWA)
- Depreciation
- % of Value

Government Finance Officers Association (GFOA)
- Internal Lease Fees
- Depreciation

American Public Works Association (APWA)
- Vehicles
- Forecast
- 15% for Reserves
Equipment Replacement Fund Review

- **Basis of Funding**
  - Forecast of Needs
    - Specific needs
    - Updated
    - Lower balances
    - Accurate forecast required
  - **Timing**
    - 6 year forecast
    - Monitoring forecast every 6 months
    - Update every 2 years

Example Equipment: Aqueduct Control System Equipment
Equipment Replacement Fund

Current ERF Asset Types

- **Computers**
  - Computers
  - Network Appliances
  - Servers
  - UPS
  - Printer

- **Fleet**
  - Vehicles
  - Equipment

- **SCADA**
  - Card Access
  - Instrumentation
  - Communication Hardware
  - SCADA Computer Hardware
  - Panel Views
  - PLC Hardware
  - UPS

- **Other**
  - Cameras
  - Pumps
  - Cathodic Protection
  - Flow Meters
  - Large UPS
  - Tanks
  - Miscellaneous

- **Software**
  - PeopleSoft
  - Maximo
  - PowerPlan
  - Primavera
  - OnBase

---

Our Region’s Trusted Water Leader
San Diego County Water Authority

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Equipment Replacement Fund

Current ERF Asset Value

<table>
<thead>
<tr>
<th>ERF Assets List</th>
<th>Value</th>
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<tbody>
<tr>
<td>Fleet</td>
<td>7,944,400</td>
</tr>
<tr>
<td>Software</td>
<td>6,583,411</td>
</tr>
<tr>
<td>Other</td>
<td>4,734,739</td>
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<tr>
<td>SCADA</td>
<td>4,558,450</td>
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<tr>
<td>Computer</td>
<td>3,884,674</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$ 27,705,675</strong></td>
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</table>

Range of life of assets  5 – 20 years
Equipment Replacement Fund Review

Transfer in - based on 6 years average from Replacement Forecast

- transfer in
- transfer out
- ERF Balance
Equipment Evaluation Criteria

- Criticality to operations
- Functionality
- Regulatory issues
- Age
- System Compatibility
  - Past & future
- Downtime
- Options
  - Rent, lease, etc.
### FY 20&21 Equipment Replacement Fund

<table>
<thead>
<tr>
<th>Description</th>
<th>FYs 20&amp;21 Budget</th>
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<tbody>
<tr>
<td>Vehicles</td>
<td>$ 1,801,000</td>
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<tr>
<td>Computers, Servers</td>
<td>$ 912,024</td>
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<tr>
<td>SCADA</td>
<td>$ 1,778,100</td>
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<tr>
<td>Miscellaneous Equipment</td>
<td>$ 1,532,626</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 6,023,750</strong></td>
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</tbody>
</table>
General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Grants Budget
Budget Document Pages 31 & 35

San Diego County Water Authority
Our Region’s Trusted Water Leader
Kelley Gage
Director of Water Resources
Grant Support for Essential Water Management Projects – FYs 2020 & 2021

- Total Grant Budget: $27.3 Million
- Integrated Regional Water Management (IRWM)
  - Non-Water Authority projects: $20.5 Million (pass through IRWM funding)
  - Water Authority projects: $4.4 Million
    - Water Authority-sponsored IRWM projects: $3.5 Million
    - Grant Administration to support IRWM projects: $861,000
- Conservation Grants
  - Member Agency Administered Program (MAAP) Funding: $2.4 Million
Grant Support for Essential Water Management Projects – FYs 2020 & 2021

- Supports achievement of water supply goals in Urban Water Management and IRWM Plans
- Provides multiple water management and supply benefits
- Most funds passed-through to member agencies, NGOs and other partners
Grant Support for Essential Water Management Projects – FYs 2020 & 2021

- IRWM Proposition 84, Rounds 1 through 4, and Proposition 1 IRWM Planning Grants: $21.3 Million
  - Completion of the 2019 IRWM Plan Update
  - Receipt of final funds, including retention funds (between 5% and 10%), withheld until projects are complete
  - Significant implementation reimbursements for Round 4
Grant Support for Essential Water Management Projects – FYs 2020 & 2021

- IRWM Proposition 1, Disadvantaged Community Involvement Grant: $3.5 Million
  - Completion of projects benefiting disadvantaged communities
  - Receipt of final funds, including retention funds (5%) withheld until projects are complete
    - 3 Member Agency-sponsored projects: $831,000
    - Water Authority-sponsored task and Grant Administration: $300,000
    - Other project sponsors: $2.7 Million
Other Anticipated Grant Program Support – FYs 2020 & 2021

- Water Efficiency and Outreach: $2.4 Million
  - MWD Member Agency Administered Program (MAAP)
    - Water and Energy Saving Partnership – SDG&E
    - Regional programs (Field Services, Classes, Contractor program)
    - Member Agency programs
  - Educational Programs (Hans & Margaret Doe Charitable Trust)- Estimated to be $10,000

- Future IRWM Funding: Proposition 1, Round 1, Implementation funding
  - About $15 million to support implementation of regional water-related projects over next 5 years
General Manager’s Recommended Budget for Fiscal Years 2020 & 2021

Enhanced Member Agency Engagement
An Evolving Approach

- **2014**: Ramped up community outreach
  - Increased presence at business, community orgs
  - Citizens Water Academy
- **2017**: Regional campaign and communication
  - Brought to You by Water
  - Water News Network
- **2019-Forward**: Increased collaboration, engagement with member agencies
Partnership Focus

Enhanced Communications

Events

Outreach Support
Enhanced Communications

- Two-way focus
  - Program updates
  - Legislation
  - Current issues
- Beyond subject matter silos
  - Integrated relationships
Events

- Collaborative programs
- Co-branded activities
- Logistical support
Outreach Support

- Enhanced Water News Network
- Co-branded materials
- Technical assistance
- Continue existing field activities (education, landscape classes, etc.)
Media and Community Relations

- Collaborative focus
  - TV and print opportunities
  - Social media posts and campaigns
- Expanding involvement to more diverse stakeholders
  - Earlier engagement on plans, programs
Resource Deployment

- Stay within recommended 2020-2021 budget
- Reassign staff to support activities
  - Sustainable level of activity
- Monitor effectiveness on ongoing basis
  - Advise Board of significant adjustments
- Launch July 1