BAWSCA Capital Improvement Planning Comparison Study

September 2019

Comparing the SFPUC's Regional Water and Hetch Hetchy Water Capital Improvement Plan development with other western United States public utility practices

BAWSCA
Bay Area Water Supply & Conservation Agency

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BAWSCA is grateful for the assistance of the staff at the following participating agencies:

Contra Costa Water District
East Bay Municipal Utility District
Las Vegas Valley Water District
Los Angeles Department of Water and Power
Metropolitan Water District of Southern California
San Francisco Public Utilities Commission
Santa Clara Valley Water District (Valley Water)
Seattle Public Utilities
Western Municipal Water District

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Acronyms

BAWSCA	Bay Area Water Supply and Conservation Agency
CCWD	Contra Costa Water District
CIP	Capital Improvement Plan
EBMUD	East Bay Municipal Utility District
FY	Fiscal Year
LADWP	Los Angeles Department of Water and Power
LVVWD	Las Vegas Valley Water District
MWDSC	Metropolitan Water District of Southern California
SCVWD	Santa Clara Valley Water District (Valley Water)
SFPUC	San Francisco Public Utilities Commission
SPU	Seattle Public Utilities
WMWD	Western Municipal Water District

Limitations

To prepare this analysis, information from the participating agencies, which is considered to be accurate and reliable, served as the primary reference source. CIP information detailed by each agency, such as project cost data, was not subjected to an accuracy review nor was it independently verified.

1. Executive Summary

The Bay Area Water Supply and Conservation Agency (BAWSCA) was formed in 2003 via legislative action (AB 2058) to represent the water interests of 26 member agencies in Alameda, Santa Clara, and San Mateo Counties. Each member agency purchases water supplied by the San Francisco Regional Water System (SF RWS). Collectively, BAWSCA agencies purchase roughly two-thirds of the water supplied by the SF RWS and pay roughly two-thirds of the costs to operate the SF RWS.

BAWSCA is the only entity having the authority to directly represent the needs of the cities, water districts and private utilities (wholesale customers) that depend on the SF RWS. BAWSCA is also the only entity having the authority to perform regional water supply reliability planning on behalf of its member agencies.

BAWSCA member agencies have long-term contracts for water with the City/County of San Francisco (San Francisco). The San Francisco Public Utilities Commission (SFPUC) operates the SF RWS. BAWSCA provides the vehicle for member agencies to work with SFPUC on an equal basis.

In large part due to their reliance on the SF RWS coupled with their revenue commitments, it is critical that the wholesale customers have a well-maintained and efficient water supply system. This objective leads them to pay attention to the capital improvements that are proposed and implemented by the SFPUC. BAWSCA monitors and participates in SFPUC's capital planning process to represent the interests of the wholesale customers of the regional water system.

In 2018, BAWSCA began working with the SFPUC staff on amendments to the 2009 Water Supply Agreement (WSA) in place with SFPUC's Water Enterprise. That effort was completed in early 2019. An updated and restated WSA (also termed the 2019 WSA) was executed by all parties (SFPUC and BAWSCA's Member Agencies) as of August 2019. One amendment to the 2009 WSA requires the SFPUC to formally engage with BAWSCA during the SFPUC's development of its 10-year CIP. The BAWSCA Capital Improvement Planning Comparison Study (Study) serves as an initial contribution to the upcoming FY2021-2030 update to the CIPs covering the regional water system (Water Enterprise CIP and Hetch Hetchy Water CIP).

This Study summarizes the capital planning processes in place at the SFPUC and at other water suppliers (participating agencies) to identify best practices for capital planning processes. The Study was conducted through a review of CIP documents as well as interviews with staff from participating agencies in Spring/Summer 2018.

Selection of Participating Agencies

Nine water suppliers, including SFPUC, were selected for participation in the Study. This number is small enough to be manageable yet large enough to draw meaningful comparisons. Selection factors included size of agency, services provided, geographic location, and customer types (i.e., retail-only, retail wholesale mix, etc.).

Typical CIP Content and Development Process

CIPs are typically designed to inform the reader, often policy-level decision makers, about upcoming projects to be initiated within a set planning horizon (typically 10 years or less). Moreover, CIPs often include greater detail on short-term work efforts planned for the first one to two years of the planning horizon. CIP development involves working with staff to identify priorities, engaging with stakeholders through outreach, factoring in regulatory-required work, and considering financial limitations.

Side-by-side comparisons of the efforts of the nine participating agencies were conducted to identify similar practices as well as unique or noteworthy approaches in CIP development.

Key Observations

Overall, the Study found that the SFPUC's practices for CIP development and documentation were consistent with the other participating agencies. SFPUC's CIP is developed in accordance with the following best practices:

1. Water utilities develop their CIPs in close coordination with the short-term budgeting and long-term fiscal planning processes; and

2. A variety of methods are used to identify needs and assess priority of projects. The final selection of adopted plan elements results from input from management review teams, governing body guidance, and stakeholder involvement.

Recommendations

BAWSCA recommends the SFPUC consider the following enhancements to the Water Enterprise CIP and Hetch Hetchy Water CIP development, documentation and decision-making processes:

1. **Document the adopted biennial CIP information in a format that can serve as a stand-alone, publicly available report.** The document could discuss the capital planning process, identify high priority elements of the plan, and present project-level details (including Priority 3 projects not in the adopted spending plan). Features of this documentation could follow the Draft Biennial CIP report contents on regional water

system projects required under the new Wholesale Customer Water Supply Agreement (WSA) amendment. Specifically, it would provide project descriptions and justifications, details on asset classification plans, project implementation schedules by phases, and budget information at a project level, as well as program roll-up including projected inflation factor(s) assumed.

2. San Francisco prepares a new 10-year CIP once every two years. At the end of the first year of a 10-year CIP, a mid-cycle update is performed. **A stand-alone, publicly available document should be produced for each mid-cycle CIP.** The document could be more focused than the biennial report SFPUC prepares for a new 10-year CIP, limiting the discussion to any substantial changes in the proposed projects. Specific features of this documentation could follow the draft mid-cycle CIP report contents on regional water system projects required under the updated and restated WSA. The WSA CIP amendment calls for the discussion of any material changes proposed to projects found in the 10-Year CIP. Further, it requires the SFPUC to detail any increases to the cost of any CIP project by more than 10%, any increases in the schedule of CIP projects by 12 calendar months or greater, and possible impacts of changes to CIP projects on the SFPUC's ability to meet its RWS Level of Service Goals and Objectives.

3. **Actively engage BAWSCA's involvement early in the CIP development process prior to the official draft review required by the updated and restated WSA.** This may include sharing early drafts of CIP spreadsheets/budgets coupled with meetings to discuss projects and prioritization.

4. **Reformat project data sheets to include a narrative on current project status** (e.g., phase, construction percent complete, major milestone achievements, key refinements to scope).

5. **Add details to project data sheets on significant subprojects** (e.g. basic description of work, planned duration of work, and estimated budget).

6. **Look into a qualitative-style prioritization system to augment the Priority 1, 2, and 3 project priority classifications and the failure risk matrix currently used.** This could give a better sense of the factors considered in the project prioritization process. It may be based on the criticality ranking process used in developing the FY2019-FY2028 CIP.

7. **Perform an analysis comparing recently completed CIP projects with similar projects in the proposed CIP to assess if the level of effort and scheduling for the proposed projects are consistent with actual capabilities.** Selected large projects and aggregated small projects would be used in this metric. Also, cost-

estimating accuracy ranges would be identified to acknowledge the potential variability of costs when projects are in the pre-planning through the design stages of development versus later stages of project implementation.

The above recommendations, if implemented, would result in a CIP that is more transparent and easier to support. Having greater detail for each CIP project, including cost breakdowns by project stage, schedule information, prioritization decisions, etc. would enable BAWSCA to more readily evaluate the CIP's appropriateness.

2. Introduction

BAWSCA's Interest in Capital Improvement Planning for the SF RWS

The Bay Area Water Supply and Conservation Agency (BAWSCA) was formed in 2003 via legislative action (AB 2058) to represent the water interests of 26 member agencies in Alameda, Santa Clara, and San Mateo Counties. Each member agency purchases water supplied by the San Francisco Regional Water System (SF RWS). Collectively, BAWSCA agencies purchase roughly two-thirds of the water supplied by the SF RWS and pay roughly two-thirds of the costs to operate the SF RWS.

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BAWSCA member agencies have long-term contracts for water with the City/County of San Francisco (San Francisco). The San Francisco Public Utilities Commission (SFPUC) operates the SF RWS. BAWSCA provides the vehicle for member agencies to work with SFPUC on an equal basis.

In large part due to their reliance on the SF RWS coupled with their revenue commitments, it is critical that the wholesale customers have a well-maintained and efficient water supply system. This objective leads them to pay attention to the capital improvements that are proposed and implemented by the SFPUC. BAWSCA provides the ability for the customers of the regional water system to work with the SFPUC in its capital planning process. A recent amendment to the Water Supply Agreement formalizes BAWSCA's oversight of the development and implementation of SFPUC's CIP.

Original CIP Review

In 1997, the Bay Area Water Users Association (BAWUA) a non-profit organization representing San Francisco's wholesale customers that preceded BAWSCA, issued a report entitled "Review of the San Francisco Public Utilities Commission Ten-Year Capital Improvement Program (1997 – 2007) for the Water Enterprise". A comparison of the September 1996 draft of the San Francisco Water Enterprise CIP with CIPs from five other west coast water agencies as well as the San Francisco Clean Water Enterprise was made as part of that Study. Plan elements such as project development, cost estimating practices and level of project detail were compared.

As documented in BAWSCA's 1997 report, it was found that the Water Enterprise CIP contained the basic elements common to all the plans reviewed – a description of the projects, project schedule, and summary of the financial impacts. Recommendations to better serve the decision-making process were presented. The status of the current Water Enterprise CIP and

Hetch Hetchy Water CIP relative to those original recommendations is summarized in Table 2.1.

Note that the SF RWS CIP includes a Hetch Hetchy Water component as well as a Bay Area (Water Enterprise) component. The Study considers both components in its review.

Table 2.1: Status of Incorporating 1997 Comparison Report Recommendations

Recommendation *	Current CIP Status for Water Enterprise & Hetch Hetchy Water
Define a project priority system. As a minimum, a means of distinguishing mandatory activities should be developed.	Uses a 3-level system with mandatory projects as the highest priority. A risk of failure matrix is used to inform the process.
Add projects as needed to cover capital expenses in the following areas: (1) Programmatic projects (2) Facilities maintenance projects (3) Major activities from the Water Department CIP project list (including studies which will result in recommending future capital expenditures) (4) Major equipment purchases	Uses ongoing condition assessment, asset management evaluations, emergency preparedness plans, and master planning efforts to identify candidate CIP projects. Planning objectives have been formally adopted by the SFPUC Commission and are referred to as the Level of Service (LOS) goals.
Add a section on plan implementation to discuss issues in the following areas: (1) Staffing /resource needs to support the plan (2) Constraints to the CIP (e.g., significance of current capital project "backlog")	Uses a quarterly reporting system to inform the SFPUC Commission, stakeholders, and the public about progress on the adopted CIP. Program-wide and project-level accomplishments as well as current issues and challenges are discussed. Topics include budget and schedule status, and, where appropriate, staffing level projections.
Revise project description sheets to include the following information: (1) Quantify the cost estimating accuracy (2) Note the service implications/benefits of the project and any expected consequences resulting from delay in the project (3) Note the operational implications and benefits of the project (4) Note the project beneficiaries (e.g., Retail system versus Wholesale system) (5) Organizational unit responsible for the project (6) Link project descriptions (e.g., schedule, cost, status) to UEB project tracking system	Project description sheets have been modified and include: (1) Cost estimating accuracy stated in State of the Regional Water System Report (2) Project justification narrative added (3) Operating impact narrative added (4) Organization type added (e.g., regional water, local water, programmatic, Hetch Hetchy water) (5) Enterprise group noted (e.g., Water, Hetch Hetchy) (6) Major projects (generally over $5M) tracked in P6 project control system
Depict all studies that will lend definition to future capital projects, regardless of whether the study costs are capitalized in the CIP	Water Enterprise: Uses programmatic account for water resource planning and project accounts for studies specific to various asset classifications. Hetch Hetchy: studies included in projects.

** Jean M. Gardner. "Review of the San Francisco Public Utilities Commission Ten-Year Capital Improvement Program (1997-2007) for the Water Enterprise", Prepared for the Bay Area Water Users Association, February 26, 1997.*

Current CIP Involvement

Beginning in 2017, the SFPUC provided BAWSCA with an opportunity to review and comment on its 10-year CIP while it was under development. As part of that effort, BAWSCA recognized that constructive input to the SFPUC process required a better understanding of how other water agencies prepare and summarize their capital plans. Doing so could identify enhancements of potential use to the SFPUC.

Recently, BAWSCA and the SFPUC completed negotiations on an amendment to the 2009 WSA. The amendment formalizes BAWSCA's engagement in the SFPUC's development of its 10-year CIP for the SF RWS and oversight of CIP implementation.

It should be noted that BAWSCA does not contend that SFPUC's CIP development efforts are insufficient or require substantial modification. It should also be noted that this document is not meant to be a benchmarking study. Given inherent agency differences, the information presented in this Study should not be used to evaluate and rank SFPUC against the participating agencies' practices. Rather, BAWSCA hopes that this Study serves as a useful tool in helping the SFPUC refine its capital planning practices in the future.

Comparison Methodology

This Study compiles CIPs from a variety of water suppliers and compares their practices. CIP documents were reviewed and discussed in interviews with each participating agency's staff members. This section of the report provides a broad overview of the methods employed. Details on which agencies were selected for the Study and participating staff are provided in Section 3.

A diverse group of agencies was selected for this Study to gain from their varied practices. Their practices reflect their unique circumstances, which include their locations, size, and services provided in addition to water supply. Once agencies agreed to participate, they were asked to provide written documentation that detailed their most recent CIP efforts.

Interview questions were developed to gain a better understanding of how CIPs are prepared by the particular water agency. Agencies interviewed include those that were similar to SFPUC (in that they serve both retail and wholesale customers) as well as those that provided only retail services. The information collected from interviews with agency staff was combined with data retrieved by reviewing publicly available documents. The information was then summarized in table format to better allow for side-by-side comparisons.

In addition to reviewing how each agency approaches CIP development, the Study attempts to identify, through the review detailed above, if there are any specific components, activities or actions an agency incorporates into the CIP preparation process that enhance documentation and/or communication of CIP decision-making. Those of interest are called out if they are of potential merit to others, including the SFPUC.

Report Organization

The remaining sections of this document have been organized to present the rationale for selecting agencies to be included in the Study (Section 3). Section 4 of the report compares information on common features of the selected CIPs with the current CIPs prepared for the SF RWS. Section 5 identifies key findings including useful CIP components that may be considered for incorporating into future CIPs prepared by the SFPUC.

Appendices to this report present additional supporting information about the participating agencies. Detailed background information on the compared agencies and their CIP development processes is provided. Examples are also provided to display a variety of presentation formats for common content topics (e.g., individual project descriptions, project/program summary lists, plan prioritization methods).

3. Participating Agencies

Selection of Participating Agencies

Proper selection of participating agencies was a critical first step for this comparison. Following several discussions with the project team, the following conclusions were reached:

- The number of agencies selected had to be manageable.
  - Not more than 10 agencies
- The number of agencies selected had to be meaningful.
  - There needed to be more than 5 agencies taking part to properly compare
- There should be a sufficient number of Bay Area agencies taking part, allowing for a regional comparison to be made.
- There should be a sufficient number of agencies outside the Bay Area taking part, allowing for geographic contrasts, if any, to be observed.
- There was a desire to focus mostly on California agencies, with a recognition that one to two out-of-state agencies would be appropriate from a contrast perspective.
- Agency size and scale should be considered.
  - Care was taken to select agencies that could be considered mid to large size in scale
  - Care was taken to select agencies that had varying degrees of geographic reach
- Agency services should be considered.
  - All agencies were to be water providers (either at a retail or wholesale level)
  - Not all agencies needed to provide the same services SFPUC provides (power, water and wastewater/stormwater services)
  - Some agencies should serve both retail and wholesale water customers

BAWSCA staff served as the initial contact with the agencies to secure their participation. The selected agencies are all located in the western region of the United States (see Figure 3.1).

Figure 3.1
CIP Comparison Report Participating Agencies

In keeping with the selection goals identified earlier in this section, all the participating agencies provide water service to either wholesale or retail customers, or both. In some cases, agencies provide multiple services such as wastewater, power, or other, which is particularly true of cities. Profiles of each of the participating agencies are summarized in Table 3.1. Additional information on the capital improvement plans for each of the nine agencies are provided in Appendices A through I of this report.

Table 3.1: Agency Profiles

Features		CCWD	EBMUD	LADWP	LCCWD	MWDSC	SFPUC	SCVWD	SPU	WMWD
General										
	Service Area	Portions of Contra Costa County, CA	Portions of Alameda and Contra Costa Counties, CA	Primarily the City of Los Angeles, CA	Las Vegas, NV and suburbs	Significant portions of Southern California	San Francisco, CA, San Mateo County, CA and portions of Santa Clara and Alameda Counties, CA	Santa Clara County, CA	Seattle, WA and suburbs	Portion of Riverside County, CA
	Government Form	District	District	City	District	District	City	District	City	District
Services Provided										
	Water	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Wastewater	—	✓	—	—	—	✓	—	✓	—
	Power	—	—	✓	—	—	✓	—	—	—
	Stormwater	—	—	—	—	—	✓	—	✓	—
	Flood Protection	—	—	—	—	—	—	✓	—	—
	Refuse	—	—	—	—	—	—	—	✓	—
	Technology	—	—	—	—	—	—	—	—	—
Water Service Info										
	Water Sales (MGD)	142	139	446	299	1,298	240	268	130	66
	# of Retail Accounts	201,000	382,114	681,000	375,000	—	175,000	—	200,000	82,000
	# of Wholesale Customers	6	—	—	—	26	27	13	19	8
	Service Area Population	500,000	1,400,000	4,000,000	1,400,000	19,000,000	2,700,000	1,900,000	1,400,000	1,030,000
Water CIP Info										
	Planned Expenditures	$1,030,000,000	$1,690,000,000	$6,600,000,000	$616,000,000	$514,500,000	$2,635,900,000	$2,496,000,000	$531,176,000	$28,843,497
	Expenditure Plan Horizon	10	5	10	10	2	10	15	6	5
	Average Annual Expenditures	$103,000,000	$338,000,000	$660,000,000	$61,600,000	$257,250,000	$263,359,000	$136,300,000	$88,529,333	$9,768,699
	Number of Projects	48	97	—	—	345	108	61	59	83
	Average Annual Costs per Project	$2,145,833	$3,484,536	—	—	$745,652	$2,440,648	$8,183,607	$1,500,497	$117,695

Agency Resources

As noted previously in this document, aside from a review of each agency's CIPs and associated documents, a key component of the Study was to interview one or more individuals at each agency that played a key role in CIP preparation. Table 3.2 lists those contacts.

Table 3.2: Participating Agency Contacts

Agency	Contact
CCWD	Marguerite Patil Special Assistant to the General Manager Date Interviewed: May 24, 2018
EBMUD	Xavier Irias Director of Engineering and Construction Date Interviewed: May 23, 2018
LVVWD	Laura Jacobsen, Manager, Planning Division Nass Diallo, Senior Civil Engineer Date Interviewed: May 23, 2018
LADWP	Eloy Perez, Civil Engineering Associate/Capital Improvement Program Group Supervisor, Water Engineering Technical Services Division Date Interviewed: June 5, 2018
MWDSC	Lisa St. Regis, Budget Manager Tobin Tellers, Engineering Planning Manager Date Interviewed: May 23, 2018
SFPUC	Steve Ritchie, Assistant GM, Water Enterprise Dan Wade, Director, Water System Improvement Program Chris Nelson, Manager, Water Supply & Treatment Michele Novotny, Senior Water Analyst and BAWSCA Liaison Alexis Dufour, Long-Term Vulnerability Project Manager, Water Enterprise Date Interviewed: May 11, 2018
SCVWD	Katherine Oven, P.E. Deputy Operating Officer Beth Redmond, Capital Program Planning and Analysis Unit Manager Date Interviewed: June 8, 2018
SPU	Alex Chen, Planning & Program Management Division Director, Water Line of Business Joan Kersnar, P.E., Drinking Water Planning Manager Date Interviewed: May 24, 2018
WMWD	Tim Barr, Deputy General Manager Susie Aguilar, Senior Management Analyst Date Interviewed: May 21, 2018

Table 3.3 lists the specific documents reviewed for each of the nine agencies surveyed in this Study. All of the documents summarized can be found online, although not all websites contained the most up-to-date versions of the respective agencies' CIP. Further, some agency websites are more intuitive than others, making it easier to find the documents.

Table 3.3: Agency Bibliography

Agency	Reference(s)
CCWD	Ten Year Capital Improvement Program for Fiscal Years 2019-2028
EBMUD	Biennial Budget, Fiscal Years 2018 & 2019 – Volume 1 Capital Project Supplemental Material Fiscal Years 2018 & 2019 – Volume 2
LVVWD	Capital Improvements Plan 2017 Operating and Capital Budget 2019
LADWP	Water System Ten-Year Capital Improvement Program for the Fiscal Years 2010-2019*
MWDSC	Capital Investment Plan Appendix – Fiscal Years 2018/19 and 2019/20
SFPUC	Commission Presentation: Biennial Budget FY 2018-19 and FY 2019-20, Water Enterprise Commission Presentation: Biennial Budget FY 2018-19 and FY 2019-20, Hetch Hetchy Water State of the Regional Water System Report 2018
SCVWD	Five-Year Capital Improvement Program – FY 2019-23 (2-27-2018 DRAFT)
SPU	City of Seattle 2018-2023 Adopted Capital Improvement Program
WMWD	Staff Report: DRAFT Fiscal Year 2017-2018 Capital Spending Plan Summary and Listing (5-15-2017)

* *In 2019 LADWP prepared a CIP for Fiscal Years 2019-2028. However, as this document was prepared to summarize what was available for review and consideration in 2018, updated information from 2019 is not included in this document.*

It should be noted that some agencies may have other documents that are integral to their respective CIPs. For example, facility master plans, condition assessments, and financial policies support the development of CIPs. However, for purposes of this Study, only the documents that were identified as the CIP were reviewed.

4. Side-By-Side Comparisons

Typical CIP Content and Development Process

This discussion provides a general overview of what CIPs typically include and how CIPs are typically developed.[1] CIPs are designed to contain information that allows the reader to understand what work is upcoming in the CIP's planning horizon (typically 10 years or less). They do so by providing descriptions of major work proposed coupled with information detailing how that work will be paid for. Often, CIPs include greater focus on the short term (first one to two years of a CIP), and lesser focus moving beyond that short term.

Capital improvement planning is fundamental to any water supplier. CIPs enable water suppliers to ensure that sufficient capacity is available to meet customer demands. In addition to their engineering significance, capital improvement plans are used to set rates and capacity charges that will generate sufficient revenue to cover the cost of capital improvements.

CIP Typical Elements

Most CIPs include the following features:

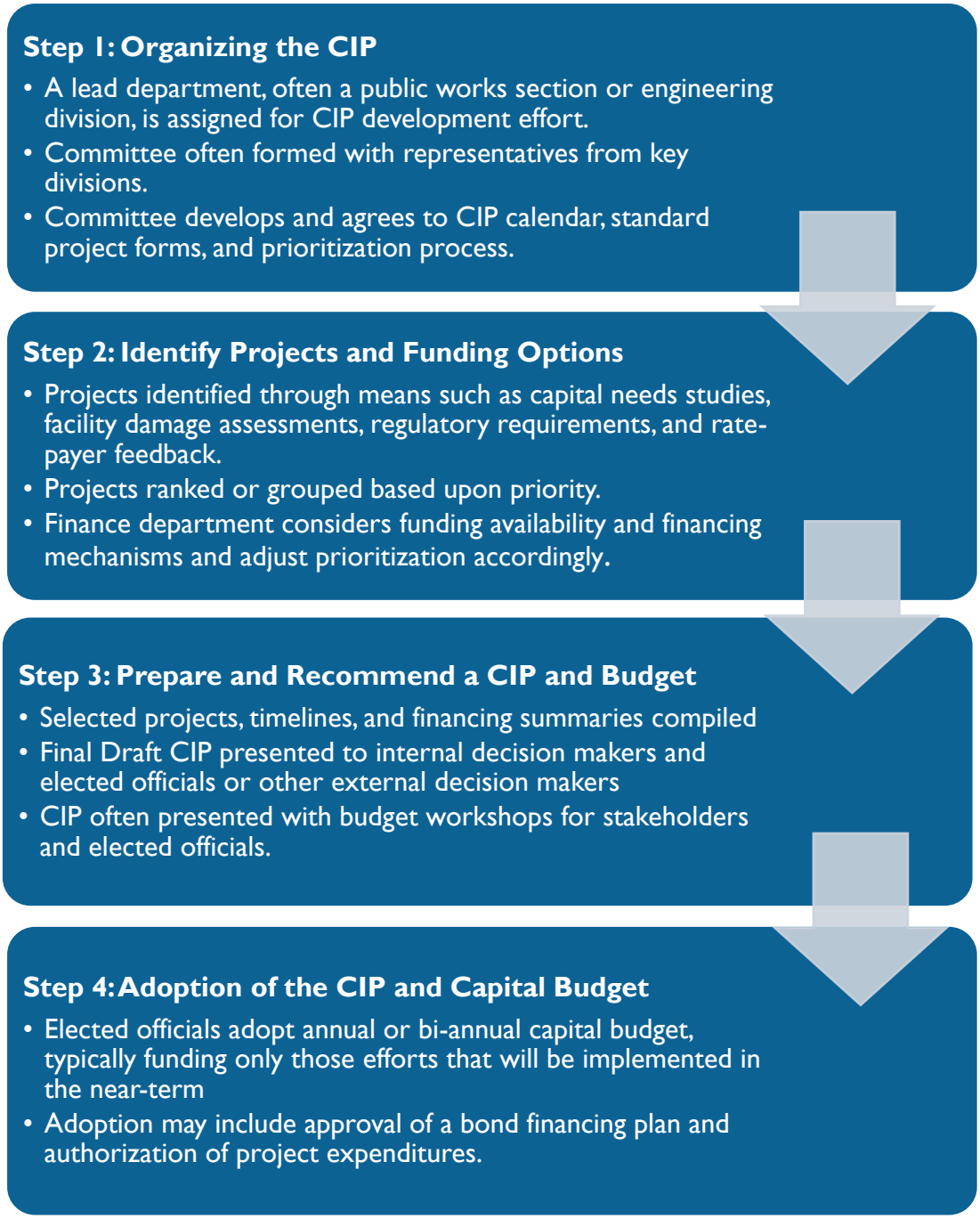
- A listing of capital projects, equipment, and major studies
- A ranking of projects
- A financing plan
- A timetable for the construction or completion of project(s)
- Project justification(s)
- A classification, itemization and explanation of project expenditure

Steps in the CIP Development Process

Water agencies generally follow specific steps when preparing a CIP. Figure 4.1 illustrates the typical flow of work to create a CIP (see Figure 4.1).

[1] "Capital Improvement Plans 101", Charlie Francis, May 10, 2016, https://opengov.com/article/capital-improvement-plans-101

Figure 4.1: Typical CIP Development Sequence



Minimum Requirements

CIPs should ideally meet certain minimum requirements:

- Provide governing bodies with sufficient information for adopting the CIP.
- Provide engineers with sufficient information to design and install infrastructure that provides a reliable water supply that meets regulatory requirements at a reasonable cost.
- Provide rate payers and other stakeholders with sufficient information to understand the need for the capital improvements and accept the rates and capacity charges needed to fund the capital costs. Understanding leads to acceptance and will reduce challenges.

This report will highlight examples of where agencies' CIPs are particularly successful at meeting these requirements.

Although there are common engineering functions (e.g., source of supply, purification, pumping, transmission, distribution, storage) shared by water suppliers, each water supplier prepares its capital improvement plan to address its specific needs, which includes the format of the document in which the results are brought forward for public review and adoption. The format can range from high-level summaries with general information for the benefit of the public to very detailed compendiums of project information and supplemental support documents.

The final capital improvement program serves not only to guide the agency in subsequent planning and project delivery but also becomes part of the administrative record for setting rates. Although no consistent industry standard emerges from the variety in these excerpts, capital improvement plans could be expected to address certain concerns, such as:

- Why are these projects included in the plan and not others?
- What benefits do these projects provide?
- What consequences could occur if these projects are not constructed?
- How much do these projects cost?
- How are they going to be funded?
- Who is going to pay for these projects?
- What is the status of previously approved capital projects?

Table 4.1 and Table 4.2 illustrate the variety of approaches to these typical CIP features for plan contents and development processes used by the participating agencies.

Table 4.1: Comparison of Capital Improvement Plan Contents

Agency	Project Description	Justification / Benefits	Cost Estimate	Schedule	Operating Cost Impacts	Staffing Impacts	Financial Analysis	Capitalizes Major Equipment Expenses	Capitalizes Planning Studies
CCWD	✓	✓	Current dollars	✓	✓	✓	✓	✓	✓
EBMUD	✓	✓	Current dollars	✓	✓	In annual budget	✓	✓	✓
LVVWD	Aggregated by major category	✓	Current dollars	Current FY active projects list	In annual budget	In annual budget	In annual budget	✓	✓
LADWP*	Aggregated by major category	✓	Current & escalated dollars	Current FY active program list	Approved in the annual budget process(but those costs are not incorporated into the CIP)	In annual budget	In annual budget	✓	✓
MWDSC	✓	✓	Current dollars	✓	✓	In annual budget	In annual budget	✓	✓
SFPUC**	✓	✓	Current dollars	✓	In biennial budget	In annual budget	✓	Communication & SCADA & Security only***	✓
SCVWD	✓	✓	Current & escalated dollars	✓	✓	In annual budget	✓	✓	✓
SPU – Water	✓	✓	Current dollars	✓	✓	In annual budget	✓	✓	✓
WMWD	✓	✓	Current dollars	✓	In biennial budget	In biennial budget	In biennial budget	✓	✓

* *LADWP tracks large (>$1M) project schedules and maintains an annual Priority List for those projects. Remaining projects may not be prioritized dependent on management staff decision(s)*
** *Reviewed CIPs for Water Enterprise (Regional) and Hetch Hetchy Water*
*** *Capitalizes all equipment greater than $5k and a useful life greater than 3 years*

Table 4.2: Comparison of Capital Improvement Plan Development Process

Agency	Planning Horizon	Primary Project Classification System	Project Priority System	Project Ranking System	Stated Cost Accuracy	Update Cycle	Formal Adoption?
CCWD	10 Year	10 programs (by function or major effort)	3 levels	Uses CIP update team recommendations	Yes (quantitative)	Annual (Biennial starting in 2020)	Yes
EBMUD	10 Years (formal approval for 5 Years)	10 strategies (by key strategic plan objectives)	Not stated	Uses capital steering committee recommendations	No	Biennial	Yes (part of biennial budget)
LVVWD	10 Year	3 (asset management, water quality protection, new facilities)	Not stated	Uses ongoing assessment process	No	Annual (near-term projects)	Yes (part of annual budget)
LADWP	10 Year	4 (infrastructure reliability, water supply, regulatory compliance, and operational support)	Priorities are set by the CIP Group and designed to align with the project ranking system (see adjacent column)	Uses a developed project ranking system that includes program plans and committee recommendations	No	As needed	Yes (part of annual budget)
MWDSC	10 Year	12 (by goal or major objective)	Evaluation criteria with risk multiplier	Uses CIP evaluation team recommendations	No	Biennial (near-term projects)	Yes (part of biennial budget)
SFPUC*	10 Year	7 – Water Enterprise – Regional 3 – Hetch Hetchy Water (by function or major effort)	3 levels	Risk matrix and criticality ranking	Yes (quantitative)	Annual	Yes
SCVWD	15 Year	5 (by function)	Priority ranking criteria (specific to project type)	Uses CIP group recommendations	No	Annual	Yes
SPU – Water	6 Year	8 (by function)	3 levels	Selection criteria ranking and line of business lead recommendations	Yes (quantitative)	Annual	Yes
WMWD	5 Year	7 (by benefit type or major effort)	Under development	Uses infrastructure planning committee recommendations	No	Annual	Yes

** Reviewed CIPs for Water Enterprise (Regional) and Hetch Hetchy Water*

Detailed Side by Side Comparison

The following tables (Table 4.3 and Table 4.4) have been produced to provide a side-by-side comparison of the CIPs prepared by each of the nine agencies that participated. They allow the reader to quickly identify what certain agencies have in common and what is unique about a particular agency.

CIPs are published in a variety of forms, which are briefly characterized in Table 4.3. Four of the CIPs are stand-alone documents and five are integrated with the budgets.

Table 4.3: Capital Improvement Program Documentation

Agency	CIP Document Format
CCWD	Stand-alone detailed report.
EBMUD	Part of budget with separate volume for projects.
LVVWD	Part of district budget.
LADWP	Stand-alone, high-level summary report.
MWDSC	Part of budget with separate volume for projects.
SFPUC	Part of city-wide CIP budget.
SCVWD	Stand-alone detailed report.
SPU – Water	Part of city-wide CIP budget.
WMWD	Stand-alone staff report.

There is considerable variation in the contents of the capital improvement plans, as illustrated in the excerpts contained in the appendices. All of the CIPs include summaries of costs by program. With the exception of the high-level summary reports, the CIPs also include lists of projects, and some include descriptions of individual projects.

The participating agencies that provide only one or two services tend to provide the greatest amount and range of detail in their CIP documentation. For agencies that provide multiple services (e.g., EBMUD, LADWP, SCVWD, SFPUC, SPU), less detail on each project is typically available. The most detailed CIPs contain information about the proposed projects as well as additional information that provides context:

- Descriptions of agency history, services, facilities, and mission and goals.
- The development process for their capital and operation budgets.
- Financial policies, strategic plans, and other planning assumptions.
- Program objectives.
- Funding sources and uses.
- Project evaluation and prioritization.
- Financial impacts, rates, and charges.

This additional information provides the rationale for how projects become part of the CIP. Some key aspects of this information are discussed in this section.

Individual Project Descriptions

The majority of the CIPs contain detailed descriptions for each project. For those participating agencies with detailed project descriptions in their CIPs, Table 4.4 summarizes the information they provide on individual projects; specific examples are compiled in the appendices.

Table 4.4: Information Provided for Individual Projects

Information Type	CCWD	EBMUD	LADWP	LVVWD	MWDSC	SFPUC	SCVWD	SPU	WMWD
Project Identification									
Project name	✓	✓	✓	—	✓	✓	✓	✓	✓
ID number	—	✓	✓	—	—	✓	✓	✓	—
Program	✓	✓	✓	—	✓	✓	✓	✓	✓
Lead Department	✓	✓	✓	—	—	—	—	—	—
Manager	—	—	✓	—	—	✓	✓	—	✓
Project Description									
Description	✓	✓	✓	—	✓	✓	✓	✓	✓
Priority	✓	—	✓	—	—	—	✓	—	—
Justification	✓	✓	✓	—	—	✓	—	—	✓
Location map/photo	—	—	✓	—	—	—	Both	—	—
Milestones achieved	—	✓	✓	—	✓	✓	—	—	—
Operating impacts	Quantitative	Quantitative	—	—	Quantitative	—	Quantitative	Quantitative	—
In-service date	—	✓	✓	—	✓	—	—	✓	—
Useful life	—	—	—	—	—	—	✓	—	—
Project Funding									
Planned Expenditures						(By project phase)	(By project phase)		
For/from prior year(s)	✓	✓	—	—	✓	—	✓	✓	—
For individual years	10 years	First 5 years	—	—	✓	First 5 years	First 5 years	7 years	First 5 years
For grouped years	Total project	Next 5 years	—	—	—	Next 5 years and 10 year total	Future	—	—
Funding Sources									
By type of funding	✓	✓	—	—	—	✓ *	✓	7 years	✓
Schedule	—	—	—	—	—	✓ *	✓	7 years	—
Available balance	—	—	—	—	✓	✓ *	Cost to date	—	—

* *Included in the published Adopted Budget*

Various details are used to uniquely identify projects. In addition to the project name, the program with which the project is associated is usually shown. Each project is typically described in a few paragraphs. In some cases, brief status reports or statements of accomplishments since the prior year are provided.

Part of the description may include a justification for the project. In two cases, the priority number or priority category for the project is indicated. SCVWD formally derives a priority number for each project using a scoring system. Each project's priority is included in the project description. CCWD has three priority categories into which each project is classified. The formal scoring system is not included in CCWD's CIP. Most of the other agencies apply some form of prioritization as they compile their CIPs, although the details are not included in their CIPs. Prioritization is discussed in greater detail at the conclusion of this section.

The expected impact on operations is noted in some CIPs in either qualitative or quantitative terms.

The sources and uses of funding are reported annually for periods ranging from five to ten years. Costs may be reported in groups of years and by construction phase. The costs incurred to date are usually shown. Many projects are ongoing projects that were underway prior to the first year of the cost projections that is shown and that will continue beyond the last year shown, perhaps indefinitely. Other projects have discrete start and end dates. Two of the agencies indicate the estimated in-service date for these discrete projects.

Annual cost projections correlate with the funding that was and will be needed. Funding sources are sometimes identified by type in total. Although full construction cost accounting is beyond the scope of most CIPs, some detail is provided in the CIPs reviewed. In several cases, the expenditures to date are indicated. In some cases, the available balance is shown.

CIP Roll-Up Summaries

Although not all the CIPs contain detailed descriptions of individual projects, all the CIPs contain summary lists of the individual projects subtotaled by program. Table 4.5 summarizes the information contained in these project summaries; specific examples are provided in the appendices. These summaries are useful in directing attention from individual projects to groups of projects in programs, which is beneficial to strategic planning.

Expenditures and funding are projected for individual projects for periods ranging from one to ten years. In some cases, the prior year's amount is compared with the current year to indicate the year-over-year variance.

For those agencies with explicit prioritization systems, the priorities are shown. In two cases, the unfunded projects are indicated. In effect, certain low priority projects are identified for future consideration.

The status of project funding is complex and separately tracked because it exceeds the scope of CIPs. However, the CIPs contain some information about changes in funding from prior years and the remaining available funding.

Table 4.5: CIP Roll-Up Summaries

Financial Category			CCWD	EBMUD	LADWP	LVVWD	MWDSC	SFPUC	SCVWD	SPU	WMWD
Expenditures											
	By program		✓	✓	✓	✓	✓	✓	✓	✓	✓
	Discrete / ongoing		—	—	—	—	—	—	—	✓	—
	Timeframe										
		For prior year(s)	✓	✓	10 years	—	5 years	✓	✓	—	—
		For individual years	10 years (prior and current periods)	5 years	1 year	1 year	3 & 10 years	10 years	5 years	7 years	5 years
		For grouped years	10 year total	5 year total	10 year total	10 year total	—	10 years (prior and current periods)	Next 10 years (15 years total)	—	5 year total
		Change from prior year	For 10 year periods	—	—	—	✓	For 10 year periods	—	✓	—
	Prioritization		3 categories	—	—	—	—	—	Individually numbered	—	Ranked
	Unfunded projects		—	—	—	—	—	✓	✓	—	—
Funding Sources											
	By type of funding		✓	✓	✓	—	✓	✓	By fund	—	—
	Timeframe										
		For/from prior year(s)	—	—	—	—	1 year	—	1 year	—	—
		For individual years	10 years	5 years	10 years	—	3 years	10 years	10 years	—	5 years
		For grouped years	10 years	5 years	10 years	—	—	10 years (prior and current periods)	—	—	—
		Changes from prior year	✓	—	—	—	✓	For 10 year periods	—	—	—
	Available balance		—	—	—	—	—	By program	—	—	—

Some CIPs contain more than project information particularly when they are integral with the operating budget. They may contain financial or strategic plans that build on the capital budgets, integrating them with the operating budgets to derive revenue and rate projections. They may also contain detailed information on debt service, reserves, and financial policies, all of which is relevant to rating agencies.

At the summary level, there is often a general discussion of the planning process, planning assumptions, the prioritization process, customers, and the service area. In some cases, performance indicators are discussed, which may be general in nature or related to specific financial or engineering parameters.

Additional Information

CIPs are prepared so that the approving bodies understand the basis for the capital expenditures that will be paid by the users through rates, capacity charges, and other revenue sources. At a minimum, the CIPs need to identify the projects, the cost of the projects, and the implementation schedule. With this information, the agency can plan accordingly, and rates can be set to generate the required revenue.

CIPs can provide additional information that could be valuable in supporting the rationale for the proposed work efforts. The following discussion identifies areas where additional information can add defensibility to a CIP. Specific examples are provided in the appendices.

Prioritization

Prioritization processes are indicative of the application of a rigorous set of consistent evaluation criteria to each project. Priorities are valuable in ordering projects from highest to lowest priority, which is useful in objectively evaluating project effectiveness. The additional level of formality that prioritization requires may improve the likelihood that the project will be completed as planned and may decrease the likelihood that significant modifications will occur later.

SCVWD's CIP provides great detail on how it prioritizes projects (see Appendix G). For each water supply project, there are twenty-six criteria in four weighted categories. Other agencies discussed their prioritization process but do not choose to show the details in their CIPs. SCVWD does not include the prioritization forms for each project but presumably can provide the detail if needed. However, the prioritization score is shown for each project in the CIP.

MWDSC approaches prioritization by providing the criteria by which it justifies the need for projects (see Appendix E). Projects are also evaluated based on four criteria to which a risk multiplier is applied (see Table E-3). MWDSC does not include evaluation forms for each project in its CIP but the detailed discussion clearly describes a rigorous process for selecting projects.

CCWD indicates one of three priority levels into which a project can be classified. Each level is described in the CIP (see Appendix A). CCWD shows the priority level for each project in the individual project descriptions and subtotals the projects by priority level in the plan roll-up summaries. The SFPUC also uses this type of priority system.

Prioritization processes provide reference points for why a project was included in the CIP. If those factors change, it is easier to understand the impact of the change on the CIP.

Prioritization is not without its pitfalls. The SFPUC reports that it used a detailed prioritization system but found that it could produce anomalous results. It was possible to score projects on various criteria but the sum of the scores could give a higher priority to certain projects than was reasonable. Rather than be controlled by the system, the SFPUC discontinued using it in favor of a more straightforward priority classification system. SFPUC states that it will continue to move forward with the improved ranking system with the understanding that it is simply a tool that can be used by management to inform good decision-making.

Performance Accountability

CIPs are used to establish budget and schedules for work efforts that ultimately feed the rate-setting process. Those who prepare CIPs must anticipate future conditions in identifying projects and in estimating their costs and construction schedules. Despite the best possible planning, change is inevitable. As a result, CIPs can overestimate capital costs.

Some agencies, aware that their CIPs may overestimate the effort to deliver projects in the later years of the CIP, look at recent project efforts. This analysis is based on comparing actual recent capital expenditures with the CIP projections. The recent "running rate" is used to establish the budget available to the capital planners who must adjust their projects to fit within the budget. This practice is followed by several of the agencies interviewed in this report.

Most of the CIPs do not address their approach to monitoring projected versus actual capital expenditures, which involves close interaction between the engineering and financial planners. We note, however, that the EBMUD CIP includes its strategic plan with its budget. Among other topics, the strategic plan contains several performance metrics, one of which indicates that 97% of the budgeted water capital expenditures was spent (see Appendix B). This is an important measure of accountability that supports the rate-setting process.

Some information on construction accounting supports the use of CIPs for accurate rate setting.[2] Some of the CIPs provide information on construction expenditures to date and available balances. Information on capital reserve balances is also a valuable measure of accountability, particularly if it compares the current balance with the target balance (including the basis for the target balance).

[2] For purposes of setting capacity charges, Govt Code Sections 66601 and 66006 stipulates accounting procedures for determining whether refunds are due for over-charging capacity charges.

5. Key Findings and Recommendations

Common key practices in CIP development and documentation were identified over the course of this Study.

1. Water utilities develop their CIPs in close coordination with the short-term budgeting and long-term fiscal planning processes.

2. A variety of methods are used to identify needs and assess priority of projects. The final selection of adopted plan elements results from input from management review teams, governing body guidance, and stakeholder involvement.

The SFPUC uses these practices in developing the Water Enterprise CIP and Hetch Hetchy Water CIP.

Recommendations

BAWSCA recommends the SFPUC consider the following enhancements to the Water Enterprise CIP and Hetch Hetchy Water CIP development, documentation and decision-making processes:

1. **Document the adopted biennial CIP information in a format that can serve as a stand-alone, publicly available report.** The document could discuss the capital planning process, identify high priority elements of the plan and present project-level details (including Priority 3 projects not in the adopted spending plan). Features of this documentation could follow the Draft Biennial CIP report contents on regional water system projects required under the new Wholesale Customer Water Supply Agreement (WSA) amendment. Specifically, it would provide project descriptions and justifications, details on asset classification plans, project implementation schedules by phases, and budget information at a project level, as well as program roll-up including projected inflation factor(s) assumed.

2. San Francisco prepares a new 10-year CIP once every two years. At the end of the first year of a 10-year CIP, a mid-cycle update is performed. **A stand-alone, publicly available document should be produced for each mid-cycle CIP.** The document could be more focused than the biennial report SFPUC prepares for a new 10-year CIP, limiting the discussion to any substantial changes in the proposed projects. Specific features of this documentation could follow the draft mid-cycle CIP report contents on regional water system projects required under the updated and restated WSA. The WSA CIP amendment calls for the discussion of any material changes proposed to projects found in the 10-Year CIP. Further, it requires the SFPUC to detail any

increases to the cost of any CIP project by more than 10%, any increases in the schedule of CIP projects by 12 calendar months or greater, and possible impacts of changes to CIP projects on the SFPUC's ability to meet its RWS Level of Service Goals and Objectives.

3. **Actively engage BAWSCA's involvement early in the CIP development process prior to the official draft review required by the updated and restated WSA.** This may include sharing early drafts of CIP spreadsheets/budgets coupled with meetings to discuss projects and prioritization.

4. **Reformat project data sheets to include a narrative on current project status** (e.g., phase, construction percent complete, major milestone achievements, key refinements to scope).

5. **Add details to project data sheets on significant subprojects** (e.g. basic description of work, planned duration of work, and estimated budget).

6. **Look into a qualitative-style prioritization system to augment the Priority 1, 2, and 3 project priority classifications and the failure risk matrix currently used.** This will give a better sense of the factors considered in the project prioritization process. It may be based on the criticality ranking process used in developing the FY2019-FY2028 CIP.

7. **Perform an analysis comparing recently completed CIP projects with similar projects in the proposed CIP to assess if the level of effort and scheduling for the proposed projects are consistent with actual capabilities.** Selected large projects and aggregated small projects would be used in this metric. Also, cost-estimating accuracy ranges would be identified to acknowledge the potential variability of costs when projects are in the pre-planning through the design stages of development versus later stages of project implementation.

APPENDICES

Appendix A:
Contra Costa Water District Information

Contra Costa Water District (CCWD)

References:

Ten Year Capital Improvement Program for Fiscal Years 2019-2028
(https://www.ccwater.com/ArchiveCenter/ViewFile/Item/302)

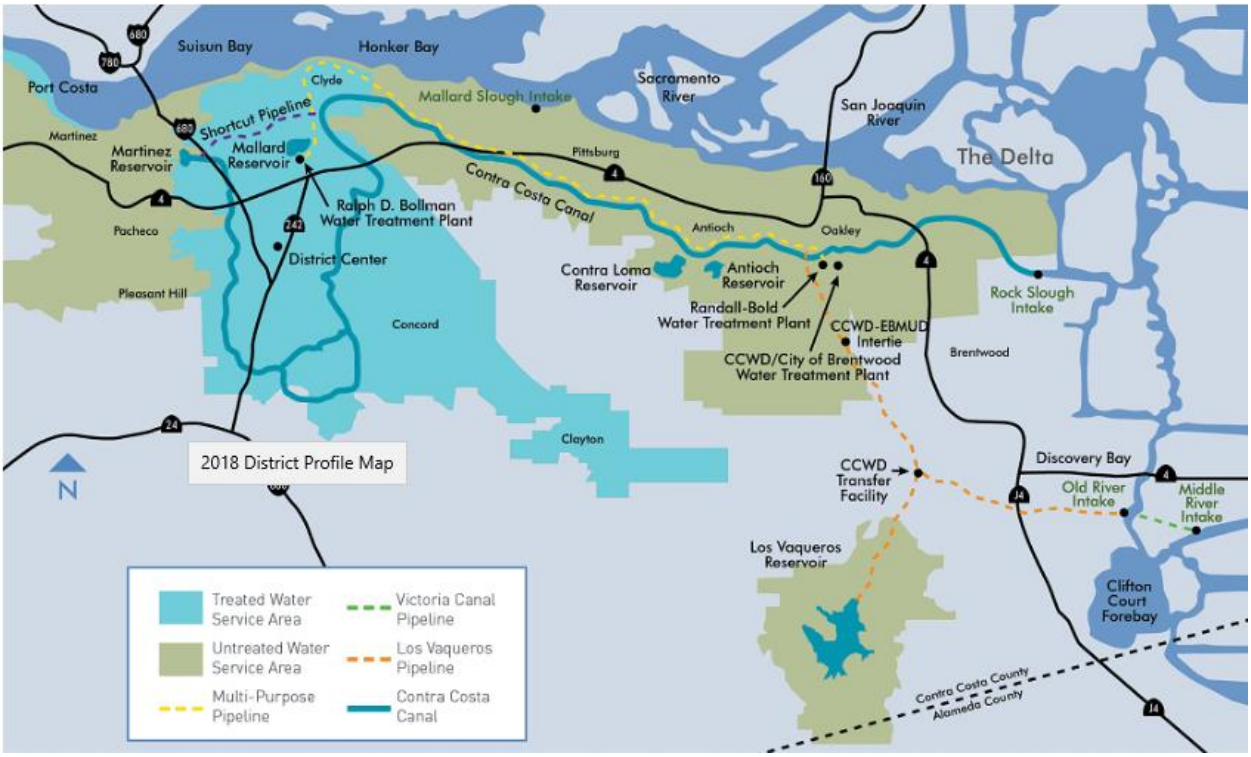
Website: https://www.ccwater.com/

The Contra Costa Water District delivers safe, clean water to approximately 500,000 people in central and eastern Contra Costa County in Northern California (see Figure A-1). Formed in 1936 to provide water for irrigation and industry, CCWD is today one of the largest urban water districts in California and seen as a leader in drinking-water treatment technology and source water protection.

CCWD's service area encompasses most of central and northeastern Contra Costa County, a total area of more than 140,000 acres (including the Los Vaqueros watershed area of approximately 19,100 acres). Water is provided to municipal, residential, commercial, industrial, landscape irrigation, and agricultural customers. Treated water is distributed to customers living in the following communities: Clayton, Clyde, Concord, Pacheco, Port Costa, and parts of Martinez, Pleasant Hill, and Walnut Creek.

CCWD's major untreated water municipal customers are the Cities of Antioch, Pittsburg, and Martinez. In addition, the District treats and delivers water to the City of Brentwood, Golden State Water Company (serving Bay Point), Diablo Water District (DWD), and the City of Antioch. In 2008, the District entered into an agreement with the Golden State Water Company to meet 100% of the demands in the Community of Bay Point through a treated water interconnection on the Multi-Purpose Pipeline.

Figure A-1: Contra Costa Water District Service Area



Overview of CCWD's CIP

Contra Costa Water District's (CCWD) has established a Ten-Year Capital Improvement Program (CIP) and Financial Plan that identifies and prioritizes the capital assets and financial tools required over a ten year cycle seen by CCWD as necessary to successfully carry out their mission to "Strategically provide a reliable supply of high quality water at the lowest cost possible, in an environmentally responsible manner." CCWD's CIP includes a Ten-Year Financial Plan that projects revenue requirements to fund the proposed projects and anticipated operating costs. CCWD's CIP and Financial Plan are updated annually as part of an ongoing financial planning cycle that includes bi-annual budgets and annual rate reviews.

CCWD's total 2019 CIP is approximately $1,030.3 million. This latest CIP indicated that funded projects (level 1 and 2 projects) went from $306.9 million in the 2018 CIP to $314.5 million in the 2019 CIP, an increase in funded projects of $7.6 million.

CCWD has in place three project priority levels used to rank and fund projects. In this most recent CIP, those projects that are ranked in priority levels 1 and 2 are funded. Priority level 3 projects are desirable, but due to funding limitations are not proposed for implementation during the CIP's 10-year horizon. Projects that were in place in previous CIP cycles are reviewed and their costs, schedule and progress are adjusted if needed.

CCWD's CIP is organized into ten separate program areas, each representing a different function of the organization. Grouping projects by function allows CCWD's CIP to be viewed as a series of programs for improvements in specific areas of responsibility.

CCWD's ten programs are as follows:

- Administrative, Support, and Maintenance Facility Improvement
- Delta Projects
- Equipment and Other Capital Purchases
- Expansion of Services
- Future Water Supplies
- Los Vaqueros Watershed and Conservation Lands
- Treated Water Distribution and Storage Facilities
- Untreated Water Supply and Transport
- Water/Energy Demand Reduction
- Water Treatment Facility Improvements

CCWD's CIP includes a detailed description of each of the 10 programs listed above as well as any sub-programs. In addition, individual project summaries are included in the CIP. Within each program area, projects are prioritized according to a standard set of criteria that measure the relative importance of a project based upon factors such as protection of health and safety, legal requirements, relationship to CCWD's goals, and rate of return on their investment. The projects are assigned a priority level which provides a basis for deciding which projects should be done in any given year and scheduling projects over the ten-year span of the CIP.

Three levels are used to reflect a range of priorities from high to low:

- Priority Level 1 -- These are the highest priority capital projects. They include projects already under construction and those required by legislation, regulation, contract, or for protecting health and safety. Priority level 1 also includes applicant and grant-funded projects.
- Priority Level 2 -- These are projects that provide measurable progress toward achieving the CCWD's goals; however, CCWD has a moderate level of control as to when they should be performed. Where return on investment is a determining factor, projects in this priority level will have a payback of less than five years.
- Priority Level 3 -- These are projects that are projected to be needed, but CCWD has a significant level of control as to when they should be performed, CCWD is awaiting response to a grant application, or the project is dependent upon the decision of an outside entity to proceed. Where return on investment is a determining factor, projects in this priority level will generally have a payback of greater than five years.

CCWD considers operation and maintenance cost in their CIP. More specifically, the CIP's Financial Plan considers total District operating costs in its analysis, including current operating costs inflated over time, as well as future costs related to implementing the CIP projects

Significant operating costs include fixed labor and variable costs such as power, purchased water, and chemicals. CCWD notes in this most recent CIP that lower water sales projected have resulted in reduced variable operating expenditures, including water purchases and energy costs. Further, CCWD has assumed a 3.5% annual inflation in their most recent CIP. Other increases or decreases in variable operating cost are the result of changes in consumption.

This particular CIP and Financial Plan also reflects the substantial retirement of long-term debt issued for CCWD's original Los Vaqueros Reservoir Project beginning in year 2022. CCWD plans to use the regained debt capacity to refinance short-term debt issued for other projects as well as to invest in future infrastructure projects.

Finally, CCWD considered projected untreated and treated water revenue increases as required to fund priority level 1 and level 2 projects, while covering operating costs and debt service and maintaining required reserve balances, in their CIP effort. Note that they are projections only. CCWD's Board of Directors determines actual revenue increase at the time of each annual rate review.

CCWD's CIP Development Process

CCWD has a project team that is assembled to develop / update their CIP. That team meets in earnest several months prior to their annual update. One of their first tasks is to review documentation that has been developed by the agency that identifies capital needs and priorities. More specifically, most of the projects in the CIP are identified in various CCWD planning documents. Further, most of their key planning documents are periodically updated to ensure that project planning is based on current and reliable information.

Some CIP projects are based on maintenance reports and field inspection records, while other projects are required to meet legislation, regulation, agreement, or Board policy requirements.

The CIP update team meets with staff responsible for specific District functions, such as water treatment, to facilitate identification of capital project needs or adjust timing of a previously identified project based on changing conditions.

For this most recent CIP update, CCWD's project team consisted of five (5) senior staff members (their lead engineer, their primary rate and financial analyst, their project controls manager, their director of planning, and their director of finance.

Selected Excerpts from CIP Documentation

1. Project Description

CONTRA COSTA WATER DISTRICT

TEN-YEAR CAPITAL IMPROVEMENT PLAN
PROJECT SUMMARY

Program: Untreated Water Supply and Transport

Sub-Program: Untreated Water Facilities - Upgrades

Project: Untreated Water Reservoir Rehabilitation Program

Priority: 2/3

The purpose of this program is to improve reliability of the District's untreated water reservoirs, some of which are over 60 years old, by implementing improvements identified and prioritized in the 2010 Untreated Water Reservoir Master Plan and the 2011 Reservoir Valve and Pipeline Assessment.

Priority Level 2 work planned for FY2019 includes rehabilitation of Los Vaqueros Dam Gate 5, implementation of Los Vaqueros reservoir instrumentation equipment lifecycle replacement and restoration of rip rap on the setback levees at Old River and Middle River pump stations. Abandonment of the Chenery Pipeline and relocation of the Los Vaqueros Dam Toe Drain are planned for construction in FY2020. Also planned for FY2019 is an update to the Untreated Water Reservoir Master Plan, including assessment of dam safety emergency response practices for compliance with recently enacted regulatory requirements. Future Priority Level 3 projects include improvements to the Contra Loma gate valves, repair of corrosion on valves and intake gate supports at Los Vaqueros Reservoir and replacement of aging access roads and additional reservoir instrumentation.

The project was included in the 2018 CIP at a ten-year cost of $5,544,000. The cost has been adjusted for inflation and to reflect current project schedules.

Total Project: **N/A**
Cost to Date through FY2018 **N/A**
CIP Total: **$6,919,000**

Cost Estimate Accuracy Range: **$10,379,000 to $4,844,000 (+50%/-30%)**
ENR-CCI = 12,015

Annual Cost Distribution (in $1,000s): *Priority 2*

FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
750	1,605								

Annual Cost Distribution (in $1,000s): *Priority 3*

FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
		456	201	736	401	1,136	301	1,132	201

Project Funding: This project is funded by untreated water rates.

Operational Impacts: Operational impacts of this project are anticipated to be minimal. Increasing automated dam monitoring instrumentation will decrease the cost of dam monitoring, and increase the level of dam oversight through higher quality, faster data.

Basis for Priority: FY2018 through FY2020 activities have been ranked as Priority Level 2, because the District has a moderate level of control over the scope and implementation. Subsequent activities have been ranked as Priority Level 3 because the District has a significant level of control over the scope and implementation of these activities.

Lead Department: Engineering

2. Project Line-Item Summaries

Table IV-17 Projects within the Treated Water Distribution and Storage Facilities Program

A. 2019 CIP

(In thousands of dollars, current dollars)

Sub-Prog	Project	Priority	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	TOTAL
Pipe Upgrades	Large Treated Water Meter Replacements	2	226	200	199								625
Non-Dist Funded	Distribution Facilities (Developer Projects)	1	1,539	1,539	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	15,814
Pipe Upgrades	Pipeline Renewal / Replacement	2	5,127	4,495	3,448	3,448	3,708	3,448	3,448	3,658	6,343	6,603	43,726
Facilities – New	Port Chicago Pipeline - Phase II	2									255	1,625	1,880
Site Upgrades	TW Facilities Improvement Program	2	4,103	2,746	2,703	3,067	3,330	2,943	3,055	3,064	3,329	3,472	31,812
Site Upgrades	TW Reliability Improvements	2		205									205
TWSA Planning	TWRR Study Update	2				245					245		490
TWSA Planning	TWMP Updates	2		25	415					287			727
Facilities - New	CCWD/EBMUD TW Regional Intertie	3			2,030	9,170							11,200
Non-Dist Funded	CNWS – Potable Water Facilities	3				3,520	10,315	7,765					21,600
Non-Dist Funded	CNWS – Recycled Water Facilities	3				5,090	12,630	12,480					30,200
PROGRAM TOTAL			10,995	9,210	10,387	26,132	31,575	28,228	8,095	8,601	11,764	13,292	158,279

B. 2018 CIP

(In thousands of dollars, current dollars)

Sub-Prog	Project	Priority	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	TOTAL
Non-Dist Funded	Distribution Facilities (Developer Projects)	1	1,814	1,460	1,460	1,460	1,460	1,460	1,460	1,460	1,460	1,460	14,954
Pipe Upgrades	Pipeline Renewal / Replacement	2	947	3,174	3,399	3,673	3,867	4,660	4,292	4,584	4,259	4,173	37,028
Facilities – New	Port Chicago Pipeline - Phase II	2									249	1,570	1,819
Site Upgrades	TW Facilities Improvement Program	2	3,291	2,807	2,598	2,516	2,516	4,081	4,081	2,516	2,516	2,516	29,438
Site Upgrades	TW Reliability Improvements	3				510	2,590						3,100
TWSA Planning	TWRR Study Update	2					207					207	414
TWSA Planning	TWMP Updates	2		258					415				673
Facilities - New	CCWD/EBMUD TW Regional Intertie	3				2,030	9,170						11,200
Non-Dist Funded	CNWS – Potable Water Facilities	3				3,390	9,930	7,480					20,800
Non-Dist Funded	CNWS – Recycled Water Facilities	3				4,900	12,180	12,020					29,100
PROGRAM TOTAL			6,052	7,699	7,457	18,479	41,920	29,701	10,248	8,560	8,484	9,926	148,526

3. Project Roll-Up Summaries

Table IV-1 2019 CIP by Program

(In thousands of dollars, current dollars)

Program	2019 CIP	2018 CIP
Administrative, Support, and Maintenance Facility Improvement	5,075	4,714
Delta Projects	12,832	12,243
Equipment and Other Capital Purchases	21,143	21,658
Expansion of Services	80,500	77,500
Future Water Supplies	3,400	3,185
Los Vaqueros Watershed and Conservation Lands	7,376	6,270
Treated Water Distribution and Storage Facilities	158,279	148,526
Untreated Water Supply and Transport	615,652	329,324
Water/Energy Demand Reduction	40,764	41,001
Water Treatment Facility Improvements	85,272	89,066
TOTAL	1,030,293	733,487

Though projects are organized by program, funding is determined by priority level. For reference while reviewing program expenditures, Tables IV-2 and IV-3 show funding by priority level and by fiscal year for the 2019 CIP and 2018 CIP, respectively.

Table IV-2 2019 CIP by Fiscal Year and Priority

(In thousands of dollars, current dollars)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	TOTAL
Priority Level 1*	15,675	4,116	3,377	3,377	6,797	15,754	14,774	3,377	3,377	3,377	74,001
Priority Level 2*	26,882	26,036	24,965	24,317	20,127	20,835	16,407	30,658	20,387	24,530	235,144
Priority Level 3	0	0	6,087	37,272	58,608	110,919	106,058	113,965	150,183	132,752	715,844
Subtotal	42,557	30,152	34,429	64,966	85,532	147,508	137,239	148,000	173,947	160,659	1,024,989
Debt-funded	742	1,530	3,032	0	0	0	0	0	0	0	5,304
TOTAL	43,299	31,682	37,461	64,966	85,532	147,508	137,239	148,000	173,947	160,659	1,030,293

* Excluding debt-funded projects

Table VI-1 2019 CIP Projected Revenues and Uses of Funds

(in millions of dollars, inflated)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	TOTAL
Sources of Funding											
Water Sales Revenues	117.1	128.4	140.3	147.4	154.6	161.9	169.4	177.2	185.3	193.8	1,575.4
Revenue Increases	7.0	7.7	5.3	5.5	5.8	6.1	6.4	6.6	6.9	7.3	64.6
Facility Reserve Charges	6.8	7.4	8.3	9.1	10.0	10.8	11.3	11.6	11.8	11.9	99.0
City of Brentwood	5.9	4.4	4.7	4.9	5.1	5.3	5.5	5.8	6.0	6.3	53.9
DWD Revenue	2.6	2.7	2.7	1.4	1.5	1.5	1.6	1.7	1.7	1.8	19.2
Other Revenue	2.4	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	27.6
Interest Income	3.8	4.0	4.5	5.2	5.4	5.6	5.8	5.8	5.9	6.2	52.2
Property Taxes	3.1	3.1	3.1	3.2	3.3	3.3	3.4	3.4	3.4	3.4	32.7
Land Levy Taxes	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	7.0
Capital Funded by Others	12.7	4.7	3.7	3.5	4.3	8.4	8.5	6.1	4.2	4.4	60.5
Reserve Use[1]	17.1	4.6	(2.5)	(2.2)	(7.7)	1.8	(6.4)	1.6	(13.0)	(8.5)	(15.2)
TOTAL	179.2	170.1	173.3	181.3	185.7	208.2	209.1	223.5	216.0	230.5	1,976.9
Uses of Funds											
Operating & Maintenance	89.0	93.2	98.5	104.1	109.9	115.7	121.8	129.1	134.5	141.4	1,137.2
Capital Funded by Others	12.7	4.7	3.7	3.5	4.3	8.4	8.5	6.1	4.2	4.4	60.5
District Funded Capital	31.3	28.2	28.5	29.3	28.7	38.4	32.9	40.9	29.9	37.3	325.4
Debt Service Short-Term[2]	4.2	4.8	5.2	6.1	5.6	5.5	5.3	-	-	-	36.7
Debt Service Long-Term Committed[3]	42.0	39.2	37.4	38.3	37.2	35.2	34.6	34.8	34.4	17.2	350.3
Debt Service Long-Term Projected[4]	-	-	-	-	-	5.0	6.0	12.6	13.0	30.2	66.8
TOTAL	179.2	170.1	173.3	181.3	185.7	208.2	209.1	223.5	216.0	230.5	1,976.9

[1]Includes Restricted and Unrestricted District Reserves. Positive values reflect reserve use; negative values reflect increases.
[2]Projects financed with short-term debt include Middle River Intake, Los Vaqueros Reservoir Expansion, Shortcut Pipeline, Canal Replacement Segment 2, and District Center Building Improvement Projects.
[3]Committed long-term debt service reflects debt used to finance completed projects, including the original Los Vaqueros Reservoir, Multi-Purpose Pipeline and anticipated conversion of existing short-term debt into long-term debt.
[4]Projected long-term debt service reflects District's capacity to fund future capital projects.

4. CIP Priority/Performance Parameters

Priority Level 1

These are the highest priority of all capital projects. Projects are ranked priority level 1 if they meet one or more of the following criteria:

- **Project is required for health and safety.** This includes projects needed to protect and preserve the health and safety of customers, employees, and the public.
- **Project is required by law, regulation, or contract.** This includes projects required to meet requirements imposed by Federal, State, or local governments.
- **Project is under construction.**
- **Project is funded by applicants or outside funding source.**

As an example, an Untreated Water Reservoir Rehabilitation project would be ranked priority level 1 if it was required by the California Department of Safety of Dams or Reclamation to ensure dam safety.

Priority Level 2

Priority level 2 projects are those that provide measurable progress toward achieving the District's goals, but the District has a moderate level of control as to when these projects should be accomplished. Projects are ranked priority level 2 if they meet all of the following criteria:

- **The project has a defined scope and provides measurable progress toward achieving the District's goals.**
- **The District has a moderate level of control over the schedule.**
- **Funding is available such that rate increases are consistent with the Board policy.**
- **When return on investment is a determining factor, projects have a payback period of less than five years.**

Reservoir and pump station upgrades as recommended in the TWMP and Treated Water Renewal and Replacement (TWRR) Study are examples of projects that are priority level 2. Treated water reservoirs and pump station improvements help achieve the strategic goals of improving water system reliability and increasing operational flexibility, the District has control of scheduling, and any rate increases to fund the project are consistent with the Board policy.

Priority Level 3

Projects not meeting the criteria for priority level 1 or 2 are ranked as priority level 3. These are projects that are anticipated to be needed, but may not yet have defined scopes, schedules, or funding sources. In some cases where a project is defined but only a portion of the funding is available, the project will be phased with the funded portion in priority level 1 or 2 and the unfunded portion in priority level 3. Where return on investment is a determining factor, projects with a long-term payback of greater than five years are priority level 3 projects.

The three priority levels are consistent with those used in previous ten-year CIPs. Project priority rankings were re-evaluated during the project review process and changes were made where necessary to reflect changed circumstances.

Appendix B:
East Bay Municipal Utility District Information

East Bay Municipal Utility District (EBMUD)

References:

Biennial Budget, Fiscal Years 2018 & 2019 – Volume 1
(https://www.ebmud.com/index.php/download_file/force/5230/1265/?Budget_Book_-_Volume_1.pdf)
Capital Project Supplement Fiscal Years 2018 & 2019 – Volume 2
(https://www.ebmud.com/index.php/download_file/force/5213/1265/?Budget_Book_-_Volume_2.pdf)

Website: https://www.ebmud.com/

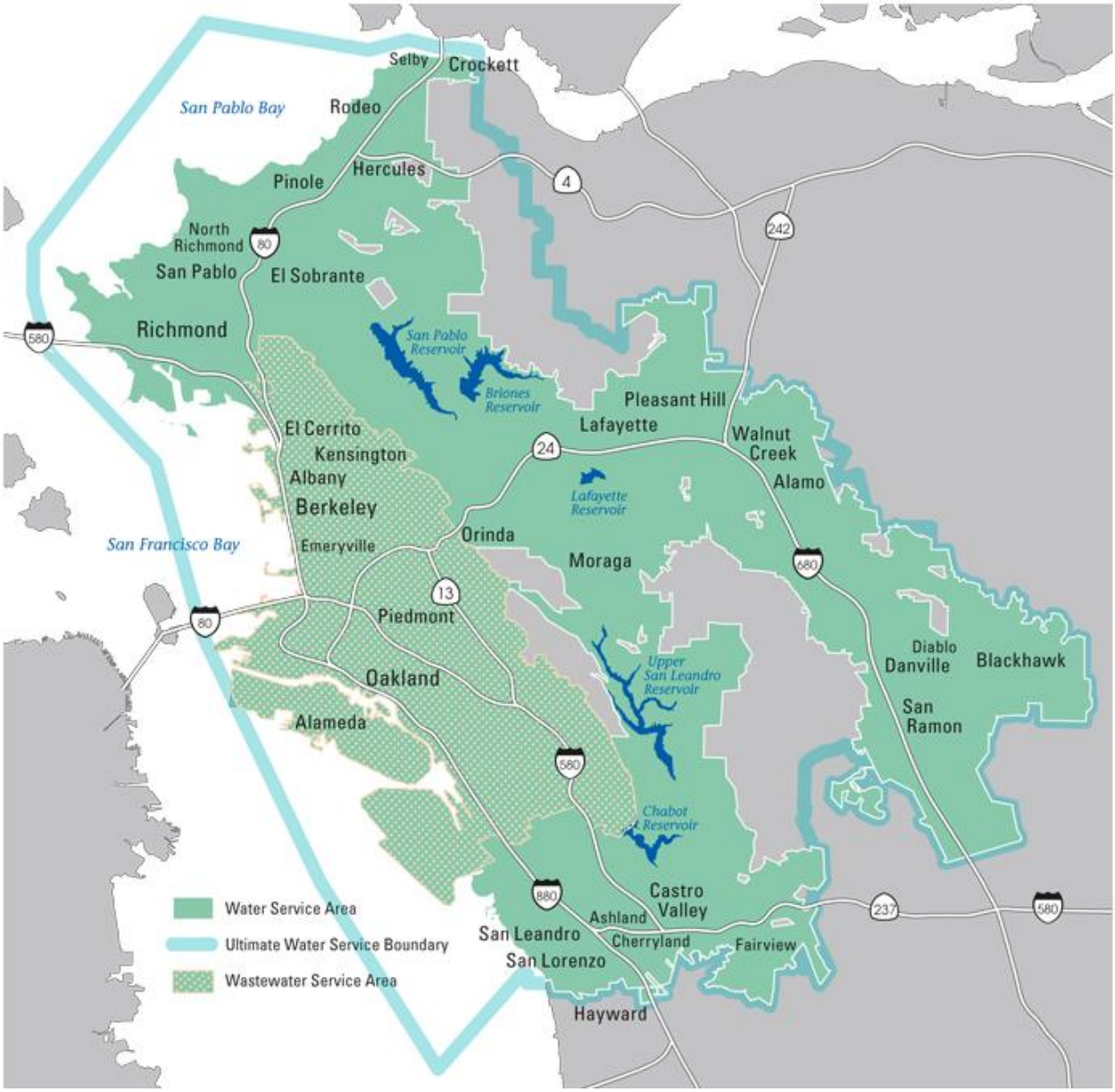
East Bay Municipal Utility District (EBMUD) supplies water and wastewater treatment for East Bay communities located within Alameda and Contra Costa Counties in California. It is a publicly owned utility formed as a Special District under the Municipal Utility District (MUD) Act passed by the state legislature in 1921.

EBMUD has a seven-member Board of Directors publicly elected from wards within the service area. EBMUD employs over 1,800 people in service to its mission.

Since 1929, when EBMUD first delivered water from the Sierra Mountains to the East Bay, the population they serve has grown from approximately 0.5 million to 1.4 million. The EBMUD water service area includes a large part of urban and suburban development in Alameda and Contra Costa Counties. It covers a 332- square mile area extending from Crockett in the north to San Lorenzo in the south, and eastward from San Francisco Bay through the Oakland-Berkeley hills to Walnut Creek and south through the San Ramon Valley. 20 cities and 15 unincorporated communities located on the eastern shore of San Francisco Bay (the "East Bay") are included in the water service area. EBMUD's wastewater service area is an 88-square mile area along the east shore of the bay extending from Richmond in the north to Oakland in the south.

Ninety percent of EBMUD's water comes from the 627-square mile watershed of the Mokelumne River located on the western slope of the Sierra Nevada. This area is mostly national forest, EBMUD-owned lands and other undeveloped lands. The Mokelumne watershed collects snowmelt which flows into EBMUD's Pardee Reservoir which in turn directs water supply into one or more of three large aqueducts that serve to carry this water to EBMUD's East Bay service area (see Figure B-1). When water demand is high or during times of operational need, EBMUD also draws water from their protected local watersheds (and the terminal storage reservoirs located therein).

Figure B-1: EBMUD Service Area



EBMUD's budgets are prepared on a modified cash flow basis which projects the District's cash inflows and outflows over the course of a fiscal year (July 1 through June 30) excluding physical and intangible assets such as depreciation. Revenues are recognized as they are received and accounted for while obligations for expenditures are recognized when a commitment is made through an encumbered purchase order or actual expense. EBMUD's accounts and transactions are tracked on an accrual basis, which is the basis of accounting under generally accepted accounting principles. Under this method, all assets and liabilities associated with operations are

included on the balance sheet; and revenues are recorded when earned and expenses are recorded at the time commitments are incurred.

Depreciation and amortization are handled differently in budgetary reporting and in financial reporting. In budgetary reporting, depreciation and amortization are excluded, and the repayment of the principal on debt as expense is included. In financial reporting, depreciation and amortization are included, and the repayment of the principal on debt as expense is excluded.

Financial Planning and EBMUD's CIP

EBMUD prepares a biennial strategic plan and annual financial forecasts that provide the basis for developing the budget. Long-term financial stability is a goal in the EBMUD's Strategic Plan, which includes managing the EBMUD's finances to support its needs and maintain reasonable water and wastewater rates.

Revenue requirements over a five-year planning horizon are evaluated to determine the level of rate adjustments required for the upcoming budget years. To the extent possible, increases in water and wastewater rates are adjusted to avoid large fluctuations.

EBMUD also has established policies and resolutions put in place to comply with the stipulations set forth in the MUD Act. A number of those polices set forth long range financial planning and control.

EBMUD's Capital Improvement Program Preparation

EBMUD states that their Capital Improvement Program (CIP) budget communicates the capital priorities for the next five years to enable them to identify and prioritize its infrastructure needs and plan for infrastructure investments.

EBMUD's CIP consists of three primary levels:

The highest level in EBMUD's CIP is a strategy, which groups several programs representing key capital objectives as identified in the EBMUD's Strategic Plan. The nine Water System and three Wastewater System strategies are summarized in the Capital Expenditures sections of the Water System and Wastewater System chapters.

The second level in EBMUD's CIP is a program, which represents a group of related projects combined to facilitate planning and decision-making. A discussion of the significant programs included in the CIP can be found in the CIP program highlights sections of the Water System and Wastewater System chapters.

The third level in EBMUD's CIP is a project, which is a discrete set of capital improvement tasks, coordinated by a project manager. Appropriation requests and projected spending (cash flow) are authorized at the project level.

In addition to the three primary levels of the CIP, the project level is further broken down into segments. The names of these segments, and their historic and projected appropriations, are also shown in the Capital Project Summaries portion of the biennial budget.

EBMUD's CIP Budget Preparation

EBMUD's CIP is prepared as part of the District's biennial budget process. The responsibilities for preparing and managing the CIP are shared among District staff as follows:

Project Management

Project managers work together to meet the requirements of the biennial CIP budget process and to implement a specific program or project. During the budget process, the project managers update project appropriations and cash flows, and modify project descriptions and justifications to identify recent and anticipated major accomplishments. Managers also work together to identify the most effective ways to schedule, staff, and coordinate projects.

The steps EBMUD uses to budget for the CIP are:

- Propose and justify new capital projects needed to carry out the goals of the District;
- Identify how resources will be allocated to accomplish the work;
- Identify the required appropriation and estimated cash flow for each project; and
- Include direct costs (without overhead), contingency and an inflation factor in the recommended appropriations and cash flows for projects.

EBMUD Capital Steering Committee (CSC)

EBMUD uses a CSC, which consists of Department Directors and Managers from divisions in charge of capital projects. The CSC acts as the top level of responsibility for the creation of the CIP during the budget preparation process. In addition to the three primary levels of the CIP, the project level is further broken down into segments, and their historic and projected appropriations are also shown in the Capital Project Summaries portion of the biennial budget.

CSC Responsibilities include:

- Serve as an advisory group to the General Manager and the Budget Office;
- Review projects for opportunities to combine programs and projects, streamline costs, and determine the necessity for proposed new projects;
- Confirm the adequacy of District resources to complete proposed projects;
- Scrutinize proposed project cash flow amounts;

- Establish priorities and finalize the list of individual projects to be presented to the General Manager and Board of Directors based on available resources and project justification;
- Review the status of the CIP regularly;
- Work with project management staff to resolve administrative issues; and
- Authorize necessary changes to project scope, schedule and budget that are within staff's administrative authority.

EBMUD's Budget Office

EBMUD's Budget Office duties include:

- Manage the CIP budget preparation and planning process;
- Provide staff support to the CSC;
- Ensure that the decisions of the CSC and General Manager are reflected in the budget;
- Determine types and levels of funding necessary for the CIP;
- Report to the General Manager and CSC the status of capital project appropriations and cash flow spending; and
- Report CSC recommendations regarding adjustments to the CIP that require either General Manager or Board approval.

EBMUD's Budget Process

EBMUD develops a financial plan and biennial budget for both their Water and the Wastewater Systems. The budgets cover the operations and capital programs proposed and sets levels of related operations, capital and debt service expenditures that may be made.

EBMUD's budget reflects "the costs necessary to provide customers with safe, reliable water and wastewater service over the long term while keeping rates fair and reasonable". The budget is used to develop rates and charges that provide adequate revenues to meet the District's needs, and encourages the efficient use of water.

Decisions on allocating resources and addressing budget needs do not end when the Board adopts the budget. Throughout the year, departments are responsible for implementing the budget and monitoring budget performance, responding to unforeseen or emergency circumstances, and participating in long-range financial planning.

EBMUD received the Government Finance Officers Association's (GFOA) Distinguished Budget Presentation Award for its FY16 and FY17 biennial budget document dated June 9, 2015. In addition, the California Society of Municipal Finance Officers (CSMFO)presented the Excellence in Budgeting Award to EBMUD.

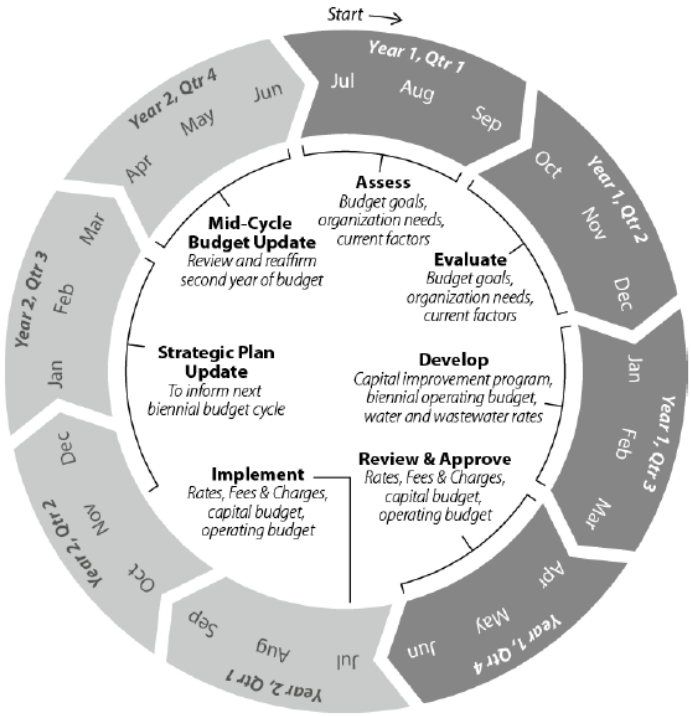
Balanced Budget

EBMUD's budget is deemed balanced when operating revenues are equal to or greater than operating expenditures including debt service, and ending fund balances meet minimum policy levels. EBMUD establishes its budget on the principle of overall revenue neutrality, as outlined in the American Water Works Association (AWWA) Principles of Water Rates, Fees and Charges recommendations for government-owned utilities. EBMUD's rates and charges are set to ensure that revenues are sufficient to recover the total cash needs in a given fiscal year.

Budget Development Calendar

The District has a biennial budget process which is represented in Figure B-2 and described more fully below.

Figure B-2: Bienniel Budget Process



Assess: Budget goals, organization needs, and current factors

July - Strategic Plan adopted.
August - Budget guidelines and assumptions prepared.
September - Capital budget development starts.

Evaluate: **Budget goals, organization needs, and current factors**

October - Operating budget development starts.
November - Review of capital budget requests begins.
December - Review of operating budget requests begins.

Develop: Biennial operating budget, capital improvement program, water and wastewater rates

January / February - Operating budget and capital improvement program recommendations are developed by Senior Management with input from EBMUD's Board of Directors. Water and Wastewater rates to fund budget needs are proposed.
March - Documents prepared to present proposed budget and rates to the Board and the public. The General Manager presents the proposed operating and capital budgets, and proposed rates, fees and charges to the Board at budget workshops.

Review & Approve: **Rates, fees & charges, capital budget, operating budget**

April - Another budget workshop occurs if needed to address any direction given by the Board at previous budget workshops. California Proposition 218 notices are distributed to property owners.
May - The General Manager's recommendations on the proposed rates, charges, and fees are filed with the Board of Directors.
June - Board adopts operating and capital budgets.

Implement: Adopted rates, fees & charges, capital and operating budgets

July - Public hearing on rates is held. EBMUD's Board adopts rates, fees and charges schedules; and positions authorization. Adopted rates and budget implementation begins. Adopted Budget, and rates and charges schedules, published.

EBMUD's Strategic Plan Update

EBMUD's Strategic Plan is updated every other year. This plan provides the District with overall direction for the next two to five years, sets priorities, and guides the development of the operating and capital budgets with those priorities.

Mid-Cycle Budget Update

EBMUD's Board of Directors approves the budget covering a two-year period. The Board reviews and reaffirms the second year of the two-year budget prior to the start of a new fiscal year in July. A Mid-Cycle Budget Update workshop given to the Board of Directors provides a budget status and any projected changes to revenues, expenditures and staffing.

Annual and Semi-Annual Budget Performance Reports

At the mid-point and conclusion of each fiscal year, EBMUD's Board of Directors is provided with a comparative analysis of expenditures to budget.

Budget Responsibilities

EBMUD's Budget decisions are made through a process that involves their Board of Directors, staff and the public. The responsibilities for financial management planning and budget control are as follows:

Departmental Responsibilities

- Prepare capital improvement program and biennial budget requests.
- Monitor financial performance and take prompt corrective action, as needed.
- Monitor key performance indicators and take corrective action, as appropriate.
- Inform the General Manager when unforeseen circumstances indicate that budget amounts may be exceeded or that expected revenues may be less than planned.

Finance Department Responsibilities

Treasury Operations

- Monitor District's liquidity and ensure funds are available as needed, invest funds in accordance with Board policy, wire funds to pay approved demands, and take other actions associated with the prudent management of the District's financial resources.
- Provide for the issuance of debt to fund the capital improvement program.
- Prepare financial projections, schedules of rates and charges, tax rate proposals and other financial materials.

Accounting

- Produce monthly and annual expenditure and revenue reports.
- Prepare and present information on financial trends to facilitate evaluation of the District's financial position and identify conditions requiring management attention.
- Prepare periodic reports on the status of expenditures, revenues, investments and actions taken to ensure the financial stability of the District.

Budget Office

- Support the development of the Strategic Plan.
- Project short-range and long-range financial needs, and recommend methods for meeting those needs.
- Prepare the District's biennial operations and capital improvement program budgets.
- Prepare budget performance reports on a monthly, quarterly, semi-annual and annual basis.
- Prepare the mid-cycle budget update.
- Develop procedures and controls to monitor and ensure compliance with the budget.
- Assist departments throughout the year with their budgets and financial issues.

General Manager's Responsibilities

• Review and present to the Board of Directors long range plans, budgets and revisions, schedules of rates and charges, payments of financial demands and other financial transactions, as necessary.
• Authorize budget transfers up to 5 percent of the fiscal years' budget between the operations and capital budgets in each of the Water and Wastewater System's budgets, provided that the total budget for each of the two systems remains unchanged.
• Authorize the allocation of budgeted funds from contingency.
• Implement emergency financial procedures within approved limits, when necessary.

Budgetary Controls

Automated budgetary controls track spending to the amounts set in EBMUD's budget. Budgetary controls function differently for operations and capital budget expenditures.

For the operations budget, each department is controlled within each expenditure category: personnel costs, contract services, and operations and maintenance. Departments are not allowed to exceed their authorized operations budget for each fiscal year.

For the capital budget, each capital project is controlled based on its appropriation. A project may not exceed its total appropriation. Unlike the operations budget, which expires on June 30 of each fiscal year, capital appropriations are multi-year and will last the life of the project.

Budget Adjustments

Adjustments to EBMUD's operations budget are reallocations of funds between organizational units, categories, and/or line items, which allow departments to have financial flexibility within established budgetary controls. Budget adjustments to the capital budget are reallocations of funds within or between projects. Approval from the affected department(s) and the Budget Office is required for all budget adjustments.

General Manager approval is required for the reallocation of funds from contingency, and the reallocation of funds between the operations and capital budgets in both the Water and Wastewater Systems. Approval from EBMUD's Board of Directors is required for increases to the total adopted budget of the Water or Wastewater System.

Selected Excerpts from CIP Documentation

1. Project Description

Capital Improvement Program - Project Summary			
Project: Maloney Pressure Zone Facility		**Project Number:** 1002575	
Strategy: Extensions and Improvements		**Program:**	Pressure Zone Improvements

Justification:

The projects are needed to replace aging infrastructure and address operational and reliability issues including storage capacity, pumping capacity, and distribution system pipeline deficiencies. The projects will improve the level of service and reduce long-term operation and maintenance costs.

Description:

The Maloney Pressure Zone Improvements include a new 3 to 5 million gallon (MG) Selby Reservoir in Crockett; upgrades to the Maloney Pumping Plant (PP) in El Sobrante and Crockett PP in San Pablo to increase the combined pumping capacity by 12.5 MGD; electrical upgrades at Maloney PP and Sobrante Water Treatment Plant (WTP) to address safety, maintenance and back up power issues at both facilities; and 18,500 feet of 36-inch pipeline to improve transmission capacity from the Crockett PP to the new Selby Reservoir.

In FY17, the Maloney PP transient analysis was completed. Design of the Maloney PP project will commence in FY18 and is scheduled to be completed in FY19. A Maloney Reservoir outage plan is scheduled for FY20, with construction of both the Maloney PP and Sobrante WTP improvements scheduled for FY19-21. Planning, design and construction of the Selby Reservoir replacement is scheduled for FY23-27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Maloney PP & SOWTP Imprvmts	9,500,000	9,300,000	0	18,800,000
Selby Reservoir Replacement	0	0	13,190,000	13,190,000
Crockett PP Capacity	180,000	450,000	5,830,000	6,460,000
Maloney PZI Planning Study	709,000	0	0	709,000

Appropriations:	
Prior Years	$ 10,389,000
2018	$ 9,300,000
2019	$ 0
2020	$ 0
2021	$ 450,000
2022	$ 0
Future Years	$ 44,640,000
Total Cost	**$ 64,779,000**

Lead Dept: ENG
Recurring: No

Funding: BOND/REV 59%
SCC 41%

In Service Date: 30-Jun-31

2. Project Line-Item Summaries

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's) FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	5 YR TOTAL
RESOURCE MANAGEMENT								
Recreation Areas								
Camanche Rec Area Upgrades	ENG	6,176	0	0	0	0	0	0
Pardee/Cam Rec Areas Impr Plan	NRD	8,929	500	775	0	0	0	1,275
Recreation Areas Total		15,105	500	775	0	0	0	1,275
Watershed Recreation								
East Bay Watershed Rec Projs	NRD	10,667	706	1,110	770	980	910	4,476
F&W Projects and Mok Hatchery	NRD	3,771	200	190	245	195	345	1,175
Mokelumne Watershed Rec HQ	NRD	4,160	0	0	1,695	0	0	1,695
Mokelumne Watershed Rec Projs	NRD	5,371	270	200	225	200	200	1,095
Pinole Valley Mtb. Bank Plan	NRD	1,055	0	0	0	0	2,300	2,300
Watershed Property Purchases	NRD	17,813	0	0	0	0	0	0
Watershed Recreation Total		42,837	1,176	1,500	2,935	1,375	3,755	10,741
RESOURCE MANAGEMENT TOTAL		57,742	1,676	2,275	2,935	1,375	3,755	12,016
WATER QUALITY								
Water Quality Improvement								
Distrib Sys Wtr Quality Imprv	WQD	18,200	1,500	1,500	1,500	1,500	1,500	7,500
Water Quality Improvement Total		18,200	1,500	1,500	1,500	1,500	1,500	7,500
Water Treatment Upgrade								
Treatment Plant Upgrades	ENG	98,585	51,962	82,300	3,000	0	0	137,262
Minor WTP Capital Work	WQD	3,710	405	427	451	476	502	2,261
Water Treatment Upgrade Total		102,295	52,367	82,727	3,451	476	502	139,523
WATER QUALITY TOTAL		120,495	53,867	84,227	4,951	1,976	2,002	147,023

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's) FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	5 YR TOTAL
WATER SUPPLY								
Aqueduct Program								
Mok Aqu No 2 & 3 Relining Proj	ENG	65,422	0	0	0	0	0	0
Mokelumne Aqueduct Recoating	ENG	43,315	0	0	0	0	1,335	1,335
Raw Water Studies and Improves	ENG	53,089	6,739	16,588	16,560	8,687	13,369	62,043
Raw Wtr Aq O&M Imprvmts	WQD	41,531	2,545	696	1,606	1,660	1,670	8,179
Aqueduct Program Total		203,358	9,284	17,286	18,266	10,347	16,374	71,557
Supply Reservoirs								
Cam So Shore WTP Replacement	WQD	6,234	735	0	0	0	0	735
Camanche Area WWTP Improvement	WQD	0	0	0	0	6,000	0	6,000
Enhanced Power Revenue	WQD	9,588	1,420	370	20	1,500	0	3,310
Pardee Dir Cap Maint & Imprvmt	WQD	1,630	106	109	112	145	88	560
Powerhouse Improvements	WQD	9,076	290	300	300	603	105	1,598
Rec Area Cap Maint & Imprvmt	WQD	3,281	155	260	268	276	284	1,243
Wtr Supply Monitoring System	WQD	1,757	70	30	38	50	50	238
Supply Reservoirs Total		31,565	2,776	1,069	738	8,574	527	13,684
Water Conservation								
Water Conservation Project	CUS	63,632	3,800	3,918	4,030	4,155	4,280	20,183
Water Conservation Total		63,632	3,800	3,918	4,030	4,155	4,280	20,183
Water Recycling								
East Bayshore	WRD	55,408	2,573	2,094	5,170	7,500	5,730	23,067
RARE Water Project	WRD	64,802	0	0	104	280	0	384
SRV Recycled Water Program	WRD	69,171	12,724	6,497	17,834	10,552	1,948	49,355
Water Recycling WSMP	WRD	16,068	500	0	601	1,113	2,315	4,529
No Richmond Recy Wtr Fac Impr	WRP	12,868	927	1,275	449	452	475	3,687
Water Recycling Total		218,337	16,724	9,866	23,958	19,907	10,468	80,922
Water Supply Mgmt Program								
Addl Supplemental Supply Projs	WRD	103,157	0	0	0	0	0	0
Bayside Groundwater Project	WRD	58,164	0	0	0	0	0	0
Freeport Regional Wtr Project	WRD	251,140	0	0	0	0	0	0
Water Supply Mgmt Program Total		412,461	0	0	0	0	0	0
WATER SUPPLY TOTAL		929,353	32,584	32,138	46,992	42,983	31,649	186,345

APPROPRIATIONS SUMMARY (IN 000'S) Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	5 YR TOTAL
3,198,156	346,450	327,459	243,781	324,743	244,209	1,486,641

3. Project Roll-Up Summaries

WATER SYSTEM FUND - CAPITAL BUDGET FIVE-YEAR FINANCIAL FORECAST ($ Millions)						
	Forecast					
	FY18	FY19	FY20	FY21	FY22	Totals
Beginning Balance	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	-
Resources:						
Revenue Funded Capital	70.7	101.1	135.6	143.1	173.7	624.2
New Bond Proceeds	175.9	148.6	151.4	176.4	130.3	782.6
Loans Proceeds	0.0	0.0	0.0	0.0	0.0	0.0
Grants	0.5	0.3	0.2	0.4	0.2	1.5
Reimbursements	20.6	19.9	18.2	17.2	17.4	93.3
Commercial Paper	0.0	0.0	0.0	0.0	0.0	0.0
Total Resources	**267.7**	**269.8**	**305.4**	**337.2**	**321.5**	**1,501.6**
Expenditures:						
Capital Cash Flow	227.7	229.8	264.2	294.7	277.8	1,294.3
Administration of Capital	40.0	40.0	41.2	42.4	43.7	207.3
Total Expenditures	**267.7**	**269.8**	**305.4**	**337.1**	**321.5**	**1,501.6**
Ending Balance	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	-
Debt Percentage of Funding	**65.7%**	**55.1%**	**49.6%**	**52.3%**	**40.5%**	**52.1%**

Numbers in the table may be rounded.

FY16-20 vs. FY18-22 Appropriation Capital Improvement Program by Strategy ($ Thousands)					
	Appropriation		Change		% of
Strategy	FY16-20	FY18-22	$	%	FY18-22
Emergency Preparedness*	0	0	0	0%	0%
Extensions & Improvements	237,302	194,672	(42,630)	-18%	13%
Facilities, Services & Equipment	64,024	89,269	25,245	39%	6%
Maintaining Infrastructure	615,707	790,748	175,041	28%	53%
Regulatory Compliance	62,707	40,068	(22,639)	-36%	3%
Resource Management	4,813	12,016	7,203	150%	1%
Water Quality	48,627	147,023	98,396	202%	10%
Water Supply	362,139	186,345	(175,794)	-49%	13%
Non-Program Specific	14,200	26,500	12,300	87%	2%
Water Subtotal	**1,409,519**	**1,486,641**	**77,122**	**5%**	**100%**
Administration of Capital	207,345	207,345	0	0%	
Water Total	**1,616,864**	**1,693,986**	**77,122**	**5%**	

Numbers in the table may be rounded.

* No new appropriation is required.

FY16-20 vs. FY18-22 Cash Flows Capital Improvement Program by Strategy ($ Thousands)					
Strategy	Cash Flows		Change		% of
	FY16-20	FY18-22	$	%	FY18-22
Emergency Preparedness	1,268	0	(1,268)	0%	0%
Extensions & Improvements	208,605	188,805	(19,800)	-9%	15%
Facilities, Services & Equipment	60,568	85,410	24,842	41%	7%
Maintaining Infrastructure	514,023	623,807	109,784	21%	48%
Regulatory Compliance	73,329	70,808	(2,521)	-3%	5%
Resource Management	7,306	11,331	4,025	55%	1%
Water Quality	39,625	116,811	77,186	195%	9%
Water Supply	263,559	197,309	(66,250)	-25%	15%
Non-Program Specific	0	0	0	0%	0%
Water Sub-total	**1,168,283**	**1,294,281**	**125,998**	**11%**	**100%**
Administration of Capital	207,345	207,345	0	0%	
Water Total	**1,375,628**	**1,501,626**	**125,998**	**9%**	

Numbers in the table may be rounded.

4. CIP Priority/Performance Parameters

LONG TERM FINANCIAL STABILITY

The District has a goal to manage its finances to meet its funding needs and maintain reasonable rates. Strategies to accomplish this goal include developing a financial plan to meet long-term funding needs; implementing equitable rates; ensuring integrity and accountability in financial management; and implementing new technologies that improve efficiency. The following KPIs measure our progress in achieving our financial stability goal.

Key Performance Indicator	FY16 Target	FY16 Performance	FY16 Target Met?
Sufficient Revenue / Fair Rates & Charges			
• *Rates as compared to other Bay Area agencies*	At or below median: Water	Water - below median, 12 other agencies surveyed	++
	At or below median: Wastewater	Wastewater – above median, 15 other agencies surveyed	--
Financial Position			
• *% of capital program funded from debt*	≤ 65%	45% Water	++
		40% Wastewater	++
• *Debt service coverage*	≥ 1.6 times coverage	1.65 Water	++
		1.98 Wastewater	++
• *Actual reserves as % of target*	≥ 100%	>100% Water	++
		>100% Wastewater	++
Integrity, Accountability and Transparency			
• *% of planned audits completed*	100%	40%	--
• *% of audit findings resolved within 90 days*	100%	100%	++
Budget Performance			
• *Operating expenditures as a percentage of operating budget*	≤ 100%	96% Water	++
		94% Wastewater	++
• *Capital expenditures as a percentage of capital budgeted cash flow*	≤ 100%	97% Water	++
		95% Wastewater	++

++ *Target met* + *Target not met, but on track* -- *Target not met* n/a *Target/Data not available* ■ *Qualitative measure only*

Appendix C:
Las Vegas Valley Water District Information

Las Vegas Valley Water District (LVVWD)

References:

Capital Improvements Plan 2017
(https://www.lvvwd.com/assets/pdf/capital-improvements-plan.pdf)

Website: https://www.lvvwd.com/

The Las Vegas Valley Water District (LVVWD) is a subdivision of the State of Nevada. The agency was created by a special act of the Nevada Legislature in 1947 to acquire and distribute water, primarily in the Las Vegas Valley. The not-for-profit LVVWD commenced operations in July 1954 and has served as the Southern Nevada region's largest municipal water provider since that time. As of 2017, their water distribution system comprised more than 6,500 miles of pipeline, 53 pumping stations, 70 reservoirs/tanks, 76 production wells, approximately 400,000 water meters and a 3.1 megawatt solar-electric system.

For much of its past, the LVVWD focused on developing new facilities to meet the evolving needs of their community. Between 1980 and 1998, Clark County was among the fastest-growing communities in the nation, which necessitated major capital investments in new infrastructure. However, conditions changed in late 2007.

In 2007 the nation began to experience the most significant economic downturn since the Great Depression. Southern Nevada was hit harder than almost any other region in the nation, and this period of recession marked the first time in decades that the Las Vegas area experienced a sustained period of little or no growth. During this time, most new residential and commercial development projects came to a halt. While economic recovery since 2007 has been occurring, the massive booms of prior decades have not returned. As a result, LVVWD's operational priorities have changed in response to meet the evolving needs of the community. While expanding the water system to accommodate new customers remains one of LVVWD's core responsibilities, the emphasis has shifted to ongoing operations and infrastructure management.

As of present day, LVVWD provides water service to an area approximately 300 square miles in size, serving more than 375,000 residential and commercial customers through a network of approximately 6,500 linear miles of pipelines and service laterals (see Figure C-1).

Accomplishing this task requires the agency to maintain millions of individual components, ranging in size from the small service laterals that deliver water to individual homes to massive pumping stations and reservoirs.

Figure C-1: Las Vegas Valley Water District Service Area

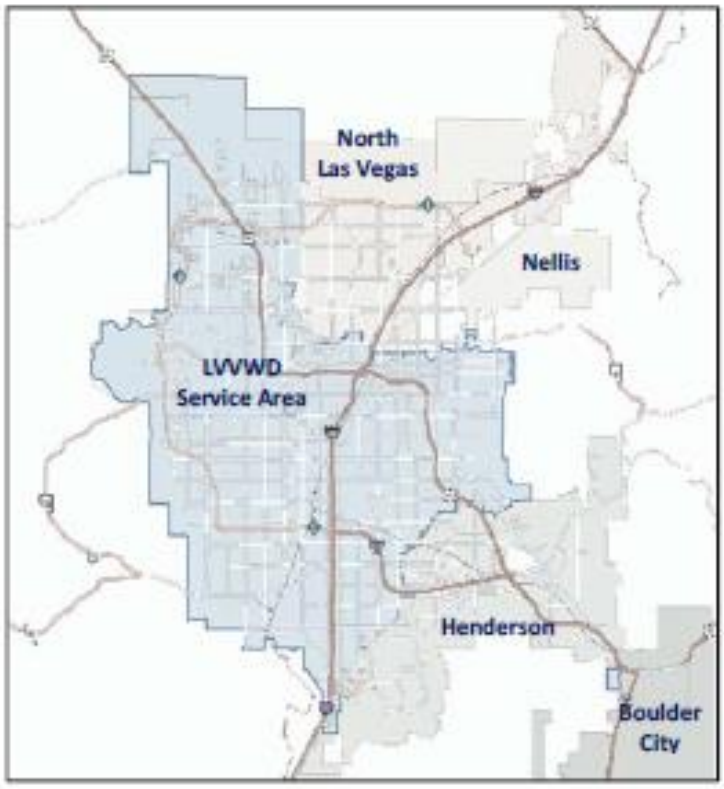


Image: LVVWD Service Area

Strategic Approach to Capital Management

As a public, not-for-profit water agency, LVVWD is committed to managing its finances and assets responsibly. The system represents a significant community investment; in total, the agency's capital assets were valued at $1.7 billion as of the 2017 fiscal year. As with all capital assets, depreciation is inevitable, although the rate and degree thereof are influenced by many factors. The responsibility for optimizing the value of the assets—maximizing service life while maintaining the reliability of water delivery—rests with the LVVWD's infrastructure management and maintenance programs.

Calculating the necessary rate of replacement for water facilities is the responsibility of the LVVWD's Infrastructure Management department, which maintains an inventory of water system components categorized by type, age and material. The service life of a given pipeline,

pump or valve is influenced by a variety of factors. Knowing when to replace assets is the key to operational efficiency, as well as minimizing leaks and service interruptions. These engineering professionals also work to optimize infrastructure value by refurbishing equipment when possible instead of prematurely replacing it.

CIP Components

LVVWD considers groups projects into three primary CIP Components:

- Asset Management Improvements
- Maintaining Water Quality
- New Development Improvements

Asset Management Improvements

The Infrastructure Management department is primarily responsible for overseeing LVVWD's physical assets, with considerable input and support from their Engineering, Operations, Water Quality and Finance work groups. Because the service life of individual components comprising a large water system can vary by decades, Infrastructure Management uses sophisticated planning tools to develop repair/replacement schedules, allowing for orderly and fiscally prudent implementation. The agency's infrastructure management strategy is based on five foundational principles:

• Extend infrastructure life and prevent failures through timely maintenance and repairs

• Protect system assets through continual condition assessments

• Assess and prioritize projects to ensure critical system operations remain functional

• Minimize financial impacts through orderly, phased implementation

• Minimize financial outlays by maximizing asset life cycle

A substantial percentage of LVVWD's water system was constructed in the 1980s to address increasing demands. As a result, numerous facilities now exceed 30 years of age. Key system components that must be addressed during the 10-year planning horizon include: reservoirs, pumping stations, pipelines and service laterals, valves and vaults, meters, water quality systems, groundwater wells, facilities and building improvements, electrical systems, and communication systems.

Cumulative costs associated with the repair and/or replacement of these hundreds of thousands of components—measures necessary to maintain current service levels, system

reliability and water quality—are projected to be approximately $390 million over the next decade.

Maintaining Water Quality

As a Public Water System, the LVVWD is responsible for ensuring compliance with all water quality regulations, enforced by the Environmental Protection Agency and the Nevada Division of Environmental Protection's Bureau of Safe Drinking Water.

Chief among the many regulatory mandates that LVVWD is currently addressing is related to "backflow protection," a mechanism that prevents the reintroduction of water from private properties into the municipal water system. Compliance with this relatively new State of Nevada requirement will entail the installation of approximately 35,000 backflow prevention devices on meters throughout the District's service area.

New Development Improvements

During the recession, LVVWD deferred all nonessential construction projects. While this decision was fiscally prudent, it required engineers to devise mid-term solutions that could provide access to the municipal water supply for residents and businesses in newly developed areas without investing in additional reservoirs and pumping stations. While those solutions proved effective, the absence of core infrastructure in affected areas undermines system reliability and subjects customers to vulnerability that is inconsistent with organizational standards.

To address this issue and ensure these customers receive the same level of reliability as their counterparts in other parts of the valley, LVVWD plans to construct a total of four reservoirs, four pumping stations and associated appurtenances during the planning horizon. LVVWD anticipates spending approximately $125.7 million to design and construct these facilities, which will both serve existing customers and support additional development. Additional costs associated with facilities needed to support new communities will be borne by developers.

10-Year Capital Planning

In total, the asset management, water quality protection and system expansion activities outlined LVVWD's most recent CIP document represent an investment of $616 million over a 10-year planning horizon (see Figure C-2). These improvements are designed to help LVVWD maintain current service and water quality standards, ensuring continued reliability for their residents and businesses.

Figure C-2: CIP Budget Allocation

Figure 1.2: Cost Distribution by Improvement Type

Selected Excerpts from CIP Documentation

1. Project Line-Item Summaries

CAPITAL PROJECTS

2300 - Information Technology

Enterprise Content Management System	$	1,800,000
Genesys Call Center		1,835,100
Purchase and Budget System Consolidation		2,160,000
Subtotal	**$**	**5,795,100**

2500 - Public Services

Springs Preserve Garden Paving	$	67,500
Springs Preserve Exhibit Upgrades		67,500
Springs Preserve Gardens Lighting		72,000
Sustainability Gallery Exhibit Acquisition		90,000
Spring Preserve Outdoor Speaker Installation		135,000
Springs Preserve Gardens speakers and low voltage wiring installation		135,000
Springs Preserve Butterfly Playground		900,000
Springs Preserve Gardens Electrical Service Expansion, Phase II		990,000
Subtotal	**$**	**2,457,000**

2800 - Customer Care and Field Services

Annual Large Meter Replacement	$	1,665,000
Subtotal	**$**	**1,665,000**

3400 - Engineering

Pipeline Installation in Rip Van Winkle Lane at Matterhorn Way	$	25,200
Pipeline Installation near Bromley Ave and Michael Way		27,000
Installation of Diesel Exhaust Fluid Dispenser at the fuel islands LVVWD campus		27,000
3090 Zone North Interim Tank		27,000
3090 Zone North Interim Tank Inlet/Outlet Pipeline		27,000
Pipeline Installation in Sunland Ave between Tonopah Dr and Montrose St		28,800
Pipeline Relocation from Alley between 7th and 8th St from Ogden Ave to Stewart Ave		29,880
Pipeline Installation at Mayfair Place and 16th St		36,000
Fleet Services antifreeze and used oil storage area upgrade		45,000
On-Call Concrete Replacement Services, 2017		45,000
Pipeline Installation Walnut Road from Welter Ave to Boston Ave		51,840

2. Project Roll-Up Summaries

Asset Management Projects

ACTIVITY	10-YEAR	PERCENTAGE
Meter Program	$32.4 million	8%
Vault Program	22.5 million	6%
Service Laterals	70.0 million	18%
Pipeline Rehabilitation and Replacement	130.0 million	33%
Facilities Improvements	27.0 million	7%
SCADA	6.0 million	2%
Pump Stations	6.7 million	2%
Reservoirs	4.65 million	1%
Wells	15.6 million	4%
Reclaimed Water	1.7 million	<1%
Fleet, Safety and Security	39.3 million	10%
Misc. Capital	34.5 million	9%
TOTAL	**$390.3 million**	

New Facilities Projects

ACTIVITY	COST
Northwest Facilities	
5 MG Reservoir & Associated Inlet/Outlet Pipeline	$10.6 million
10 MG Reservoir & Associated Inlet/Outlet Pipeline	26.0 million
Pumping Station & Discharge Pipeline	13.6 million
Pumping Station & Discharge Pipeline	10.9 million
Pressure Reducing Valves	700,000
Subtotal	*$61.8 million*
Summerlin Facilities	
10 MG Reservoir & Inlet/Outlet Pipeline	$22.5 million
Pumping Station	7.6 million
Subtotal	*$30.1 million*
Southwest Facilities	
10 MG Reservoir	$20.8 million
Pumping Station	12.3 million
Pressure Reducing Valves	700,000
Subtotal	*$33.8 million*
TOTAL	**$125.7 million**

Appendix D:
Los Angeles Department of Water and Power Information

Los Angeles Department of Water and Power (LADWP)

References:

Water System Ten-Year Capital Improvement Program for the Fiscal Years 2010-2019.

Note that LADWP prepares a document each year (as of the date of this report, LADWP's Document for FY 2018-2019 was being finalized). Those annual documents, while not requiring Board adoption, presents a snapshot of the present status of the CIP projects and associated project and program goals. These annual documents are referred to internally at LADWP as "Capital Books".

Website: https://www.ladwp.com

In 1902, the City of Los Angeles (City) created a municipal water system by acquiring title to all properties of a private water company. In 1925, the Los Angeles Department of Water and Power (LADWP) was established by a new city charter. The availability of water has been essential to the economic development of the City, growing from a town with a population of approximately 146,000 in 1902 to the nation's second largest city with nearly 4 million people. As the largest municipal utility in the nation, LADWP delivers safe and reliable water service to over 675,000 active service connections. Note that present-day LADWP houses both the city's power and water systems.

During the 1900s, continued population growth coupled with drought conditions led the city to identify that a source other than the Los Angeles River needed to be identified to address their water supply needs. Staff at the time identified the Owens Valley more than 200 miles away. In 1907, the city began construction of the 233-mile Los Angeles Aqueduct.

With a stable water supply, numerous adjacent communities voted to become a part of the city of Los Angeles, increasing the city's population and further expanding its need for water. In 1928, Los Angeles joined with other cities to form the Metropolitan Water District of Southern California (MWD). The MWD, a water wholesaler, would bring additional supplies from the Colorado River and the California Aqueduct to the city of Los Angeles and surrounding areas.

LADWP delivers water to its customers through a complex and expansive network of large and small pipes, with varied functions, measuring more than 7,200 miles in length. LADWP's trunk lines are pipes with a diameter greater than 20 inches that transport water from wells and aqueducts to reservoirs and enable the movement of water from one area of the city to another. Trunk lines connect to smaller distribution mains. LADWP's water distribution system is so extensive, that if all the pipes from trunk lines and distribution mains were laid end to end in a straight line, they would stretch from Los Angeles to New York and back again.

LADWP's CIP (Water Side)

The CIP that BAWSCA was provided by LADWP (their 2010-2019 CIP) is nearing the end of its life and will soon be updated (as of the date of this report, the CIP for 2019-2028 is about to be released). Note, that as it was the most-recent and thorough document for review, for the purposes of this comparison it was utilized.

LADWP's Water System's CIP is a ten-year plan focused on maintaining or replacing existing components of the Water System and constructing new facilities. Many of LADWP's facilities pre-date World War II and are near the end of their useful lives. In addition to aging infrastructure, existing and anticipated changes in state and federal water quality regulations affect the way LADWP stores and treats water that arrives at the tap. LADWP is responding to these changes and improving its water quality by eliminating daily dependence on large in-city open reservoirs. LADWP is also instituting more comprehensive monitoring programs to ensure that the water delivered is the highest quality and meets all state and federal drinking water regulations. Further, LADWP is addressing infrastructure reliability, as their aging infrastructure is requiring replacement/upgrades. Also, LADWP is investing in local water supply, as local supply is targeted to be an increasing share of the overall supply over the coming years, in keeping with an aggressive supply goal as set by elected representatives of the City.

LADWP's Capital Improvement Program budget is segmented into four major categories:

1. Infrastructure Reliability

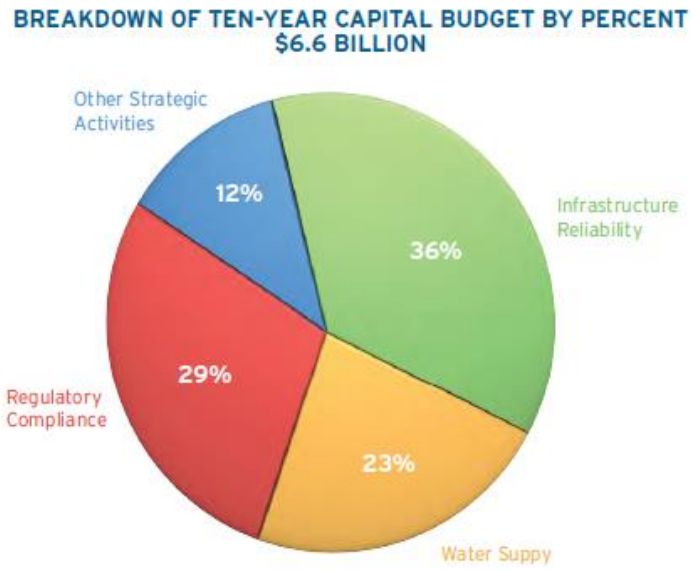
2. Water Supply

3. Regulatory Compliance

4. Other Strategic Activities

Figure D-1 illustrates the percentage each category represents of the total ten-year capital budget. The total capital budget (as projected from 2010-2019) was estimated to exceed $6 billion dollars.

Figure D-1: CIP Budget Allocation by Category



Infrastructure Reliability

Infrastructure projects provide LADWP customers with a reliable source of water by replacing or upgrading major system components that are outdated, malfunctioning, or susceptible to seismic activity. The Infrastructure Reliability budget was 36% of the ten-year capital budget (in the current budget update, that percentage will increase to 48%), comprised mostly of work on distribution mains, major system connections, and reservoir improvements. In addition to reliability, many projects also have water quality benefits. The meter replacement program, for example, is the first of its kind in the country providing Los Angeles residents with lead-free meters.

Water Supply

Water Supply projects ensure that LADWP has adequate sources and supply of water for the city of Los Angeles. Projects under this budget category involve maintaining groundwater supplies, increasing recycled water supplies, developing new sources of water supply, enhancing water conservation, and ensuring efficient environmental restoration activities in the Eastern Sierra. Water Resources projects represented approximately 23% of the ten-year capital budget (in the next budget update, that percentage will decrease to approximately 15%), with nearly half allocated for environmental activities in the Owens Valley (in the coming budget, Owens Valley environmental related work will be approximately one third of the overall budget).

Regulatory Compliance

Twenty-nine percent (29%) of the total capital budget was allocated to the many water quality improvement projects required to meet increasingly stringent water quality standards that were envisioned to be put in place between 2010 thru 2019 (in the next budget cycle, that percentage will be 23%). The Regulatory Compliance budget underscores LADWP's commitment to comply with local, state, and federal regulations. These projects also affect the taste, smell, and appearance of the water supply. Major changes related to storing water in open reservoirs must be implemented to comply with state and federal regulations. As part of this compliance effort, a citywide expansion of chloramine disinfection as LADWP's primary disinfectant is underway. The switch from chlorination to chloramines was one of the water quality improvement programs driven by changes in regulation. The Water System's chloramination program is ambitious and the Water System continues to explore other innovative treatment solutions.

In addition to the chloramination program, the Water System undertook a project to add ultraviolet (UV) light treatment at the Los Angeles Aqueduct Filtration Plant as another means of reducing disinfection byproducts and comply with the recent regulations. As of the date of this report, that project is now complete. Note that the UV facility was added after the filtration process and provides the final disinfection.

Other Strategic Activities / Operational Support

Other strategic activities/Operational Support comprised the remaining 12% of the capital budget (this coming fiscal year, it will comprise 14%). That work includes support functions that play a critical role in providing the necessary tools and equipment for improved employee productivity and customer service. These projects included costs relating to facilities, furniture, lab equipment, computer software and hardware, and other items necessary for the day-to-day operations of the Water System. The Water System's information technology budget included equipment for individual users, as well as larger systems that control and monitor the water system. Transportation vehicles, heavy construction equipment, and related fueling and maintenance facilities are also included in this category.

Selected Excerpts from CIP Documentation

1. Project Line-Item Summaries

TABLE 2 - SUMMARY OF INFRASTRUCTURE CAPITAL BUDGET FOR FISCAL YEARS 2010 - 2019 (X $1,000)

Capital Improvement Program Category	2009-10 Final Budget	2010-11 Approved Budget	Program Year 2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Ten-Year Proposed Budget
LA Aqueduct A & B South	7,120.8	10,497.1	9,957.6	7,327.3	7,571.5	8,072.9	8,152.1	8,136.2	8,248.4	8,580.7	82,792.6
LA Aqueduct A & B North	9,075.3	6,815.0	2,226.0	1,886.1	2,051.6	2,150.6	2,198.6	2,265.5	2,328.8	2,400.7	33,335.2
Pump Stations	3,682.2	17,057.2	31,850.5	40,091.4	39,959.8	35,309.0	34,202.8	41,523.2	53,020.4	63,317.8	360,016.3
Seismic Improvements	2,539.5	23,279.7	14.3	685.2	601.4	512.3	552.0	568.5	2,727.5	4,392.1	35,832.5
Regulator Stations	1,838.0	2,426.0	2,608.9	2,947.8	2,948.2	8,579.6	7,847.2	2,368.2	1,043.5	1,081.6	33,709.0
Trunk Lines & Major System Connections	4,403.3	11,710.5	18,023.9	22,381.0	54,850.7	57,542.4	52,774.0	49,899.0	17,849.6	11,876.8	436,402.2
Distribution Mains	50,880.3	54,473.5	65,890.0	71,349.1	73,895.4	76,529.6	78,884.2	81,484.5	83,831.8	86,463.8	722,972.2
Services, Meters, and Hydrants	39,239.8	41,689.4	43,566.4	45,565.0	47,544.7	49,809.1	51,241.2	52,908.9	54,414.0	56,296.0	482,774.5
Reservoir Improvements	6,326.9	41,648.5	30,660.9	32,757.3	37,367.4	25,961.0	35,981.1	40,165.0	146,415	149,188.5	295,767.9
Griffith Park Improvements	187.6	750.1	899.1	992.6	2,729.5	4,187.3	4,665.8	8,736.7	5,356.7	6,931.2	34,896.3
Total Infrastructure Reliability	125,273.7	208,287.0	204,907.6	225,654.6	268,820.2	277,639.5	275,691.0	295,064.7	303,595.2	330,737.2	2,515,518.7
Reimbursements	(17,832.9)	(19,386.5)	(15,885.0)	(15,885.0)	(15,460.0)	(15,460.0)	(15,460.0)	(15,460.0)	(15,400.0)	(15,400.0)	(161,823.0)
Total Infrastructure less reimbursements	107,440.8	188,900.5	189,022.6	209,769.6	253,360.2	262,179.5	260,159.0	279,604.7	288,195.2	315,337.2	2,353,695.8

TABLE 3 - SUMMARY OF WATER SUPPLY CAPITAL BUDGET FOR FISCAL YEARS 2010 - 2019 (X $1,000)

Capital Improvement Program Category	2009-10 Final Budget	2010-11 Approved Budget	Program Year 2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Ten-Year Proposed Budget
Resource Development	1,178.4	3,726.8	961.6	-	5.2	8.9	3.7	-	-	-	6,411.6
Water Recycling	29,599.3	47,671.8	55,663.4	47,932.9	46,370.6	52,756.3	54,989.6	56,948.7	56,665.2	62,685.8	503,832.5
Groundwater Management	12,185.3	22,980.9	33,948.3	20,563.1	40,079.4	62,789.9	334,497.6	341,395.4	99,267	5,794.7	973,356.3
Conjunctive Use Capital	-	999.6	998.2	-	-	-	-	-	-	-	1,997.8
Watershed-Stormwater Capture	1,330.5	1,068.3	2,598.5	10,436.2	10,700.8	2,518.7	2,808.7	2,099.1	2,088.3	899.6	35,080.5
Total Water Supply/ Resources	44,826.5	76,370.0	94,162.0	78,926.2	97,156.0	117,996.8	390,719.6	400,443.2	158,015.0	68,639.4	1,527,254.7
Reimbursements	-	-	-	-	-	-	-	-	-	-	-
Total Water Supply less Reimbursements	44,826.5	76,370.0	94,162.0	78,926.2	97,156.0	117,996.8	390,719.6	400,443.2	158,015.0	68,639.4	1,527,254.7

2. Project Roll-Up Summaries

TABLE 1 - SUMMARY OF CAPITAL BUDGET FOR FISCAL YEARS 2010 - 2019 (X $1,000)

Capital Improvement Program Category	2009-10 Final Budget	2010-11 Approved Budget	Program Year 2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Ten-Year Proposed Budget
Infrastructure Reliability											
Capital Expenses	125,273.7	208,287.0	204,907.6	225,654.6	268,820.2	277,639.5	275,679.1	295,064.3	303,515.2	330,737.2	2,535,518.9
Projected Reimbursements	(17,832.9)	(19,380.5)	(15,885.0)	(15,885.0)	(15,460.0)	(15,460.0)	(15,460.0)	(15,460.0)	(15,400.0)	(15,400.0)	(182,623.4)
Total Infrastructure Reliability less reimbursements	107,440.8	188,906.5	189,022.6	209,769.6	253,360.2	262,179.5	260,159.1	279,604.3	288,115.2	315,337.2	2,353,895.5
Water Supply											
Capital Expenses	44,826.5	76,370.0	94,162.0	78,926.2	97,356.0	117,996.8	390,719.6	400,443.2	158,015.0	68,639.4	1,527,254.7
Projected Reimbursements	-	-	-	-	-	-	-	-	-	-	-
Total Water Supply less reimbursements	44,826.5	76,370.0	94,162.0	78,926.2	97,356.0	117,996.8	390,719.6	400,443.2	158,015.0	68,639.4	1,527,254.7
Regulatory Compliance											
Capital Expenses	231,671.3	211,786.1	246,230.7	269,226.7	173,432.0	148,025.1	148,282.9	148,171.1	175,240.8	196,446.5	1,947,513.0
Projected Reimbursements	-	-	(36,000.0)	-	-	-	-	-	-	-	(36,000.0)
Total Regulatory Compliance less reimbursements	231,671.3	211,786.1	210,230.7	269,226.7	173,432.0	148,025.1	148,282.9	148,171.1	175,240.8	196,446.5	1,911,513.0
Other Strategic Activities											
Capital Expenses	102,218.8	106,463.2	121,295.5	106,387.0	104,123.3	107,336.1	109,229.2	100,674.0	100,043.4	87,695.3	1,045,454.8
Projected Reimbursements	(28,009.7)	(27,781.9)	(29,430.6)	(26,769.0)	(26,668.7)	(30,744.8)	(30,529.0)	(27,709.1)	(28,273.2)	(28,786.4)	(286,654.3)
Total Other Strategic Activities less reimbursements	74,209.1	78,681.4	91,864.9	80,118.0	77,454.6	77,091.3	78,700.2	72,964.9	71,770.2	58,908.9	758,800.5
Ten Year Capital Budget											
Capital Expenses	503,983.1	602,906.3	666,591.8	680,194.5	643,531.5	650,997.5	923,850.8	944,353.1	736,814.4	682,518.4	7,035,741.4
Total Projected Reimbursements	(45,835.6)	(47,162.3)	(81,315.6)	(42,654.0)	(42,128.7)	(45,704.8)	(45,988.0)	(43,169.1)	(43,673.2)	(44,186.4)	(481,277.7)
Total Ten Year Budget less reimbursements	458,147.50	555,744.00	585,276.20	638,040.50	601,402.80	605,292.70	877,862.80	901,184.00	693,141.20	638,372.00	6,554,463.70

Appendix E:
Metropolitan Water District of Southern California Information

Metropolitan Water District of Southern California (MWDSC)

References:

Capital Investment Plan Appendix – Fiscal Years 2018/19 and 2019/20

Website: http://www.mwdh2o.com/

The Metropolitan Water District of Southern California (MWD) is a regional wholesaler that delivers water to 26 member public agencies – 14 cities, 11 municipal water districts, one county water authority – which in turn provides water to 19 million people in Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties (see Figure E-1). MWD is governed by a 38-member board of directors who represent their respective member agencies ensuring each member agency is part of the governance of Metropolitan.

To supply the more than 300 cities and unincorporated areas in Southern California with reliable and safe water, MWD owns and operates an extensive water system including: the Colorado River Aqueduct, 16 hydroelectric facilities, nine reservoirs, 819 miles of large-scale pipes and five water treatment plants. Four of these treatment plants are among the 10 largest plants in the world. In fact,

MWD is the largest distributor of treated drinking water in the United States. MWD imports water from the Feather River in Northern California and the Colorado River to supplement local supplies. It also helps its member agencies develop water recycling, storage and other local resource programs to provide additional supplies and conservation programs to reduce regional demands.

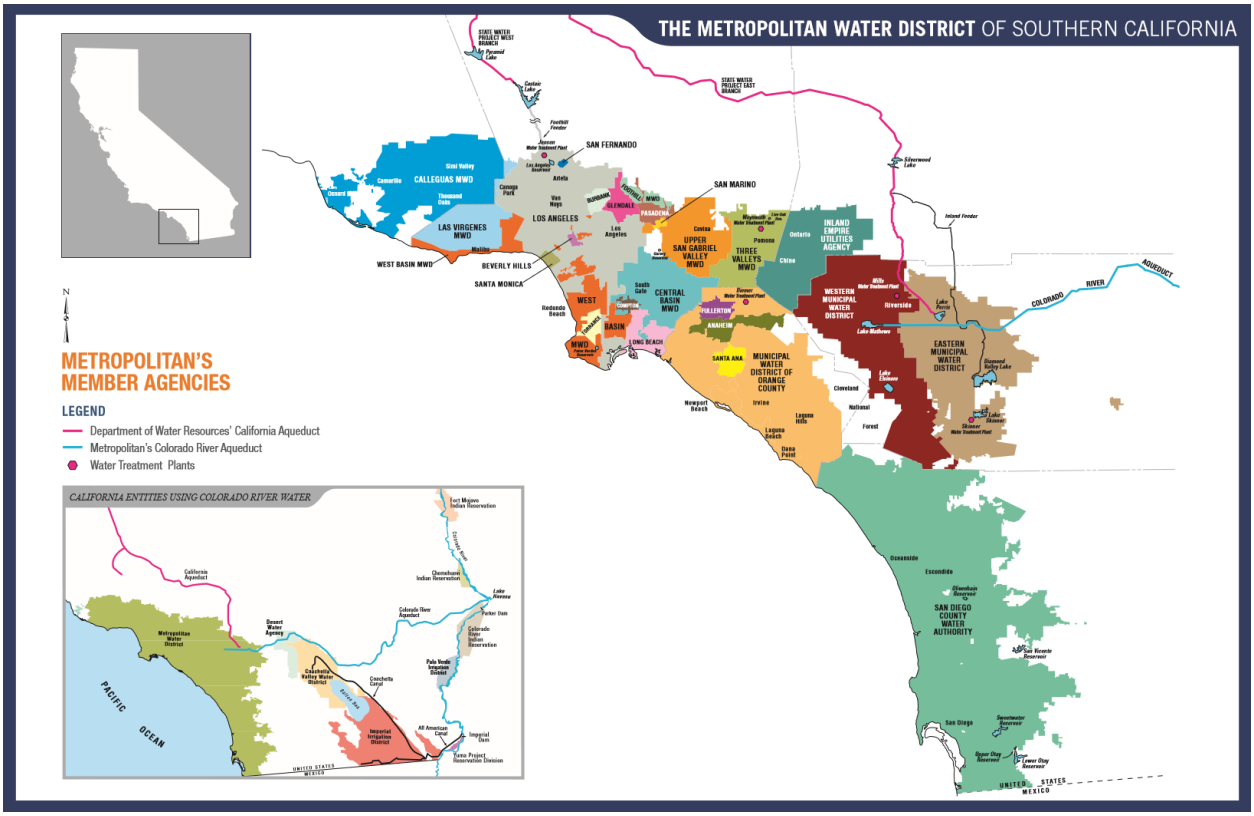
Metropolitan currently delivers an average of 1.5 billion gallons of water per day to a 5,200-square-mile service area. MWD's service area is shown on Figure 1.

History

MWD was born out of the realization that Southern Californians had to unite to solve their water problems. This same ethic that led to the creation of MWD by the California Legislature in 1928. The mission has evolved over time. At first, the goal was to secure a supply from the Colorado River for the fast-growing region, a proposal that was approved by voters in Los Angeles and Orange counties in 1931. Approximately a generation later, with even greater growth on the horizon, MWD was instrumental in securing a supply from Northern California with the statewide voters approving the construction of the State Water Project in 1960.

Today, Metropolitan is advancing local supply development and conservation while investing in its traditional imported supplies. Those investments in infrastructure and water reliability make their way into MWD's CIP.

Figure E-1: Metropolitan Water District of Southern California Member Agency Service Area



MWD's Capital Improvement (e.g., Investment) Plan

General

MWD has expressed an ongoing commitment to construct and rehabilitate facilities that enable long-term, reliable water deliveries. Infrastructure reliability is a primary focus of their Capital Investment Plan, which now has an increasing emphasis on refurbishment and replacement of MWD's existing infrastructure. Other programs in their CIP focus on water quality excellence, system reliability, regulatory compliance, and enhancements to business processes that improve efficiency and provide cost savings. The break down their CIP in terms of key capital program categories as follows (note that there are currently 12 program categories in total):

- Colorado River Aqueduct Reliability - Projects under this program will replace or refurbish facilities on the Colorado River Aqueduct system in order to reliably convey water to Southern California.

- Treatment Plant Reliability - Projects under this program will replace or refurbish components at Metropolitan's five water treatment plants to reliably meet treated water demands and comply with all applicable water quality regulations.

- Distribution System Reliability - Projects under this program will replace or refurbish existing facilities within Metropolitan's distribution system, including reservoirs, pressure control structures, hydroelectric power plants, and pipelines in order to reliably meet water demands.

- Prestressed Concrete Cylinder Pipe Rehabilitation - Projects under this program will refurbish or replace Prestressed Concrete Cylinder Pipe lines to maintain water deliveries without unplanned shutdowns.

- Oxidation Retrofit Program – This program is adding new facilities to enable ozone to serve as the primary disinfectant at Metropolitan's five water treatment plants.

The CIP that is shared with the public is shared on their website, and the viewer can visit various CIP appendices to gain additional insight into program/project details.

Under the CIP, Metropolitan may have up to $300 million in construction contracts underway at a single time. The projects range in size from large scale construction at water treatment plants and on Metropolitan's vast distribution system, to smaller refurbishment projects throughout Metropolitan's 5,200-square-mile service area. The capital work is essential to provide a safe and reliable water supply for Metropolitan's member agencies.

CIP Structure

MWD prepares a two-year CIP. The CIP is structured into three levels. In descending order, they are:

1. PROGRAM

2. APPROPRIATION

3. PROJECT

The highest level of the CIP structure is Program. Programs are comprised of one or more appropriations. There are 12 capital programs described in Table E-1. Under each capital program, there is one to several appropriations, each with multiple projects.

Table E-1: Capital Programs

Program	Definition
Colorado River Aqueduct (CRA) Reliability	Projects under this program will replace or refurbish facilities and components on the CRA system in order to reliably convey water from the Colorado River to Southern California.
Cost Efficiency & Productivity	Projects under this program will upgrade, replace, or provide new facilities, software applications, or technology that will provide economic savings that outweigh project costs through enhanced business and operating processes.
Distribution System Reliability	Projects under this program will replace or refurbish existing facilities within MWD's distribution system including reservoirs, pressure control structures, hydroelectric power plants, and pipelines in order to reliably meet water demands.
Minor Capital Projects	Projects under this program will execute refurbishments, replacements, or upgrades at MWD facilities that cost less than $250,000.
Prestressed Concrete Cylinder Pipe (PCCP) Reliability	Projects under this program will refurbish or upgrade MWD's PCCP feeders to maintain reliable water deliveries without unplanned shutdowns.
Regional Recycled Water Supply Program	Projects under this program are planned to demonstrate the feasibility of recycling wastewater for recharge of groundwater basins within Southern California, for development of a potential regional recycled water supply system.
Regulatory Compliance	Projects under this program will provide for prudent use and management of MWD's assets in compliance with regulations and codes, other than water quality.
Right-of-Way and Infrastructure Protection	Projects under this program will refurbish or upgrade above-ground facilities and rights-of-way along MWD's pipelines to address access limitations, erosion related work, and security needs.
System Flexibility/Supply Reliability	Projects under this program will enhance the flexibility and/or increase the capacity of MWD's water supply and System
System Reliability	Reliability Projects under this program will improve or modify facilities throughout MWD's service area in order to utilize new processes and/or technologies, and to improve facility safety and overall reliability. These include projects related to Metropolitan's Supervisory Control and Data Acquisition (SCADA) system and other Information Technology projects.
Treatment Plant Reliability (Diemer Plant, Jensen Plant,	Projects under this program will replace or refurbish facilities and components at MWD's five water treatment plants in order to continue to reliably meet treated water demands.

Program	Definition
Mills Plant, Skinner Plant, and Weymouth Plant)	
Water Quality/Oxidation Retrofit	Projects under this program will add or upgrade facilities to ensure compliance with water quality regulations for treated water at MWD's treatment plants and throughout the distribution system.

Capital Investment Plan Development

Background

The projects that comprise the proposed CIP have been identified from many Metropolitan studies of projected water needs as well as ongoing monitoring and inspections, condition assessments, and focused vulnerability studies. Staff continues to study operational demands on aging facilities and has made recommendations for capital projects that will maintain infrastructure reliability and ensure compliance with all applicable water quality regulations, and building, fire, and safety codes. Staff has also studied business and operations processes and proposed projects that will improve efficiency and provide future cost savings. Additionally, several projects have been identified and prioritized to address uncertain or reduced allocations from the State Water Project.

CIP Development Process

The CIP is structured to reflect Metropolitan's strategic goals of providing a reliable supply of high-quality water at the lowest cost possible. As part of the CIP development process, all new and existing projects are evaluated against an objective set of criteria to ensure existing and future capital investments are aligned with Metropolitan's priorities for water supply reliability, water quality, and public safety.

This rigorous evaluation process has resulted in a thorough review and assessment of all proposed capital projects by staff and managers prior to inclusion in the CIP. Staff continues to conduct comprehensive field investigations that identify critical replacement and refurbishment projects and a variety of necessary facility upgrades related to infrastructure reliability as well as regulatory compliance. Project schedules are evaluated regularly in order to plan for necessary capital investments in infrastructure reliability and to accommodate the urgency of each project. Additionally, current demand projections that account for ongoing conservation, planned increased local supply production, and the economy, have been evaluated to ensure that demand and growth-related projects are appropriately scheduled.

Project Proposals

Sponsors are required to submit proposals for all projects to be considered for inclusion into the CIP. For newly proposed projects, proposals must include scope, justification, alternatives, impacts of re-scheduling work for a later time, impact on operations and maintenance costs, and an estimate of total project cost. For existing projects, staff must also provide justification for continuing the project, explain any changes since inception of the project, and describe critical phases for the upcoming years.

The projects are evaluated, rated, and prioritized based on the contents of the proposals. The guidelines provided to the project sponsors are summarized in Table E-2.

Table E-2: Project Proposal Guidelines

Section	Guideline
Appropriation and Project No. (if existing) and Project Title	If a proposed project has been previously authorized by the Board, provide the Appropriation and Project numbers along with the Project Title. If not previously authorized, provide a project title.
Sponsoring Group	Indicate the Group sponsoring the project, as follows: 1) Office of General Manager 2) Water System Operations 3) Water Resource Management 4) Engineering Services 5) Information Technology 6) Real Property 7) Office of Chief Financial Officer 8) External Affairs 9) General Counsel Department 10) General Auditor Department 11) Ethics Office
Total Project Estimate	Show the total estimate of cost from inception to completion of a project, including administrative overhead and contingency, as applicable.
Current Project Phase	Indicate the phase (Study, Preliminary Design, etc.) as of the date proposal submitted.
Current Phase % Complete	Current phase percent complete as of the date proposal submitted.
Project Description	Describe the project scope of work.
Changes to Existing Project	For an existing project, describe any changes to the project scope, budget, or schedule over the past two years.
Justification	Describe the nature of the issue to be addressed by the project. What is the problem? Consider issues such as: • Operational flexibility

Section	Guideline
	• Water supply/facility expansion • Aging/deteriorated infrastructure • Process failure/improvement • Maintenance capability • Seismic vulnerability • Obsolescence (vendor support, parts, technology, etc.,) • Security • Regulatory Compliance (water quality, environmental, health and safety, etc.) • Cost savings • Revenue generation • Environmental benefits • Energy savings • Health & Safety • What is the function of the facility/component being addressed by the proposed project? Why is it important? Include an explanation of how the project addresses any of the above issues and provide documentation, when applicable, to substantiate the need for the project.
Directive	Regulatory/Legal Settlement: Indicate if this is related to a written citation or directive, verbal/written directive, or in-house identification (includes environmental mitigation mandated by an MND or EIR). Special Initiative/Directive: Indicate if the project is specifically identified in one of the core or strategic initiatives; identified via Area Study, System Overview Study, etc.; and/or what phase(s) of the project have been authorized by the Board such as study, preliminary design, final design, or construction by contract.
Service Disruption	Describe how MWD's day-to-day operations could be impacted if the project is not approved. Consider business as well as water system operations, including maintenance activities.
Cost/Productivity/Sustainability	Describe potential cost, water, and/or energy savings, revenue generation, productivity gains, environmental benefits, better customer service, etc., that justify the project. Include a pay-back period.
Alternatives	Provide a brief description of any potential project scope alternatives, including any opportunities to "stage" the work. Include if it is possible to only perform a portion of a project to meet foreseeable customer needs. Consider the possibility of new technology, changing demands, as well as environmental impacts and economies of scale. Describe any reasonable projects, processes, or other initiatives available as alternatives to the project. Discuss both positive and negative aspects of each alternative. If possible, explain what other similar companies are doing about this or similar issue.

Section	Guideline
Additional Background Information	Provide any other supplemental information (e.g. detailed history of a problem, supporting technical information, shutdown constraints, etc.) that will help in evaluating the project. This can also be attached to the proposal. Schedule Indicate the proposed beginning and end dates for all appropriate phases.
Detailed Project Estimate	Include an itemized list of all costs for the project, as follows: 1) Direct Labor with additives at the indicated rate 2) Equipment and Materials 3) Incidental Expenses 4) Professional/Technical Services (e.g., consultants) 5) Right-of-Way and Land Purchases (e.g., easements, fee title, escrow fees) 6) Operating Equipment Use and Rental 7) Contract Payments (e.g., construction contracts) 8) Administrative Overhead at the indicated rate 9) Contingency All new project proposals and existing projects must include this estimate.
Post-Implementation O&M Impacts	To the extent available/known, provide a description of the impacts, costs, and/or benefits this capital project is anticipated to have on Metropolitan's current and future O&M expenses and services upon completion (e.g. labor, maintenance, and equipment costs; enhanced reliability; improved water quality, etc. For example, "Ozone generators will substantially increase electrical consumption by approximately $1 million annually and the number of new pieces of equipment will require periodic maintenance per the manufacturer's recommendations beginning in FY 2015/16. PDR and future studies will provide additional detail on the overall lifecycle costs"). This is required for projects greater than $2 million and whose planned implementation date is within the next five fiscal years.
Approvals	1) Person submitting and/or sponsoring the proposed project 2) Team manager of the person submitting and/or sponsoring the project 3) Unit manager of the person submitting and/or sponsoring the project 4) Section manager of the person sponsoring the project (e.g., all new and existing projects) 5) Group manager sponsoring the project (e.g., all new projects) 6) Project manager signs in concurrence. (e.g., Engineering and IT organizations)

Evaluation Criteria

The evaluation criteria cover four characteristics or objectives for capital projects: Project Justification, Directive, Service Disruption, and Cost/Productivity/Sustainability. In addition, a multiplier is applied to a project rating to factor in a risk assessment. Table E-3 provides a description of the criteria and multiplier.

Table E-3: Evaluation Criteria and Multiplier

Criteria	Description
Justification	Assessment of the overall importance of a project. Criterion looks at whether a project supports the following: • Supply reliability • Infrastructure reliability • Regulatory compliance • GM Business Plan • Other goals (e.g., cost savings, revenue generation, and energy savings)
Directive	Assessment of whether a project is specifically identified in one of the core or strategic initiatives, if any permitting agency such as the California State Department of Safety of Dams has issued a directive or citation to take corrective actions, and/or the current Board authorized scope of work: • Regulatory/Legal Settlement • Special Initiative/Directive • Board authorization
Service Disruption	Assessment of not doing a project. Criterion evaluates the following: • Impact to Metropolitan's business operations • Impact to water system operations (e.g., system delivery and/or reliability, cascading impact on system due to failure, etc.)
Cost, Productivity, Sustainability	Assessment of whether a project improves: • Cost/benefit analysis • Productivity • Sustainability • Customer service
Risk Assessment Multiplier	Assessment of the probability of: • Facility/component/process failure • Workplace health and safety • Water quality or environmental impact • Missed opportunity (e.g., available resources, shutdown, revenue generation, cost savings, supply) • Not meeting service demands

Project Evaluation Process / Internal and External

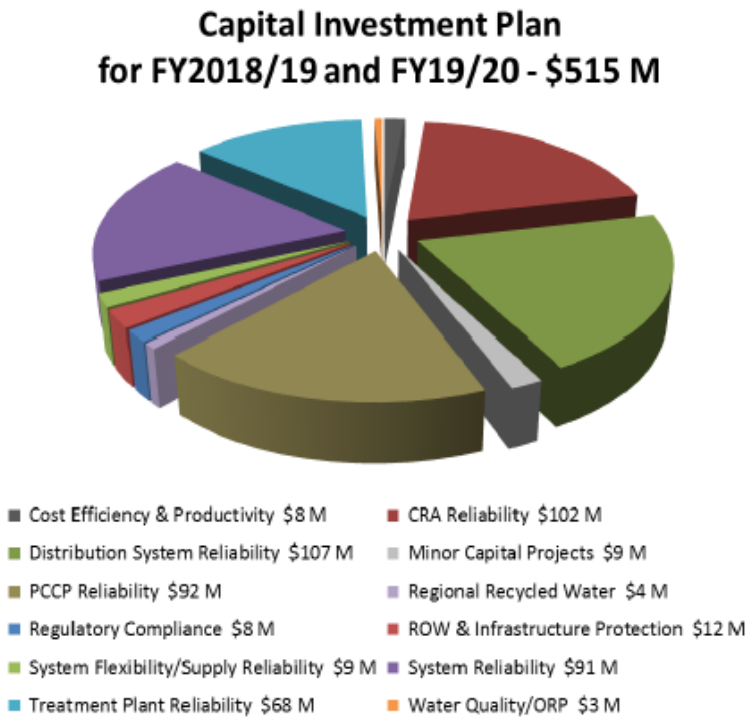
A CIP Evaluation Team comprised of staff from Water System Operations, Water Resource Management, Real Property, Engineering Services, Finance, Information Technology, Environmental Planning, and External Affairs evaluate and rate all project proposals. The evaluation criterion is designed to prioritize projects that directly support reliability, quality, and safety for inclusion in Metropolitan's proposed CIP.

An iterative process is employed to first score and rank every new and existing project, and then solicit feedback from project sponsors, customers, and resource providers in order to establish schedules and cash flow requirements. Those schedules, along with analyses of facility shutdown requirements, environmental permitting timeframes, and contracting process requirements, also enable resource managers to identify staffing needs.

The final schedule and implementation plan for the two-year CIP are reflected in the budget and objectives summarized for each of the individual appropriation narratives that appear later in the CIP.

Figure E-2: Current CIP Budget Breakdown by Program:

Figure 1 - Capital Investment Plan for FY 2018/19 and FY 2019/20 by Program



Selected Excerpts from CIP Documentation

1. Project Description

Conveyance and Distribution System - Rehabilitation for FY2006/07 through FY2011/12 — 15441

Total Appropriation Estimate:	$195,317,000	Biennial Estimate:	$3,823,564
Appropriated Amount 9/30/2017:	$100,589,000	Cost Through 9/30/2017:	$86,078,396

Purpose

To maintain the reliability of the distribution system through specific repair and rehabilitation projects on Metropolitan's distribution pipelines, reservoirs and control structures.

Scope

This appropriation was established to plan and implement multiple projects throughout the Conveyance and Distribution System. The common driver for many of the projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Santa Ana River Bridge Expansion Joint Replacement

Major Milestones Achieved Last Period:

- Etiwanda Pipeline Lining Repairs - Completed Stage 2 repairs & final design for Stage 3 repairs
- Palos Verdes Reservoir Sodium Hypochlorite Feed System Upgrade - Construction is 60% complete
- Glendale-01 Service Connection Rehabilitation - Completed construction
- DVL Inlet/Outlet Tower Fish Screen Replacement - Started construction
- San Gabriel Tower Seismic Upgrade & Spillway Improvement - Completed study
- Orange County Feeder Cathodic Protection - Began final design
- Santiago Lateral Station 216+40 BF Valve Replacement - Started preliminary design
- Lake Mathews Discharge Facilities Upgrade - Started preliminary design

Projects Completed To Date:

- 27 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Diamond Valley Lake (DVL) Inlet/Outlet Tower Fish Screen Replacement	2,960,000	2018	Complete construction
Etiwanda Pipeline Lining Repairs	46,723,000	2019	Complete Stage 3 repairs depending on SWP allocation
Glendale-01 Service Connection Rehabilitation	2,170,000	June 2018	Complete record drawings
Lake Mathews Discharge Facilities Upgrade	10,000,000	2022	Begin final design
Palos Verdes Reservoir Sodium Hypochlorite Feed System Upgrade	3,272,000	2018	Complete construction

Authorized Projects

DVL Inlet/Outlet Tower Fish Screen Replacement

DVL is Southern California's largest surface water reservoir and was completed in 2000. During lake withdrawals, fish screens are moved in front of the ports to prevent debris from entering the Inlet/Outlet Tower. Detailed inspection of the four fish screens identified that the coated carbon steel structural elements, including the hoist beam eye bars, support beams, and retaining pins, are severely corroded. The corrosion is likely caused by galvanic action between the stainless steel and carbon steel components of the screens. The corrosion damage is extensive, and continued deterioration of the structural components could impair the structural integrity of the screens. This project will include removal of the existing fish screen assemblies, fabrication of new stainless steel fish screens, and installation of the new assemblies on the tower. The Board authorized construction in June 2016.

Etiwanda Pipeline Lining Repairs

The Etiwanda Pipeline was constructed in 1993 to convey untreated water from the Rialto Pipeline to the Upper Feeder. This 6.4-mile-long welded steel pipeline is 144 inches in diameter. The northern portion of the pipeline, which is 5.4 miles long, conveys high-pressure water to the Etiwanda Power Plant. From that facility, the southern portion of the pipeline continues for one mile to an interconnection with the Upper Feeder. During an internal inspection conducted in 2008, staff discovered that approximately 37 percent of the northern portion of the line has missing or delaminated mortar lining. At the present time, the structural integrity of the pipeline remains sound. Over time, however, the loss of mortar lining will expose the pipeline to accelerated rates of corrosion and eventual leakage. The primary cause is believed to be the daily internal pressure fluctuation within the pipeline resulting from power generation at the Etiwanda Power Plant. This fluctuation of internal pressure likely produced stress cracking in the mortar lining. In addition, the seasonal variation in availability of State Water Project supplies resulted in prolonged periods when the pipeline was removed from service, creating drying and shrinkage cracks which exacerbated the situation. This project will remove existing and failing cement mortar lining and install a flexible polyurethane lining system. The replacement of the 5.5 miles of the lining will be conducted over three phases. The Board authorized construction of Stage 2 in February 2016.

Glendale-01 Service Connection Rehabilitation

The Santa Monica Feeder was constructed in 1941 as part of Metropolitan's original distribution system. The feeder is approximately 25 miles long, with a diameter ranging from 28 to 120 inches. The Santa Monica Feeder delivers treated water from the Eagle Rock Control Facility in the city of Los Angeles to four member agency service connections before reaching its terminus in the city of Santa Monica. Service connection G-01 consists of a 30-inch venturi meter located partially within a concrete vault structure. Gradual corrosion over the course of 73 years of operation has led to deterioration of the venturi meter and adjacent piping. Staff has attempted to repair the meter using localized welding and fiberglass wraps with limited success, due to the meter's age and continued deterioration. Leakage has progressively increased. Failure of the service connection could negatively impact deliveries to the city of Glendale and potentially damage surrounding properties. This project has replaced the leaking venturi meter and rehabilitated the meter structure and piping including enlargement of the vault to remove the existing venturi meter and fitted the new meter and associated piping; installed a new magnetic flow meter; upgraded the electrical system; and remediation of hazardous materials. Ongoing activities include preparation of record drawings. The Board authorized construction in August 2014.

Lake Mathews Discharge Facilities Upgrades

Lake Mathews is the terminus of Metropolitan's Colorado River Aqueduct (CRA) and was constructed in the 1930's. Untreated water stored in the reservoir is withdrawn through the lake's forebay and hydroelectric plant, and is then conveyed through the Upper Feeder and Lower Feeder to the Weymouth and Diemer plants, respectively. The Lake Mathews forebay discharge valves and outlet tower have gradually deteriorated over 75 years of operation. Portions of the facilities need to be replaced to maintain reliable deliveries from Lake Mathews into the Central Pool. The ten 32-inch-diameter Howell-Bunger valves that are used to withdraw water from the lake have gradually deteriorated through continuous use. The frequency of repairs is increasing, while replacement parts are difficult to obtain. These 60- to 75-year-old valves need to be replaced. The Board authorized preliminary design in February 2014.

2. Project Line-Item Summaries

Capital Program and Appropriations	Appn. No.	FY 2018/19	FY 2019/20	FY 2020/21
Water Delivery System Improvements	15488	$1,587,963	—	$2,345,329
Verbena Property Acquisition	15492	$1,714,380	$1,728,318	$1,561,062
Delta Wetlands Properties (Delta Islands)	15494	$1,367,618	$648,115	—
System Reliability Program		$36,498,784	$54,156,801	$70,551,092
Information Technology System - Infrastructure	15376	$12,857	—	—
Information Technology System - Security	15378	$700,594	$2,287,879	$1,507,205
La Verne Shop Facilities Upgrade	15395	$2,307,330	$5,447,637	$592,642
Water Operations Control	15467	$12,978,126	$6,438,335	$23,638,330
Union Station Headquarters Improvements	15473	$2,380,380	$21,882,915	$29,596,836
IT Infrastructure Reliability	15487	$4,974,420	$8,880,943	$7,694,986
Operations Support Facilities Improvement	15495	$7,714,235	$1,219,122	$282,117
Metropolitan Security System Enhancements	15499	$1,080,428	$5,349,395	$862,994
Infrastructure Reliability Information System	15501	$2,743,040	$93,942	—
System-Wide Paving & Roof Replacements for FY 2018/19 through FY 2019/20	18909	$183,096	$1,214,120	$5,948,621
System-Wide Paving & Roof Replacements for FY 2020/21 through FY 2021/22	Future	—	—	$200,000
Enterprise Data Analytics	18910	$1,424,278	$1,342,513	$227,361
Treatment Plant Reliability Program		$37,610,288	$30,390,464	$50,746,146
Weymouth Water Treatment Plant Improvements	15369	$7,446,272	$5,563,862	$11,308,098
Jensen Water Treatment Plant Improvements	15371	$1,979,749	$4,000,238	$5,999,998
Diemer Water Treatment Plant Improvements	15380	$5,221,124	$1,770,186	$8,337,199
Mills Water Treatment Plant Improvements	15381	—	—	—
Skinner Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15435	$177,444	$178,888	$45,000
Diemer Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15436	$7,417,346	$1,426,231	$4,744,592

3. Project Roll-Up Summaries

Plan Expenditures Summary

Capital Program	FY 2018/19	FY 2019/20	Total
Cost Efficiency & Productivity	$5,838,700	$2,185,875	$8,024,575
CRA Reliability	$50,150,170	$51,571,939	$101,722,109
Distribution System Reliability	$60,506,270	$46,762,828	$107,269,098
Minor Capital Projects	$4,614,738	$4,598,624	$9,213,362
PCCP Reliability	$39,519,326	$52,832,893	$92,352,219
Regional Recycled Water	$4,192,261	—	$4,192,261
Regulatory Compliance	$1,680,035	$6,573,370	$8,253,405
ROW & Infrastructure Protection	$5,831,896	$6,554,364	$12,386,260
System Flexibility/Supply Reliability	$5,556,301	$3,576,433	$9,132,734
System Reliability	$36,498,784	$54,156,801	$90,655,585
Treatment Plant Reliability	$37,610,288	$30,390,464	$68,000,752
Water Quality/ORP	$2,682,517	$609,058	$3,291,575
Total	**$254,681,286**	**$259,812,649**	**$514,493,935**

Plan Funding Summary

	2017/18 Budget	2018/19 Budget	2019/20 Budget
Capital Investment Plan expenses	$200.0	$200.0	$200.0
Project Funding:			
New Bond Issues	80.0	80.0	80.0
Prior Bond Funds/Construction Fund			
Grants and Loans Funds			
Operating Revenues (PAYGo)	120.0	120.0	120.0
PAYGo Percentage of Funding	60.0%	60.0%	60.0%

Capital Financing Cost Summary

Capital Financing Cost Summary, $ millions

	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Debt Service, net of BABs Reimbursement	$318.1	$311.1	($7.0)	$309.6	($1.5)
GO Bond Debt Service	18.8	14.4	(4.4)	14.3	0.0
SRF Loan	1.3	—	(1.3)	—	—
Debt Administration	5.9	6.5	0.6	6.9	0.4
PAYGo	120.0	120.0	—	120.0	—
Total[1]	**$464.1**	**$452.0**	**($12.1)**	**$450.9**	**($1.1)**

[1] Does not include Departmental costs reflected elsewhere in this Budget.

4. CIP Priority/Performance Parameters

Justification	Describe the nature of the issue to be addressed by the project. What is the problem? Consider issues such as: • Operational flexibility • Water supply/facility expansion • Aging/deteriorated infrastructure • Process failure/improvement • Maintenance capability • Seismic vulnerability • Obsolescence (vendor support, parts, technology, etc.,) • Security • Regulatory Compliance (water quality, environmental, health and safety, etc.) • Cost savings • Revenue generation • Environmental benefits • Energy savings • Health & Safety • What is the function of the facility/component being addressed by the proposed project? Why is it important? Include an explanation of how the project addresses any of the above issues and provide documentation, when applicable, to substantiate the need for the project.

Appendix F:
San Francisco Public Utilities Commission Information

San Francisco Public Utilities Commission (SFPUC)

References:

Commission Presentation: Biennial Budget FY 2018-19 and FY 2019-20, Water Enterprise (January 25, 2018)
Commission Presentation: Biennial Budget FY 2018-19 and FY 2019-20, Hetch Hetchy Water (January 25, 2018)
State of the Regional Water System Report 2018

Website: https://sfwater.org/

The City and County of San Francisco own and operate the Hetch Hetchy Regional Water System (RWS), a public asset that plays a key role in delivering high-quality drinking water to 2.7 million residents and businesses in the San Francisco Bay Area. The system collects water from the Tuolumne River in the Sierra Nevada and from protected local watersheds in the East Bay and Peninsula (see Figure F-1).

With the RWS, the SFPUC delivers water to 27 wholesale customers in Alameda, Santa Clara, and San Mateo Counties, and Retail customers in the City of San Francisco and other suburban retail accounts. Additionally, some retail customers are supplied with local groundwater and recycled water supplies. The Bay Area Water Supply and Conservation Agency (BAWSCA) represents the interests of 26 of the wholesale customers and coordinates their water conservation programming.

Figure F-1: San Francisco Public Utilities Commission Regional Water System Map

SFPUC Water System / San Francisco Regional Water System History:

As noted above, over 2.7 million people in San Francisco and throughout the Bay Area rely on water supplied by the SFPUC to meet their daily water needs. The RWS is a municipally-owned utility operated by the SFPUC, a department of the City and County of San Francisco, and serves both retail and wholesale customers. The RWS supplies high quality drinking water from the Tuolumne River watershed and from local reservoirs in the Alameda and Peninsula watersheds. The RWS draws an average of 85% of its supply from the Tuolumne River watershed, collected in Hetch Hetchy Reservoir in Yosemite National Park. This water feeds into an aqueduct system delivering water 167 miles by gravity to Bay Area reservoirs and customers. The remaining 15% of the RWS supply is drawn from local surface waters in the Alameda and Peninsula watersheds. The split between these resources varies from year to year depending on the water year hydrology and operational circumstances.

Separate from the RWS, the in-City distribution system is also owned and operated by the SFPUC and serves a population of nearly 850,000 in San Francisco. In-City retail customers are primarily served with RWS supply, as well as some groundwater and recycled water. Similarly, suburban retail customers are primarily served with RWS supply, but a few customers receive groundwater.

The RWS evolved through the development of two separate water systems: the Spring Valley Water Company and the Hetch Hetchy Project. The Spring Valley Water Company was established in 1858 as it developed a spring and several creeks into a local water system. It expanded over the years with the construction of the Pilarcitos, San Andreas, and Upper and Lower Crystal Springs Dams on the Peninsula. Further expansions included the development of

the Pleasanton Well Field, the Sunol Filter Gallery, and Calaveras Dam in southern Alameda County.

Very early in San Francisco's development, it was recognized that the local water resources would be inadequate to support a burgeoning metropolis; thus, plans for importing water from the Sierra Nevada were born. In the late 1800s, the City's decision to develop its own water supply system culminated in the planning, financing, and construction of the Hetch Hetchy Project. Because many of the Hetch Hetchy Project facilities were to be located on public land within Yosemite National Park and Stanislaus National Forest, Congressional approval of the use of federal land was required. That approval was granted by the Raker Act of 1913.

The construction of the Hetch Hetchy Project began in earnest in 1914. After almost 20 years of construction (including building of Hetch Hetchy Reservoir and the 1930 acquisition of the Spring Valley Water Company by the City), Tuolumne River water began flowing into Upper Crystal Springs Reservoir in October 1934. Through the operation of the two systems, the SFPUC has been able to provide the residents of the City and its neighboring communities with a supply of high-quality potable water from protected sources.

Approach Toward Financial Planning Efforts

Each year, SFPUC staff seeks Commission adoption of the City of San Francisco's Charter-mandated Financial Plan for the 10-year planning horizon. This rolling 10-year plan is required by Charter Section 8B.123 and is revised annually as a part of the budget process. It serves as a multi-year financial planning tool.

In practice, the SFPUC undertakes a more formalized 10-year capital planning effort once every two years and performs a mid-cycle update in alternating years.

The documents SFPUC produces reflect the final budget for each enterprise and includes a financial plan for each enterprise, consisting of 10-year projections for fund balances, sources, uses, revenue requirements and key financial reserve and debt coverage ratios.

The purpose of their financial planning is to estimate revenue and expenditure data in the form of annual revenue requirements, which are indications of future average rate changes. The financial ratios are indications of whether the enterprise is projected to have sufficient resources, coverage for debt service, fund balance and reserve requirements for both operating and capital needs over the period. The 10-year financial plan is also used to meet the City's 5-year financial plan requirement.

Budget Process

Unlike other utilities, SFPUC's capital (financial) planning document does not provide much in the way of discussion regarding the process and procedures employed by SFPUC as part of the

financial planning effort. Instead, the documents produced and provided on their web site focus in on the projects that are included in the approved financial plan.

For more significant discussion of SFPUC's CIP efforts, one can refer to their 2018 State of the Regional Water System Report. The discussion that follows was excerpted from that document.

SFPUC's Capital Improvement Program for the RWS

Capital projects that support the RWS are organized into a 10-year CIP that is adopted each year and integrated into the SFPUC's Financial Plan and rate-setting calculations. As noted above, major updates to the CIP generally happen every 2 years, in coordination with the overall budget process.

For budgetary purposes, the RWS CIP is contained in two planning documents: the Water CIP and the HHWP CIP. The Water CIP includes capital projects related to the RWS west of the City / County's retail-funded local distribution system.

The HHWP CIP includes projects funded by water revenues (retail and wholesale), power revenues, and projects funded jointly from each enterprise. For purposes of this Study, retail water capital efforts and power efforts are not detailed.

SFPUC's Capital Planning Process

Identifying Potential Capital Projects

Much of the focus on the RWS CIP is on maintaining LOS and completion of deferred projects that were not included in the Water Systems Improvements Program (WSIP). However, capital project scope can be identified through one or more mechanisms. Typically, most capital projects are generated through periodic inspection of facilities or through capital planning work that incorporates operator records, performance data, customer input/complaints, and/or pending regulatory/legislative changes. Additionally, other capital projects emerge from joint capital planning efforts with other agencies, such as many of the recycled water projects. A significant amount of capital scope is still developed through more reactive means, such as emergency response or unplanned failures of assets.

Cost Estimation and Projecting Cash Flow

For preparation of the CIP, costs are largely estimated by analogy to similar and recent projects completed by the SFPUC. Staff experience and recent bids are used to refine the estimate.

Appropriate escalation is applied when using prior projects for a cost basis. Additionally, costs are escalated throughout future years in the CIP (in this most recent budget, a rate of 3 percent per year is used). Cost estimates include construction contingencies, allowances, soft costs (project management, administration, design, construction management, environmental review, legal, etc.), land acquisition, site remediation, and closeout. Soft costs are usually prorated based on construction costs, historically around 30 to 35 percent. For major capital projects, an engineer's estimate is performed at the 35 percent design completion milestone, and an independent estimate is performed at the 95 percent design completion stage.

Cash-flow requirements are expressed in terms of annual appropriations required to fund the project without interruption, anticipating funding needs prior to when expenses are incurred. Cash flow is not otherwise front-loaded. Construction costs are usually put in the FY coinciding with Commission award of the construction contract, even though actual cash payments to the contractor may occur over several years.

For the purposes of the CIP, it is assumed that prior appropriated funds will be fully expended. Estimates of annual O&M costs include loaded labor and supplies/materials. Cost estimates for capital projects are within general ranges that decrease as project uncertainties decrease through the development of the project.

For major capital projects, the Earned Value Method is used for cost control after the tasks are resource-loaded. Progress is tracked by measuring the schedule and cost variances together with the milestone and deliverable variances. A trend program is developed and implemented for large projects, along with a change management process involving key staff. The CIP project summaries used for budgeting and resource planning also partition the cash flow by project phase (planning, design, environmental, construction, etc.)

Prioritization Process

After capital projects are scoped at the planning level and a planning-level cost estimate is calculated, the prioritization process begins. Projects are designated as Priority 1, 2, or 3. Priority 3 projects are not included in the Financial Plan.

- Priority 1 - Priority 1 projects include projects that must be completed to maintain adopted LOS; ensure safety for employees or the public; avoid significant liabilities; or comply with laws, contracts, or SFPUC Commission policies. These projects are usually not discretionary at the staff level and are the highest priority. Other examples of Priority 1 projects include supplemental funding needed to complete construction. Emergency declarations following failure of infrastructure may not be planned or budgeted. A supplemental appropriation can be used; otherwise, near-term appropriations are reprioritized. Priority 1 projects do not necessarily require Year 1 or

even near-term funding. Funding is programmed into appropriate years, as needed to ensure project delivery.

- Priority 2 - Priority 2 projects are reserved for those projects that are cost-effective or are otherwise considered to be consistent with BMPs. Examples include projects that extend the life of an asset, allow participation in an externally funded partnership (grants, etc.) or that have a rate of return on investment within 10 years.
- Priority 3 - Priority Level 3 projects usually are discretionary; are incompletely scoped; have unclear schedule or cost estimates; have external funding yet to be secured; or have pending agreements, etc. These projects are internally referred to as Candidate Projects and may remain so for more than one budget cycle.

Final Ranking

After this general priority setting process, more quantifiable ranking is needed before projects can be evaluated for inclusion in the CIP—particularly for Priority 1 projects. The process can also help determine whether Priority 1 projects are better classified as Priority 2, or vice versa. A quantifiable prioritization is achieved by using an industry standard risk analysis— applying a risk score to each risk based on consequence and likelihood of failure associated with the risk that would be addressed by a proposed capital project (see Figure F-2). Risk in this context is interpreted in terms of ability to address any Priority 1 factors, such as LOS or safety.

Figure F-2: SFPUC's Risk Priority Matrix

Likelihood of Failure		Risk Matrix				
Very High	5	11	16	20	23	25
High	4	7	12	17	21	24
Moderate	3	4	8	13	18	22
Low	2	2	5	9	14	19
Remote	1	1	3	6	10	15
Consequence of Failure		1	2	3	4	5
		Level 0	Level 1	Level 2	Level 3	Level 4

To further the above objective, during the FY19-28 CIP cycle, projects received a Criticality Ranking that incorporated factors about each asset, including:

- remaining useful life (years);
- whether the project was in progress;
- impact to operations (low to severe);
- whether the project was politically sensitive;

- whether other projects were dependent on the completion of the project in question;
- consequences of failure (low to severe); and
- whether the project satisfied a regulatory requirement.

The Criticality Ranking was used to inform choices about which projects to include in the final 10-year CIP.

10-Year CIP

There are typically seven active programs in the Water Enterprise CIP, including a programmatic planning program used for feasibility planning for certain categories of future capital projects (see Table F-1).

One or more projects can form a program, with projects being the basic units of the CIP. A project is typically a stand-alone capital improvement project above $5 million in construction cost, with a defined and approved scope, budget, and schedule managed by an assigned project manager. R&R projects are also included in the CIP. These projects are usually cash-funded and are not designed to extend the life of the overall asset (or facility).

Table F-1: Water Enterprise Capital Programs

Program	Definition
Water Treatment	Focuses on existing and new treatment facilities that typically involve chemical systems and/or water-quality monitoring systems. The program includes upgrades of chemical dosage, flow monitoring, valve and pump replacement, chemical handling upgrades, power upgrades, systems to control discharges to maintain compliance with permits, communications, process control equipment to meet more stringent drinking water regulations, seismic improvements, and upgrades to control software. Improvements at SVWTP for managing T&O issues have been prioritized.
Water Transmission	Encompasses upgrades to the conveyance/ transmission system, including pipelines, tunnels, penstocks, valves, appurtenances, meters, CP, pump stations, and vaults. Upgrades to the Palo Alto Pipeline, the SAPL No. 2 through San Bruno, and the CSPL No. 2 through Hillsborough have been prioritized.
Water Supply and Storage	Encompasses projects involving storage facilities (including dams) and new supply such as desalination, recycled water, and groundwater. The program includes upgrades to structures to meet DSOD requirements, including geotechnical work and installation of monitoring systems, and modifications to spillways and outlet structures. Upgrades to Pilarcitos, San Andreas, and James H. Turner (San Antonio Reservoir) dams are included in the CIP. The Daly City Recycled Water Project is also a significant component of the CIP.
Watershed and ROW Lands Management	Supports projects that improve and/or protect the water quality and/or ecological resources affected by the operation of the SFPUC. Projects in this program include watershed infrastructure maintenance/repair (roads, culverts,

Program	Definition
	fences, etc.) and land acquisition. This program in the CIP will support long-term monitoring of rehabilitated construction sites, as well as instream flow management below dams over the course of the CIP.
Communications and Monitoring System	Reserved for upgrades to and R&R of regional communication and monitoring systems, such as SCADA, radio, security, and other data transmission equipment/infrastructure. Assets typically reside in numerous locations regionwide. The major project in the CIP involves continued construction of a microwave backbone that would provide an independent communication link between upcountry and the four Bay Area counties served by the SFPUC, as well as security improvements to SFPUC facilities.
Buildings and Grounds	Encompasses capital improvements to existing buildings, grounds, structures, and ROWs that are not directly related to day-to-day operations or watersheds. Examples include administration buildings, cooperation/storage yards, and miscellaneous properties. The major projects in the CIP include upgrades to the Millbrae Yard, completing upgrades being made to Sunol administration facilities and laboratories, and construction of a new watershed center in Sunol.
Programmatic Studies	Includes water resources related planning studies. Examples include feasibility studies for recycled water, conservation (including aspects of implementation), and desalination.

Budgets are approved and controlled at the program levels outlined above. During budget preparation, forecast budgets are reviewed for each active or planned capital project; R&R programs are also reviewed, and adjustments are made accordingly. When the budget is prepared for Commission and stakeholder review, staff also document that the capital plan is consistent with LOS.

Programs for the HHWP CIP are differentiated by funding source (see Table F-2):

Table F-2: Hetch Hetchy Water Capital Programs

Program	Definition
Water Infrastructure	Includes water-only assets and water quality projects, and upgrades for increased capacity and reliability to the HHWP Water Infrastructure, including continued rehabilitation of the SJPLs, construction of a transmission line between Priest Reservoir and Moccasin, construction of a Moccasin Reservoir security fence, and Early Intake Dam rehabilitation.
Joint Infrastructure	Includes projects that are used for both water and power assets. Projects in this category are used to support the infrastructure required for O&M for both the HHWP water and power systems, including improvements to facilities at Moccasin, facilities outside Moccasin, road improvements, facility security, and

	communication projects. This program in the 10-Year CIP will fund Mountain Tunnel rehabilitation, O'Shaughnessy Dam outlet works improvements, and Eleanor Dam rehabilitation.
Power Infrastructure	Includes power assets only. Projects in this category include R&R of HHWP transmission lines, and clearance mitigation and improvements to penstocks.

10-Year Water CIP Update, FY19 – FY28

The FY19-FY28 10-year Water CIP ("FY19 Water CIP") includes $893.0 million in projects for these programs (not including programmatic projects). Between 2000 and 2004, various condition assessment and vulnerability studies were completed, along with an intensive effort to define and adopt LOS to guide the capital program for the RWS. Much of the scope that would become the WSIP—largely documented in the FY02 CIP—was derived from these efforts. However, of the many capital projects identified in these early planning studies, 20 were not ultimately included in the WSIP, because there was either no direct linkage to LOS, or the projects themselves from the onset were identified as deferrable to later years after more critical capital projects were completed. With the WSIP in the final phases of construction, those projects that address LOS are nearing completion; the focus of capital improvements is shifting to other critical needs, such as aging infrastructure and operational improvements. To leverage the work and institutional knowledge from prior condition assessments and vulnerability studies, the improvement needs identified in these studies are being consolidated and reviewed. In addition, these needs are organized into one of the six capital programs (excluding programmatic studies) of the CIP: Water Treatment, Water Transmission, Water Supply and Storage, Watershed and ROW Lands Management, Communications and Monitoring System, and Buildings and Grounds. The consolidation of these project lists was followed by a review of the Master Plan Schedule. The timing of the Master Plans will be coordinated with the CIP schedule, so that the results will be available to inform the planning and design of the CIP projects.

WSIP construction will continue through FY21; however, only $62 million of supplemental funding for WSIP projects is included in the current CIP, because all other WSIP appropriations were included in prior budget years.

10-Year Hetch Hetchy Water CIP Update, FY19-FY28

The FY19-FY28 10-year HHWP CIP ("FY19 HHWP CIP") includes $767.1 million in projects funded by water rates either as water-only or jointly with the SFPUC Power Enterprise. In addition to LOS, the HHWP CIP is designed to sustain the SFPUC's existing unfiltered water source and gravity-driven system. The most significant project in the FY19 HHWP CIP is the Mountain Tunnel Rehabilitation Project.

Engagement of BAWSCA (Wholesale Customers) in the CIP efforts

In years prior to the existing one, an informal engagement effort was performed by SFPUC to engage their wholesale customers in the CIP development efforts. Those were mainly one-on-one meetings with BAWSCA representatives, performed more as a courtesy rather than a result of a mandate. Additionally, wholesale agencies as well as interested members of the public were able to attend workshops held by SFPUC staff prior to budget adoption.

In 2018, as part of an amendment to the Water Supply Agreement (WSA) between SFPUC and BAWSCA Member Agencies, there is now an agreed upon process that provides BAWSCA, on behalf of the wholesale customers, more access into the SFPUC's CIP development efforts. The specific statement listed below has been incorporated as a commitment in the amended WSA:

"Beginning in 2020, at least 30 days before the first budget meeting, the SFPUC shall provide BAWSCA and the Wholesale Customers with written notice of the dates of the two budget meetings. At least 30 days before the first budget meeting, the SFPUC shall also provide BAWSCA and the Wholesale Customers with a draft of the 10-Year CIP and meet with those same parties to review potential candidate projects that it is considering for inclusion in the 10-Year CIP. Final materials for the first budget meeting will be made available to BAWSCA and the Wholesale Customers no less than 14 days prior to that budget meeting. Final materials for the second budget meeting will be made available to BAWSCA and the Wholesale Customers on the same date that they are made available to the Commission. Prior to the Commission's adoption of the 10-Year CIP at the second budget meeting, San Francisco shall respond, in writing, to all written comments by BAWSCA and the Wholesale Customers on the 10-Year CIP that were submitted prior to the date of the first budget meeting."

Selected Excerpts from CIP Documentation

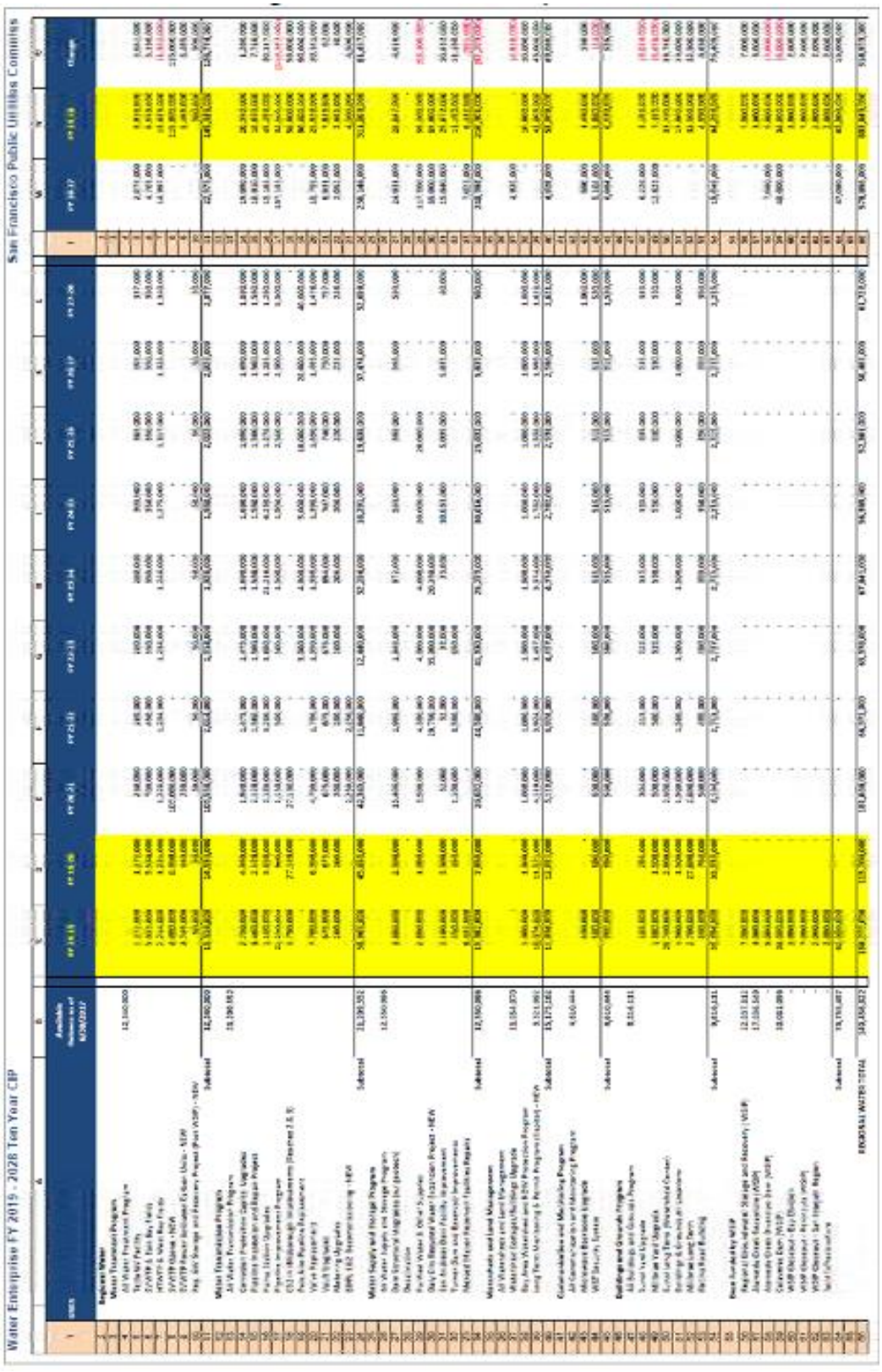
1. Project Description

SFPUC Capital Project Plan
Water Enterprise
Regional Water

Project FAMIS#:	CUW2730200
Project Title:	Regional Water - Pipeline Inspection and Repair Project - CUW2730200
Enterprise:	Water Enterprise
Organization:	Regional Water
Project Manager:	Jonathan Chow
Asset Classification:	Water Transmission Program
Type:	Capital
Description:	This project funds inspection (including shutting down, de-watering, and disinfection of pipelines) and minor rehabilitation and repair of pipelines that follow these inspections. Repairs can usually be made in weeks or within one to two months. Appurtenances such as blow-off valves and air valves are replaced and often times mortar lining or polyurethane lining can be repaired in short stretches. Inspections expected in FY2019 include SA2 (R60 to CDD), CS Bypass Pipeline, Balancing Rservoir Pipeline, BDPL4 (D30 to D40), BDPL3 (C30 to C70), and Irvington Tunnel No.2. An available 20-Year Pipeline Inspection Schedule outlined inspections for the next 20 years. In general, inspections are not committed to more than 1 year in advance. Specific known repairs include approximately 10,000 linear feet of damaged mortar on Bay Division No. 4, which was documented during an inspection in 2010. Due to the scale of repair ($2M), this scope and funding will be shifted to the Pipeline Improvement Program. For budgetary estimate, each pipeline shutdown, de-watering, and disinfection cost about $250K. Inpsection of Irvington Tunnel No.2 requires removal of portal protection structure and bringing in specialized inspection ROV, budgetary cost $1M Electromagnetic Inspection of PCCP, $30K/mob, $25K/mi, $10k/report
Justification:	Periodic internal pipeline inspections are essential to minimize pipeline failures. It also provides a condition assessment of our pipelines, which provides a basis for prioritizing pipeline replacements. Routine pipeline inspections are a part of good industry maintenance practice for large diameter transmission pipelines. Pipelines are inspected based on a long-term schedule that is updated each year by the Principal Engineer. First, a long-range recurrence inspection schedule is created based on the elapsed time since the last inspection, the condition of the pipe found on the previous inspection, and pipe material. Second, these schedules are adjusted by up to two years (forward or back in time) to accommodate construction and other system outages that can affect the cost of performing the shutdown and inspection. Third, the criticality of the pipeline is considered, particularly if a segment of pipe will be relied upon with no redundancy during other outages. If a pipeline is particularly critical, other factors carry less weight.
Operating Impact:	None.

All values in $1,000	**2019-2028**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024-2028**
Planning	$ 2,970	$ 360	$ 360	$ 360	$ 270	$ 270	$ 1,350
Environmental Review	$ 100	$ 100	$ 0	$ 0	$ 0	$ 0	$ 0
Design	$ 1,580	$ 200	$ 200	$ 200	$ 140	$ 140	$ 700
Construction Management	$ 1,360	$ 200	$ 160	$ 160	$ 120	$ 120	$ 600
Construction	$ 12,610	$ 2,600	$ 1,400	$ 1,400	$ 1,030	$ 1,030	$ 5,150
Total	**$ 18,620**	**$ 3,460**	**$ 2,120**	**$ 2,120**	**$ 1,560**	**$ 1,560**	**$ 7,800**

2. Project Line-Item Summaries



Water Enterprise FY 2019 - 2028 Ten Year CIP

San Francisco Public Utilities Commis

3. Project Roll-Up Summaries

San Francisco Water Power Sewer

Water Enterprise 10-Year Capital Plan

Program / Project (Millions)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024 - 2028	Capital Plan 2018-2027	Capital Plan 2019-2028
SPENDING PLAN								
Regional Costs								
Water Treatment Program	15.3	14.5	105.5	2.0	1.9	10.0	22.6	149.3
Water Transmission Program	40.0	45.1	42.3	11.6	12.4	160.2	230.1	311.6
Water Supply & Storage Program	15.4	7.1	20.0	44.6	41.5	87.7	248.6	216.3
Watersheds & Land Management	11.1	12.5	5.1	4.9	4.5	14.9	4.9	53.0
Communication & Monitoring Program	1.0	0.5	0.5	0.5	0.5	3.6	6.0	6.5
Buildings And Grounds Programs	35.6	33.5	8.1	2.7	2.7	11.6	18.8	94.3
WSIP Augmentation - Regional	62.0	-	-	-	-	-	47.0	62.0
Regional Subtotal	**180.3**	**113.2**	**181.6**	**66.4**	**63.6**	**288.0**	**578.1**	**893.0**
Local Costs								
Local Water Conveyance/Distribution System	56.1	56.1	57.0	58.0	59.0	314.3	561.0	600.5
Local other	28.0	18.4	32.8	24.9	37.7	1.4	67.8	143.2
Auxiliary Water Supply System	-	-	50.0	40.0	-	-	110.0	90.0
Local Subtotal	**84.1**	**74.5**	**139.8**	**122.9**	**96.7**	**315.7**	**738.8**	**833.7**
TOTAL	**264.3**	**187.7**	**321.5**	**189.3**	**160.2**	**603.6**	**1,316.9**	**1,726.7**
REVENUES								
Water Revenue	51.8	51.8	39.0	48.5	53.5	339.9	584.4	584.4
Water Revenue Bonds	210.8	134.4	230.9	99.3	105.2	256.0	612.5	1,036.6
General Obligation Bonds	-	-	50.0	40.0	-	-	110.0	90.0
Capacity Fee	1.8	1.5	1.6	1.5	1.5	7.8	10.0	15.7
TOTAL	**264.3**	**187.7**	**321.5**	**189.3**	**160.2**	**603.6**	**1,316.9**	**1,726.7**
Total San Francisco Jobs/Year	2,207	1,567	2,684	1,581	1,338	5,040	10,996	14,418
Surplus/(Shortfall)	-	-	-	-	-	-		-

Water Enterprise Projections

($M)	FYE 2018	FYE 2019	FYE 2020	FYE 2021	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028
Beginning Fund Balance	$ 174.2	$ 214.3	$ 210.9	$ 191.3	$ 178.0	$ 165.8	$ 149.9	$ 146.3	$ 132.7	$ 119.6	$ 113.1
Sources											
Retail Water Sales	256.7	279.8	302.2	323.4	346.0	366.8	385.1	404.4	424.6	445.8	463.7
Wholesale											
Wholesale Share of Operating Costs	108.7	109.5	111.7	112.7	112.8	119.3	129.5	135.9	139.1	143.3	147.0
Wholesale Share of Capital & Debt	154.4	153.7	152.1	150.4	150.3	166.6	190.7	203.6	222.6	236.6	258.6
Wholesale Water Sales	263.1	263.1	263.9	263.1	263.1	285.9	320.2	339.5	361.6	379.9	405.7
Other Miscellaneous Income	88.3	62.3	62.6	112.9	103.9	64.2	64.7	64.9	65.0	65.3	65.5
Total Sources	608.2	$ 605.3	$ 628.7	$ 699.4	$ 713.0	$ 716.8	$ 770.0	$ 808.9	$ 851.2	$ 891.1	$ 934.9
Uses											
Operations & Maintenance	219.7	237.8	250.5	256.8	263.4	268.3	276.2	285.7	293.8	302.0	310.4
Hetchy Transfer	32.6	35.2	35.2	36.2	37.3	38.4	39.6	40.8	42.0	43.3	44.6
Debt Service	256.0	283.7	306.3	320.5	332.0	356.0	387.5	407.6	435.2	458.4	475.1
Revenue-Funded Projects - Retail	41.5	31.4	31.2	89.8	80.5	56.9	58.2	74.7	77.6	79.1	86.6
Revenue-Funded Projects - Wholesale	18.3	26.4	26.4	13.2	13.2	15.2	15.8	16.5	19.8	18.4	26.4
Total Uses	568.1	$ 614.4	$ 649.5	$ 716.5	$ 726.3	$ 734.8	$ 777.2	$ 825.3	$ 868.4	$ 901.2	$ 943.0
Net Revenues	40.1	$ (9.1)	$ (20.9)	$ (17.1)	$ (13.3)	$ (18.0)	$ (7.2)	$ (16.5)	$ (17.2)	$ (10.1)	$ (8.1)
Ending Fund Balance	214.3	$ 205.2	$ 190.1	$ 174.2	$ 164.7	$ 147.8	$ 142.6	$ 129.8	$ 115.5	$ 109.5	$ 105.0
Rate Increase - Retail	7.0%	9.0%	8.0%	7.0%	7.0%	6.0%	5.0%	5.0%	5.0%	5.0%	4.0%
Rate Increase - Wholesale	0.0%	0.0%	0.0%	0.0%	0.0%	9.5%	12.2%	5.8%	6.8%	4.9%	6.7%
Fund Balance as % of Op. Expenses	85%	77%	67%	61%	55%	49%	46%	41%	36%	33%	31%
Debt Service Coverage (Current)	1.29	1.18	1.13	1.12	1.13	1.16	1.18	1.19	1.19	1.20	1.23
Debt Service Coverage (Indenture)	1.96	1.94	1.82	1.72	1.67	1.63	1.57	1.55	1.50	1.46	1.47
Water Sales - Retail (MGD)	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3
Water Sales - Wholesale (MGD)	129.4	129.4	129.4	129.4	129.4	129.4	129.4	129.4	129.4	129.4	129.4
Water Sales - SFR Monthly Average (CCF)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3

5

Appendix G:
Santa Clara Valley Water District Information

Santa Clara Valley Water District (SCVWD)

References:

Five-Year Capital Improvement Program – FY 2019-23 (2-27-2018 DRAFT) (https://www.valleywater.org/how-we-operate/five-year-capitalimprovement-program)

Website: https://www.valleywater.org/

SCVWD is an independent special district that provides wholesale water supply, groundwater management, flood protection and stream stewardship. Its service area includes all of Santa Clara County, which is located at the southern end of San Francisco Bay (Figure 3-1, Urban Water Management Plan 2015). The county encompasses approximately 1,300 square miles and has a population of about 1.9 million. Formed as the Santa Clara Valley Water Conservation District in 1929 in response to groundwater overdraft and significant land subsidence, it has over the years expanded its service area via annexation such that as of 1987 it provides services for the entire county.

Figure 3-1. Santa Clara County

Most water use occurs on the valley floor between the Santa Cruz Mountains to the west and the Diablo Range to the east. Northern Santa Clara County is home to Silicon Valley and the valley floor is highly urbanized. Southern Santa Clara County has some urban development, but much of the land use is still rural and agricultural.

After it was formed to address declining groundwater levels and land subsidence, the District constructed reservoirs to capture more local water. However, local supplies were insufficient to meet the county's growing population. The District began importing water from the State Water Project in 1965 and from the Central Valley Project's San Felipe Division in 1987. These investments, along with water recycling and conservation, have resulted in sustainable groundwater subbasins and reliable water supplies for Santa Clara County.

In terms of the facilities that SCVWD operates and maintains, it includes 10 reservoirs, three water treatment plants, an advanced water purification facility, and a water quality laboratory. Also included are conveyance pipelines and pump stations. SCVWD also has responsibilities associated with flood protection and stream stewardship. All play a factor in their CIP considerations.

CIP Planning Process

SCVWD's CIP is developed following the guidelines of Government Code § 65403 which governs the development and annual review of Capital Improvement Programs prepared by special districts in the State of California. State law requires that the program be reviewed and updated annually. The purpose of the annual updating process is to ensure the capital project:

• Meet the Board's priorities and contribute to the objectives of the District's various programs

• Have identified funding for the duration of the projects

• Are coordinated with the local jurisdictions' General Plans.

SCVWD's CIP planning process is carried out in accordance with the following directives of the SCVWD's management staff.

• Produce an annual Rolling Five-Year Capital Improvement Plan with the first year serving as the adopted capital budget and the remaining years in place as a projected capital funding plan.

• Demonstrate to the Board the planned expenditures for the identified and selected capital projects in the Rolling Five-Year Capital Improvement Plan are aligned with the Board's capital priorities.

The annual CIP planning process is the responsibility of a CIP Group assembled at the SCVWD comprised of division managers, with the responsibility to initiate or implement capital projects.

The detailed process is a documented ISO procedure. It includes the following key steps:

- Management review and approval, to ensure staff proposed projects are aligned with Board policies and approved program plans
- Validation of projects to ensure there is a business case for doing the project and that a capital investment is the best solution
- Prioritization of all projects, including continuing and newly proposed projects, to ensure the projects in the CIP reflect Board priorities
- Financial analysis, to determine the capacity of the District's capital funding sources to fund the proposed capital projects
- Outreach to local jurisdictions with land use authority, within Santa Clara County, to coordinate the District's Capital Improvement Program with their General Plans
- Board review and direction at appropriate steps, to ensure the CIP reflects Board policies and priorities
- Board adoption of the CIP plan

The annual CIP planning process starts with collecting information on proposed new capital projects in July, followed by preliminary scoping, priority and financial analyses to produce a

Draft CIP in February. The Draft CIP serves as a multi-year plan, together with other long-term planning efforts of the District, is the basis for the budget for the following fiscal year. This Draft CIP plan is also reviewed by local jurisdictions for consistency with their General Plans. While the CIP is being reviewed by the cities and County the budget is being reviewed and finalized. The Board concludes the outreach on the CIP with a public hearing. The first year of the CIP is reconciled with the budget and the two documents are presented to the Board for formal adoption in May.

SCVWD Board Direction and CIP Outreach

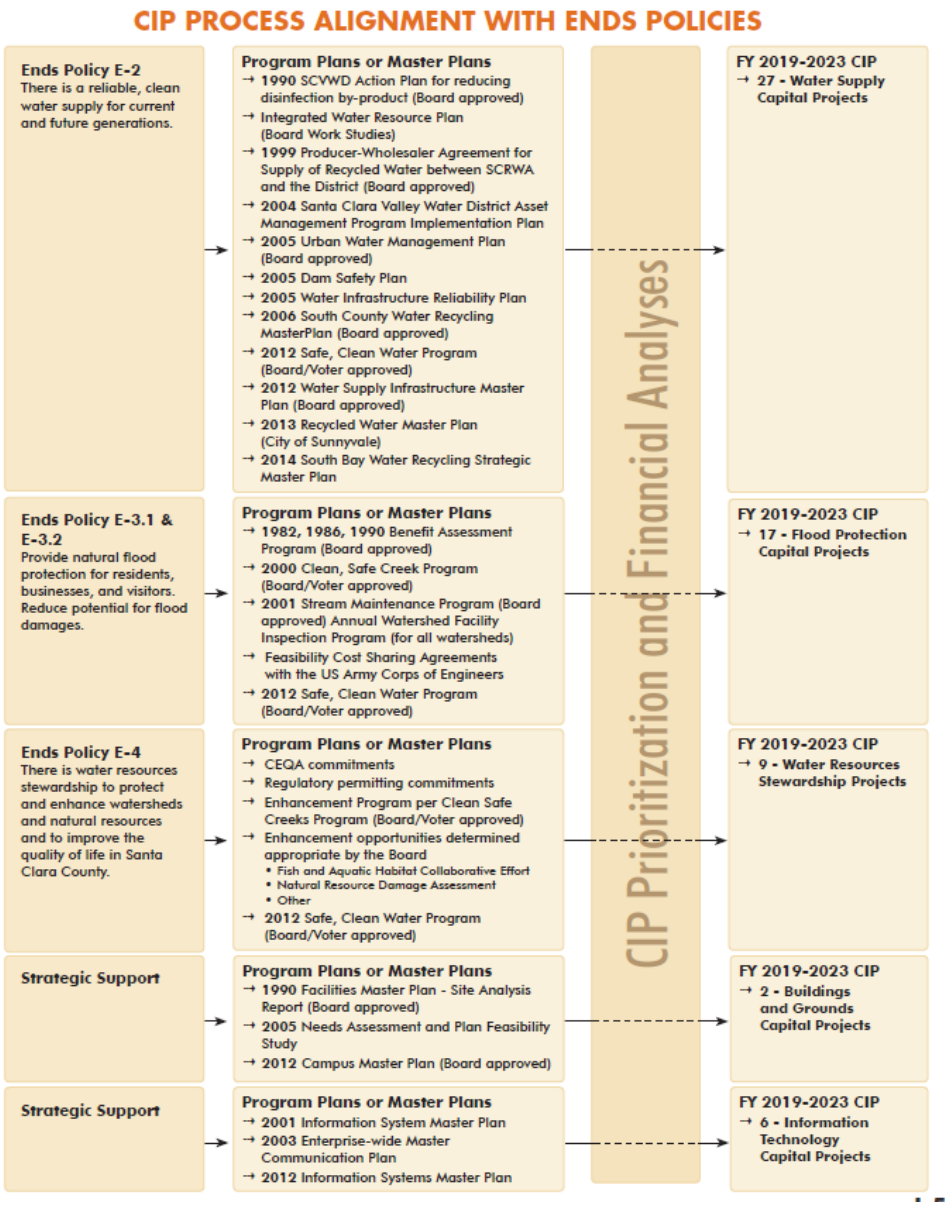
SCVWD's Board has many opportunities each year to provide direction on projects contained in the Capital Improvement Program. The CIP is developed in parallel with the budget and the water rates. It is presented to the Board on three separate occasions for review and input. Early in the process the project list is presented to the Board so it can provide direction to staff, ensuring that the document is developed in accordance with Board priorities. The direction received is used to develop the Draft CIP which is reviewed by the Board before staff is authorized to release the document for public review. The CIP is adopted by the Board in May following a public hearing.

The CIP Board Committee meets throughout the year to review and discuss information related to the development and implementation of the CIP and provide input to staff. The Committee can make recommendations to the full Board on issues ranging from projects it wants to implement, to resource utilization and funding sources or distribution. The Committee's recommendations are presented to the full Board for consideration and action.

Each project in the CIP goes through a planning phase, design phase and construction phase. The Board may determine to not implement a project based on various considerations such as financial constraints, environmental impacts or community desire during a project's planning or design phases. Approval of a capital project by the Board occurs at the end of the design phase when the Board approves the plans and specifications to solicit bids for construction of the project.

SCVWD focuses on making sure that their CIP aligns with policies that are in place at the agency. Those polices drive the development of planning documents (program plans or master plans) that in turn generate CIP opportunities and strategies (see Figure F-1).

Figure G-1: Relationship of CIP to District Policy



Fiscal Considerations

Each of the projects in the SCVWD's CIP has an identified funding source based on the type of improvement or function of the project. The principal sources of revenue for the SCVWD are property taxes, a special parcel tax, and water production charges for use of groundwater, treated water, and surface water. These revenues are organized into eight funds. Seven of the eight funds have a specific purpose and only finance the operational and capital expenditures related to that purpose. In 2008 their Board decided to combine the individual watershed funds into a countywide watershed and stream stewardship fund to send the message that the watershed activities are managed for the benefit of the county. This also streamlines most

tracking and accounting activities for staff. The District continues to receive a small amount of revenue from benefit assessments that were approved by voters in the 80s and 90s. These funds are dedicated to specific watersheds and the accounting practices to ensure that they are spent and accounted for appropriately have been kept in place. As shown in the chart below, five of the eight funds are used to finance the five types of capital improvements in the CIP.

In November 2012 the voters overwhelmingly approved the Safe, Clean Water and Natural Flood Protection Program (Safe, Clean Water). This program replaced the Clean, Safe Creeks Program that would sunset in 2016. Safe, Clean Water has an expanded focus that includes funding for important Water Utility projects as well as additional funding for Flood Protection and Water Resources Stewardship projects. The Safe, Clean Water program will provide over $750 million of special parcel tax revenue for operations and capital projects.

Several SCVWD projects are receiving substantial funding through grants from various State and Federal programs, either directly or through local partner agencies.

Format of the CIP

In recognition of the various functional areas that SCVWD operates in, the CIP includes separate chapters for work associated with Water Supply, Water Resources Stewardship, Buildings and Grounds, Information Technology and Financial Planning. Appendices are also included.

Selected Excerpts from CIP Documentation

1. Project Description

Project	**Anderson Dam Seismic Retrofit**
Program	Water Supply – Storage
Priority No.	100
Project No.	91864005
District Contact	Katherine Oven koven@valleywater.org

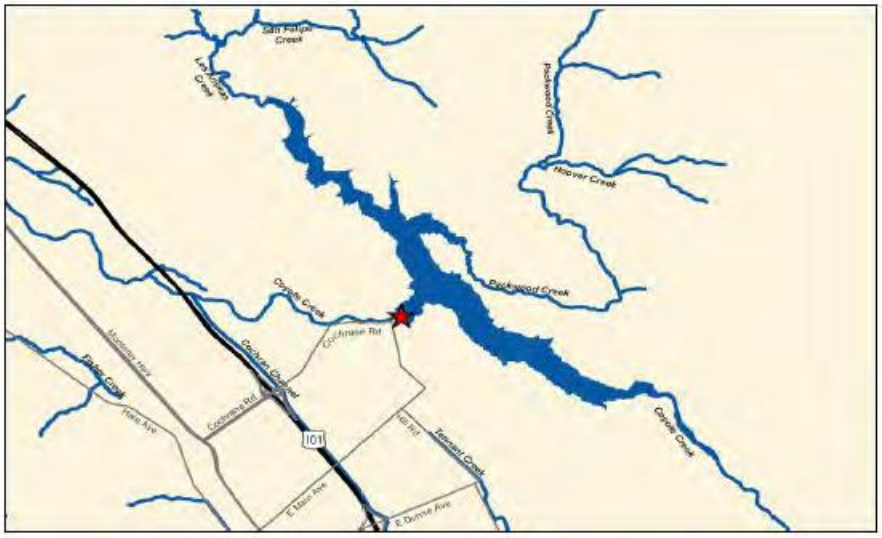
Aerial view of Anderson Dam and spillway, with a portion of the reservoir

PROJECT DESCRIPTION

This project plans, designs, and constructs seismic retrofit or replacement of outlet works at Anderson Dam, pending completion of a field investigation that will determine whether the Coyote Fault is determined to be "active". Seismic stability improvements will accomplish the following objectives:

- Resolve seismic stability deficiencies to ensure public safety.
- Restore lost reservoir storage capacity resulting from the operational restriction issued by Division of Safety of Dams (DSOD).
- Resolve the DSOD/FERC (Federal Energy Regulatory Commission) requirements in a timely manner.

PROJECT LOCATION



SCHEDULE & STATUS

January 2011 to December 2024

EXPENDITURE SCHEDULE

(in thousands $)

	Actuals Thru	Planned Expenditures						Total
Project	FY17	FY18	FY19	FY20	FY21	FY22	FY23	Future	
91864005-Anderson Dam Seismic Retrofit	31,298	8,220	10,617	141,311	107,664	130,161	82,263	1,100	512,634
with inflation	31,298	8,220	11,095	151,809	116,197	141,234	89,533	1,458	550,844

Actuals include project expenditures, and encumbrances.

FUNDING SCHEDULE

(in thousands $)

	Budget Thru	Adj. Budget	Est. Unspent	Planned Funding Requests					Total
Project	FY17	FY18		FY19	FY20	FY21	FY22	FY23	Future	
91864005-Anderson Dam Seismic Retrofit	31,586	7,932	0	11,095	151,809	116,197	141,234	89,533	1,458	550,844

Adjusted Budget includes adopted budget plus a planned budget adjustment of $19,000.

FUNDING SOURCES

(in thousands $)

SCVWD Water Utility Enterprise Fund	484,791
SCVWD Safe Clean Water Fund	66,053
Other Funding Sources	0
Total	550,844

OPERATING COST IMPACTS

The completion of this project is not anticipated to increase or decrease annual operating costs, as the project does not significantly alter the existing facilities or modes of operation.

USEFUL LIFE: 50+ Years

2. Project Line-Item Summaries

Water Supply Capital Improvements

Project Number	PROJECT NAME	Through FY17	FY18	FY18 Unspent	FY19	FY20	FY21	FY22	FY23	FY24-33	TOTAL
	STORAGE FACILITY										
91854001	Almaden Dam Improvements	12,520	520	1,816	2,207	546	525	24,963	18,940	393	60,614
91864005	Anderson Dam Seismic Retrofit (C1)	31,586	7,932	-	11,095	151,809	116,197	141,234	89,533	1,458	550,844
91084020s	Calero and Guadalupe Dams Seismic Retrofits	26,808	3,349	3,955	1,911	1,638	9,914	30,332	42,072	55,880	171,904
91234002	Coyote Pumping Plant ASD Replacement	-	536	436	698	814	3,244	6,416	4,486	791	16,985
91234011	Coyote Warehouse	2,940	3,003	-	528	-	-	-	-	-	6,471
91084019	Dam Seismic Stability Evaluation	18,812	-	33	1,221	491	456	5,963	498	1,941	29,382
60954001	Pacheco Reservoir Feasibility Study	-	2,250	-	14,176	-	-	-	-	-	16,426
91214010s	Small Capital Improvements, San Felipe Reach 1-3	n/a	2,457	-	3,472	2,080	2,706	92	-	34,750	45,557
	TRANSMISSION FACILITY										
95084002	10-Year Pipeline Rehabilitation (FY18-FY27)	-	20,489	-	17,590	13,353	20,355	8,260	4,885	33,591	118,523
92C40357	FAHCE Implementation	-	-	-	-	-	4,739	4,379	14,691	121,299	145,108
26764001	IRP2 Additional Line Valves (A3)	-	-	-	1,392	343	9,826	-	-	-	11,561
26564001	Main & Madrone Pipelines Restoration (A1)	2,327	15,084	-	292	-	-	-	-	-	17,703
92144001	Pacheco/Santa Clara Conduit Right of Way Acquisition	1,861	1,034	-	1,585	307	-	-	-	-	4,787
92374005	SCADA Remote Architecture & Communications Upgrade	776	186	-	182	175	913	835	872	3,009	6,948
92764009	Small Capital Improvements, Raw Water Transmission	n/a	321	-	765	49	-	92	-	3,226	4,453
94764006	Small Capital Improvements, Treated Water Transmission	n/a	-	-	139	-	-	-	-	-	139
94084007	Treated Water Isolation Valves	-	-	-	529	795	6,891	-	-	-	8,215
94084008	Westside Retailer Interties	-	-	-	67	358	1,385	114	-	-	1,924
92264001	Vasona Pumping Plant Upgrade	119	712	310	542	1,163	548	17,541	586	-	21,211
	TREATMENT FACILITY										
93234044	PWTP Residuals Management	-	-	-	-	-	742	1,550	8,279	-	10,571
93294051	RWTP FRP Residuals Management Modifications	31,520	17,053	12,817	-	7,756	2,083	1,759	2,430	1,595	64,196
93294057	RWTP Reliability Improvement	116,221	48,144	19	47,136	47,629	30,116	143	-	-	289,389
93294056	RWTP Treated Water Valves Upgrade	8,424	170	-	180	22	-	-	-	-	8,796
93764004	Small Capital Improvements, Water Treatment	n/a	2,512	-	6,226	7,344	7,682	3,872	315	16,943	44,894
	RECYCLED WATER FACILITY										
91304001s	Expedited Purified Water Program (EPWP)	28,089	-	9,742	2,651	10,638	25,502	37,452	77,175	95,728	277,235
91C40389	Long-Term Purified Water Program Elements	-	-	-	-	-	-	-	87,853	279,696	367,551
91094007s	South County Recycled Water Pipeline	32,915	-	8,686	5,104	14,199	221	-	-	-	52,439
	TOTAL	314,918	125,752	37,814	119,688	261,509	244,045	284,997	352,617	650,300	2,353,826

FY 2017-18 Funds to be reappropriated

Appendix B - Project List By Priority

Water Supply Capital Projects in Order of Priority

FUNDED

FY19 Priority	Name	Total Project Value ($K)	Remaining Cost ($K) (FY-19 to Completion)	Phase
100	Anderson Dam Seismic Retrofit	$550,844	$511,326	Plng/Des
92	Dam Seismic Stability Evaluation	$29,382	$10,603	Plng
92	Calero and Guadalupe Dams Seismic Retrofits	$171,778	$145,576	Plng/Des
91	RWTP Reliability Improvement	$289,389	$125,043	Construction
84	RWTP FRP Residuals Management Modifications	$64,196	$28,440	Construction
84	RWTP Treated Water Valves Upgrade	$8,796	$203	Construction
78	10-Year Pipeline Rehabilitation	$125,204	$98,034	Plng/Des
76	Small Capital Improvements, San Felipe Reach 1-3	$45,557	$43,100	Continuing
76	Westside Retailer Interties	$2,004	$1,924	Plng
75	Pacheco/Santa Clara Conduit Right of Way Acquisition	$4,787	$1,892	Des
74	PWTP Residuals Management	$10,571	$10,571	Plng
74	SCADA Remote Architecture & Communications Upgrade	$6,948	$5,986	Plng
73	Small Capital Improvements, Raw Water Transmission	$4,453	$4,132	Continuing
73	Small Capital Improvements, Water Treatment	$44,894	$42,382	Continuing
73	Small Capital Improvements, Treated Water Transmission	$139	$139	Continuing
73	FAHCE Implementation	$145,108	$145,108	Plng
71	Expedited Purified Water Program	$277,235	$258,888	Plng/Des
71	Long-Term Purified Water Program Elements	$367,551	$367,551	FY23
70	Coyote Pumping Plant ASD Replacement	$16,985	$16,885	FY19
70	Main & Madrone Pipelines Restoration	$17,703	$292	Des
67	Vasona Pumping Plant Upgrade	$21,211	$20,690	Plng
62	IRP2 Additional Line Valves	$11,561	$11,561	Plng
62	Treated Water Isolation Valves	$8,215	$8,215	Plng
52	Pacheco Reservoir Feasibility Study	$16,426	$14,176	Plng
52	South County Recycled Water Pipeline	$49,705	$25,476	Des/Const
50	Almaden Dam Improvements	$60,614	$49,390	Plng/Des
48	Coyote Warehouse	$6,471	$528	Des/Const

LOWER PRIORITY OR UNFUNDED FUTURE PROJECTS

72	Dam Seismic Retrofit at 2 Dams (Chesbro & Uvas)	$89,500	$89,500	N/A
62	SCADA Small Capital Improvements	$19,612	$19,612	N/A
52	Pacheco Reservoir Expansion Project - Design/Const.	$1,179,018	$1,179,018	N/A
32	South County Recycled Water Reservoir Expansion	$7,000	$7,000	N/A
28	Alamitos Diversion Dam Improvements	$3,183	$2,345	N/A
28	Coyote Diversion Dam Improvements	$2,461	$2,138	N/A
25	Land Rights - South County Recycled Water PL	$5,816	$5,816	N/A

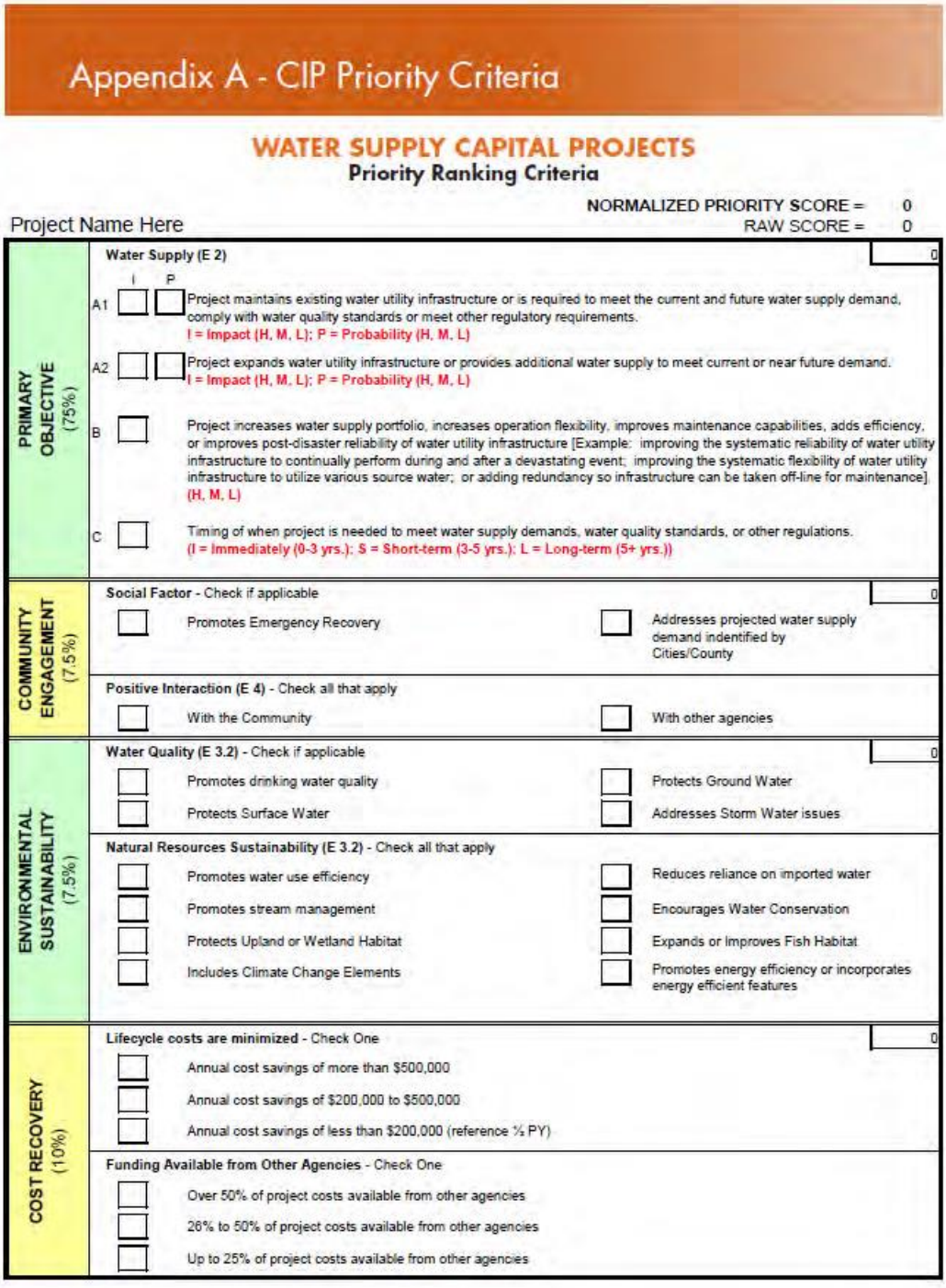
3. Project Roll-Up Summaries

CIP Funding Schedule by Type of Improvement and Funding Sources ($K)

	Through FY17	FY18	FY18 Unspent	FY19	FY20	FY21	FY22	FY23	FY24-33	TOTAL
WATER SUPPLY										
Water Utility Enterprise Fund	314,918	123,502	37,814	104,120	261,166	229,480	280,618	337,926	529,001	2,180,731
General Fund	-	2,250	-	14,176	-	-	-	-	-	16,426
Safe, Clean Water and Natural Flood Protection Fund	-	-	-	1,392	343	14,565	4,379	14,691	121,299	156,669
Water Supply Total	314,918	125,752	37,814	119,688	261,509	244,045	284,997	352,617	650,300	2,353,826
FLOOD PROTECTION										
Watershed Stream Stewardship Fund	302,441	25,179	21,577	50,621	28,042	22,190	15,318	11,358	183,424	638,573
Safe, Clean Water and Natural Flood Protection Fund	416,241	51,328	66,404	38,029	65,760	35,093	24,055	22,472	35,936	688,914
Flood Protection Total	718,682	76,507	87,981	88,650	93,802	57,283	39,373	33,830	219,360	1,327,487
WATER RESOURCES STEWARDSHIP										
Water Utility Enterprise Fund	765	-	-	-	-	4,006	6,713	3,738	39,237	54,458
Watershed Stream Stewardship Fund	20,632	2,431	517	1,110	358	534	6,844	6,744	21,350	60,003
Safe, Clean Water and Natural Flood Protection Fund	8,853	2,197	2,282	3,164	13,367	17,529	10,709	775	10,555	67,149
Mitigation Total	30,250	4,628	2,799	4,274	13,725	22,068	24,266	11,257	71,142	181,610
BUILDINGS AND GROUNDS										
General Fund	1,176	2,046	1,156	2,072	3,171	6,101	9,384	7,366	28,246	59,562
Buildings and Grounds Total	1,176	2,046	1,156	2,072	3,171	6,101	9,384	7,366	28,246	59,562
INFORMATION TECHNOLOGY										
Water Utility Enterprise Fund	920	1,301	33	503	192	-	101	1,588	8,180	12,785
General Fund	1,199	-	-	-	-	-	-	-	-	1,199
Information Technology Fund	10,727	7,376	7,035	4,300	3,911	941	429	2,358	11,304	41,346
Information Technology Total	12,846	8,677	7,068	4,803	4,103	941	530	3,946	19,484	55,330
TOTAL	1,077,872	217,610	136,818	219,487	376,310	330,438	358,550	409,016	988,532	3,977,815
CUMULATIVE TOTAL	1,077,872	1,295,482		1,514,969	1,891,279	2,221,717	2,580,267	2,989,283	3,977,815	

FY 2017-18 Funds to be reappropriated

4. CIP Priority/Performance Parameters



Appendix A - CIP Priority Criteria

WATER SUPPLY CAPITAL PROJECTS
Priority Ranking Criteria

NORMALIZED PRIORITY SCORE = 0
RAW SCORE = 0

Project Name Here

PRIMARY OBJECTIVE (75%)

Water Supply (E 2) 0

	I	P	
A1	☐	☐	Project maintains existing water utility infrastructure or is required to meet the current and future water supply demand, comply with water quality standards or meet other regulatory requirements. I = Impact (H, M, L); P = Probability (H, M, L)
A2	☐	☐	Project expands water utility infrastructure or provides additional water supply to meet current or near future demand. I = Impact (H, M, L); P = Probability (H, M, L)
B	☐		Project increases water supply portfolio, increases operation flexibility, improves maintenance capabilities, adds efficiency, or improves post-disaster reliability of water utility infrastructure [Example: improving the systematic reliability of water utility infrastructure to continually perform during and after a devastating event; improving the systematic flexibility of water utility infrastructure to utilize various source water; or adding redundancy so infrastructure can be taken off-line for maintenance] (H, M, L)
C	☐		Timing of when project is needed to meet water supply demands, water quality standards, or other regulations. (I = Immediately (0-3 yrs.); S = Short-term (3-5 yrs.); L = Long-term (5+ yrs.))

COMMUNITY ENGAGEMENT (7.5%)

Social Factor - Check if applicable 0

- ☐ Promotes Emergency Recovery
- ☐ Addresses projected water supply demand indentified by Cities/County

Positive Interaction (E 4) - Check all that apply

- ☐ With the Community
- ☐ With other agencies

ENVIRONMENTAL SUSTAINABILITY (7.5%)

Water Quality (E 3.2) - Check if applicable 0

- ☐ Promotes drinking water quality
- ☐ Protects Ground Water
- ☐ Protects Surface Water
- ☐ Addresses Storm Water issues

Natural Resources Sustainability (E 3.2) - Check all that apply

- ☐ Promotes water use efficiency
- ☐ Reduces reliance on imported water
- ☐ Promotes stream management
- ☐ Encourages Water Conservation
- ☐ Protects Upland or Wetland Habitat
- ☐ Expands or Improves Fish Habitat
- ☐ Includes Climate Change Elements
- ☐ Promotes energy efficiency or incorporates energy efficient features

COST RECOVERY (10%)

Lifecycle costs are minimized - Check One 0

- ☐ Annual cost savings of more than $500,000
- ☐ Annual cost savings of $200,000 to $500,000
- ☐ Annual cost savings of less than $200,000 (reference ½ PY)

Funding Available from Other Agencies - Check One

- ☐ Over 50% of project costs available from other agencies
- ☐ 26% to 50% of project costs available from other agencies
- ☐ Up to 25% of project costs available from other agencies

Appendix H:
Seattle Public Utilities Information

City of Seattle / Seattle Public Utilities (SPU)

References:

2018-2023 Adopted Capital Improvement Program
(http://www.seattle.gov/financedepartment/1823adoptedcip/default.htm)

Website: https://www.seattle.gov/utilities

Seattle Public Utilities (SPU) is a public utility agency of the city of Seattle, Washington, which provides water, sewer, drainage and garbage services for 1.4 million people in the greater Seattle area (see Figure G-1). The agency was established in 1997, consolidating the city's Water Department with other city functions.

The City of Seattle owns and operates a variety of physical assets, ranging from community parks, roadways, bridges, office buildings, libraries, open space, fire stations, maintenance yards, facilities at Seattle Center, and more. The City must properly maintain these assets to ensure they are safe, lasting, and provide a welcoming and usable space to serve their intended purposes. The City's utility infrastructure is also included in the CIP, including electrical, solid waste, water and wastewater utility assets. The City's capital infrastructure supports City operations, direct public services and programs, and in some cases, provides direct public benefits themselves. This comparison focuses primarily on the portion of the City's CIP that covers their water utility.

Figure H-1: Map Depicting the Water Service Area Associated with the Seattle Public Utilities

CIP Development Process

Every year during the City's annual budget process, the City adopts a six-year CIP, which outlines anticipated investments over that timeframe.

Capital Planning Policies

The City has historically based capital planning efforts on a set of criteria that help set priorities among potential capital programs. Resolution 31203, adopted in June 2010, set out the following policies to guide the City's capital spending:

- preserve and maintain existing capital assets;
- support the goals of the City's plans;
- support economic development;
- consider external funding possibilities;
- consider revenue-generating possibilities;
- seek regional funding for regional projects;
- pursue cost-saving commitments;
- pursue conservation and sustainability investments.

Additional specific considerations include:

- compliance with regulatory requirements;
- coordination between departments and with other jurisdictions; and
- public safety and health.

Capital Cabinet

In 2016, the City re-convened a Capital Cabinet to establish a coordinated decision-making structure to guide the planning and implementation of infrastructure investments and address directly related significant non-infrastructure issues so that the City delivers high quality capital projects on scope, schedule and budget. The Office of Planning and Community Development (OPCD) and the City Budget Office (CBO) co-lead the Capital Cabinet. Cabinet members are directors from key capital departments and others to address outreach, and economic issues, including Seattle City Light (SCL), Seattle Public Utilities (SPU), Seattle Department of Transportation (SDOT), Seattle Department of Construction and Inspections (SDCI), Department of Neighborhoods (DON), Office of Economic Development (OED), Department of Finance and Administrative Services (FAS), Department of Parks and Recreation (DPR), and

Office of Housing (OH). It also includes participation by other departments to address environmental and race and social justice issues.

Geographical Focused Capital Investment

In late 2016 and early 2017 the Capital Cabinet created two pilot focus areas for coordinated capital investment based on specific geographic areas. The pilots will target capital investments in areas that the City deems appropriate for renewed planning.

CIP Development and Delivery Working Group

In early 2017, the Capital Cabinet created the CIP Development and Delivery Working Group (Working Group). The Working Group, let by CBO, included project development and delivery and finance staff from each of the large capital departments (SDOT, SPU, SCL, FAS, and Office of the Waterfront) as well as input from Council Central Staff.

The goal of the Working Group was to develop a more uniform approach to capital project development and delivery across the organization. To date, this group has created a universal language for CIP Projects across the City. The Working Group finalized six common CIP project stages for which to categorize all discrete projects. Readers will notice that each project categorized as a discrete project will now display the Current Project Stage. The Current Project Stage will indicate the relative certainty of the project budget. The project stage definitions are defined in the Reader's Guide section of the CIP.

CIP Staged Oversight Pilot

The 2018 Adopted Budget contains two pilot projects for capital project oversight by stage, or project phase. Both projects contain provisos that establish a Council reporting requirement before moving to the next stage of the project.

Capital Program Funding

Like all large municipalities, Seattle relies on a variety of sources to pay for capital projects. These include locally generated revenues (taxes, fees, voter-approved levies, and user fees), intergovernmental revenues (including state and federal grants), private funding (franchise utilities, philanthropy) and debt issuance. These traditional sources continue to provide the majority of funding for capital facility investments. The City's level of capital investment is based on the mix and amount of financial resources available to the City. Their Utility organizations rely on a subset of those specific funding sources as detailed below.

Public Utility Funding

Seattle Public Utilities fund utility projects with revenues from utility rates. Each utility has adopted financial policies that determine what share of their capital investments are funded through cash, and what share from debt. These policies are designed to balance the portion of current investments that are paid by today's ratepayers, versus future ratepayers who will also benefit from long-term capital investments.

Funding as provided for FY 2018-2023 by the City of Seattle for their various agencies are shown below, including that for the Seattle Public Utilities.

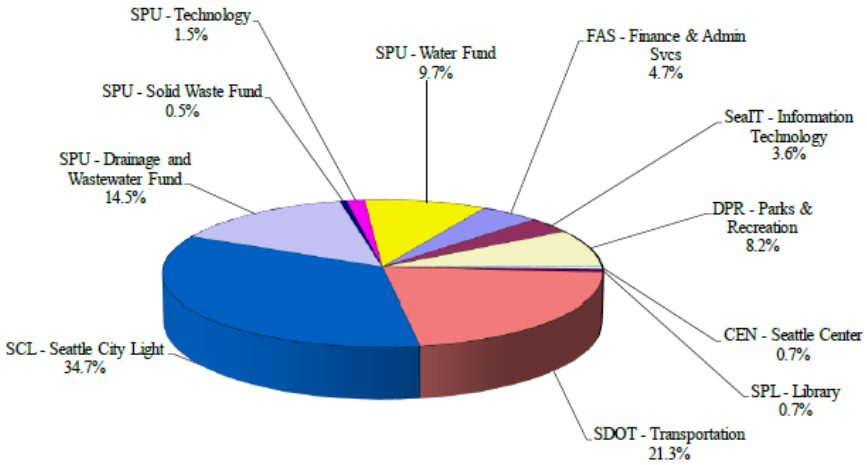
Overview

2018-2023 Adopted CIP by Department (000s)

Department	2017 Adopted	2018 Endorsed	2018 Adopted	2019 -2023 Estimate	2018-2023 Total
Finance and Admin Services	66,990	44,365	52,457	62,065	114,522
Information Technology	42,136	44,018	39,961	141,698	181,659
Parks and Recreation	79,405	84,380	92,339	375,840	468,179
Seattle Center	13,073	7,340	8,240	34,086	42,326
Seattle Public Library	5,557	4,322	7,477	4,882	12,359
Seattle Dept of Transportation	235,944	353,042	238,856	1,512,126	1,750,981
Subtotal	**443,105**	**537,467**	**439,329**	**2,130,697**	**2,570,026**
City-owned Utilities					
Seattle City Light	410,173	385,227	388,894	1,910,198	2,299,092
SPU - Drainage & Wastewater	125,910	158,106	162,643	1,117,023	1,279,666
SPU - Solid Waste	11,146	22,137	5,787	53,744	59,531
SPU - Technology Projects	28,783	16,322	16,409	51,000	67,409
SPU - Water	88,591	101,721	109,229	421,947	531,176
Subtotal	**664,603**	**683,512**	**682,961**	**3,553,912**	**4,236,873**
City Total	**1,107,708**	**1,220,980**	**1,122,291**	**5,684,609**	**6,806,899**

Note: 2017 Adopted totals are based on the 2017-2022 Adopted CIP. Not all funds above are appropriated; see the 2018 Adopted Budget for a list of capital appropriations by department.

2018 Adopted CIP by Department - $1,122 Million



Portion of Seattle's Citywide CIP that addresses Seattle Public Utilities Water needs

As noted in the above documentation, Seattle Public Utilities address not simply water supply needs, but also drainage and wastewater, solid waste, and technology projects. For the purposes of this Study, there is a greater focus on the water component of Seattle's CIP.

Overview of the Seattle's SFPUC - Water CIP Section

SPU delivers an average of approximately 120 million gallons of drinking water per day to 1.4 million people and businesses in Seattle and 18 surrounding cities and water districts, plus the Cascade Water Alliance. The water system infrastructure includes:

- The Cedar and South Fork Tolt supply sources;
- Three groundwater wells;
- Two primary water treatment plants;
- 11 booster chlorination facilities;
- 327 million gallons of treated water storage;
- 31 pump stations;
- Approximately 1,900 miles of transmission and distribution system pipelines;
- Almost 200,000 meters and service connections;
- More than 21,000 distribution system valves;
- About 18,000 hydrants;
- Monitoring and control systems; and,
- Various buildings and other related facilities.

In addition to replacing and improving the supply, treatment, transmission and distribution systems, the most current CIP includes investments in watershed stewardship projects, Cedar River Watershed Habitat Conservation Plan implementation, water conservation programs, vehicles, heavy equipment, and technology.

Planned spending in the Water Capital Improvement Program (CIP) is $568 million over the next six years. Major projects include:

- water system improvements associated with transportation projects, including Move Seattle;
- operational and Regional Facility construction;
- replacement of the Bitter Lake and Lake Forest Park Reservoirs floating covers; and
- addressing a slide area through which the Tolt Pipelines pass, upstream of the Tolt Treatment Plant.

The 2018-2023 Adopted CIP also includes many ongoing programs, such as improving the distribution and transmission system water mains, valves, steel storage tanks, and pump stations; watershed stewardship and conservation projects and programs; and facilities, vehicles, and heavy equipment investments.

Water CIP Funding

SPU funds Water capital projects through a combination of cash and issuance of bonds. The primary source of cash and debt repayment funds come from sale of water charged to retail and wholesale customers in the region. SPU has updated the Water System Plan through 2018, a Washington Department of Health (WDOH) regulatory requirement.

SPU's Water CIP is funded largely by Water ratepayers. About 72% of the Water Fund's Operating revenues come from retail ratepayers, split approximately evenly between residential and commercial customers. Another 21% of the Water Fund's overall revenues come from wholesale purveyors who serve surrounding jurisdictions. The remaining 7% consists of non-rate revenue, which include such items as tap fees received. SPU issues bonds, serviced by ratepayers, which in the current period covers 64% of the CIP, with the remainder funded by cash and loan, i.e. directly by ratepayer revenue. SPU actively seeks grants, low interest loans, and other funding sources whenever possible. And, as mentioned above, SPU also receives payments from developers that are intended to offset the cost of installing new taps when they connect newly constructed buildings to the SPU watermains. These "tap fees" are a volatile revenue source, trending with the construction-related sectors of the economy.

There are eight (8) program categories in the Water Section's CIP (see Table H-1).

Thematic Priorities

The overarching goal of Seattle's Water CIP is to ensure that the water system is properly maintained, upgraded, and expanded to reliably deliver high-quality, safe drinking water to customers, protect the environment, and comply with regulations. The primary themes driving the CIP in the next six years are asset preservation, health and human safety, environmental sustainability, and race and social justice.

Table H-1: Capital Programs

Program	Definition
Distribution	Projects and programs in this category relate to rehabilitation and improvements to the City's water mains and appurtenances, water storage tanks, pump stations, and other facilities that are part of the system that distributes treated water throughout the City of Seattle and to retail customers outside of the City.
Transmission	The purpose of this program category is to rehabilitate and improve the City's large transmission pipelines that bring untreated water to the treatment facilities and convey treated water from the treatment facilities to Seattle and to other local utilities that purchase a portion of SPU's supply for their customers.
Watershed Stewardship	Projects and programs in this category improve protection of our sources of drinking water, provide habitat protection and restoration, sustain the environment, and enhance environmental quality, both locally and regionally. Most of the projects in this program category are located within the Cedar and Tolt River municipal watersheds. Three of these projects are being carried out in response to the Endangered Species Act's designation of the Chinook salmon as a threatened species.
Water Quality and Treatment	The purpose of this program category is to construct, rehabilitate or improve water treatment facilities, and cover the remaining open water reservoirs. State and federal drinking water regulations and public health protection are key drivers of investments in this program category. To comply with regulations, SPU has invested hundreds of millions of dollars in building two new primary treatment facilities and covering two and burying five reservoirs that contain already treated water that is distributed directly to Seattle retail and wholesale customers for drinking purposes.
Water Resources	The purpose of this program category is to manage water resources to meet anticipated demands and in-stream flow requirements – the amount of water provided to the river to support aquatic habitat, wetlands, riparian vegetation, and water quality – and to promote residential and commercial water conservation. The requirements for in-stream flows are detailed in agreements with state and federal agencies and include provisions for minimum stream flows in the Cedar and South Fork Tolt Rivers. Examples of the types of projects in this category include the Dam Safety Program, the Morse Lake Pump Plant, and Sockeye Broodstock Weir and other improvements associated with the hatchery and fish ladder.
Habitat Conservation Program	This program category includes projects and programs directly related to implementation of the Cedar River Watershed Habitat Conservation Plan. The Habitat Conservation Plan benefits the utility and the ratepayers it serves by providing legal certainty under the Endangered Species Act for the City's continued operations within the Cedar River Watershed, which supplies 65% of the SPU's drinking water. The Habitat Conservation Program requires SPU to invest $100 million over 50 years, with $60 million in the first decade, on approximately 30 capital projects and 60 O&M activities in three areas: management of in-stream flows for people and fish, forest and land conservation activities, and mitigation for the blockage of salmon and steelhead fish as they return to the Cedar River to spawn. The Water Fund's

Program	Definition
	CIP projects in this area are grouped into eight categories: road improvements and decommissioning, stream and riparian restoration, upland forest restoration, Landsburg fish passage, Cedar River sockeye hatchery, improvements to the Ballard Locks for fish passage and water conservation, fish habitat protection and restoration in the lower Cedar River below the municipal watershed boundary, and evaluation of Cedar permanent dead storage in Chester Morse Lake.
Shared Cost Projects	This program includes individual capital improvement projects which typically benefit multiple lines of business (e.g. the water line of business and the drainage and wastewater line of business) and whose costs are "shared," or paid for, by more than one of SPU's utility funds. For the next six years, the Shared Cost program includes funding for several interdepartmental programs and projects including Move Seattle Levy, Alaskan Way Viaduct and Seawall Replacement, Mercer Corridor and Sound Transit Link Light Rail. Funding is also included for SPU's Heavy Equipment Purchases and several smaller projects.
Technology	The Technology capital portfolio is managed in six program areas, which provide a department-wide view of technology investments to address SPU's strategic, business, and City-wide priorities. These areas are: • Customer Contact and Billing • Enterprise Information Management • IT Infrastructure • Project Delivery & Performance • Science & System Performance • Asset Information Management

Project Selection Criteria

SPU identifies candidate capital projects from several sources – planning (e.g. comprehensive plans, program plans), external projects and opportunities, and emergencies or other unexpected events. Under SPU's Asset Management system, projects must be justified through a business case process that establishes that a problem or opportunity is timely and important, and that the proposed solution is superior to alternatives based on a triple bottom line analysis (economic, environmental and social) of life cycle costs and benefits. The process also recognizes that a project may be a "must do" project (e.g. required by regulation).

SPU prioritizes its capital projects into three categories – Priorities 1, 2 and 3, with 1 being the most important and critical. Some projects are part of an externally driven project. Typically, SPU lacks control over the timing of externally driven projects.

Priority rankings are based on five (5) evaluation criteria (see Table H-2).

Table H-2: Evaluation Criteria

Criteria	Description
Regulatory Mandates, Legal Agreements	The degree to which a project is driven by federal, state, and local laws, permit and regulatory requirements, and consent decrees; as well as by legal agreements with public and private parties. Examples of highly ranked projects in this category include the reservoir covering programs and the Habitat Conservation Program.
External Drivers	SPU's responsiveness to, or engagement with, projects of other Departments or Jurisdictions, and the specific mandates of the City. Examples of highly ranked projects in this category include the Alaskan Way Viaduct and Mercer Corridor projects.
Infrastructure	How a project addresses infrastructure conditions or vulnerabilities. Examples of highly ranked projects in this category include the Watermain Rehabilitation, Distribution System Improvements and Tank Improvements programs.
Level of Service	The importance of a project in providing or improving services to customers. Examples of highly ranked projects in this category include the Water Infrastructure – New Taps and Service Renewals programs.
Other Factors	Other important factors include high net present value or cost-effectiveness, social or environmental benefits not otherwise captured, a project already in progress or near completion, limited time opportunity, demonstration projects, community visibility, outside funding. An example of a highly ranked project in this category includes Rattlesnake Lake Sanitary Facilities.

Every project is rated against each criterion. Criteria ratings are then considered in determining an overall project priority ranking, using expert judgment (rather than a formula). Priority rankings for the CIP are determined by the leads for each Line of Business (LOB), with review by key internal stakeholders. The ranking scheme and criteria are the same for all LOBs and are approved by the SPU GM/CEO and Asset Management Committee. Project priority rankings are used to clarify and document which projects are most important (and why), to help determine which projects at the margin will be included or excluded (or deferred) from the CIP, and which projects should receive priority attention if a staff or financial resource constraint should arise.

In recent years, this prioritization process and business case analysis has resulted in decisions to defer some capital projects and retire or downsize some facilities, primarily finished water reservoirs. Retiring facilities reduces capital expenditures since these facilities need major improvements (such as seismic retrofits) that are avoided, as well as reduces annual operating costs since the level of maintenance is greatly reduced. Downsizing or retiring storage facilities is possible because the need for storage has changed over time as the system has been reconfigured, transmission and treatment has become more reliable, and demands, particularly for fire flows, have declined.

Note that the CIP also includes mention of key challenges that must be faced in this particular period of time as it relates to the Water section. These issues include the following:

- Water Conservation: The City of Seattle, Seattle residents and businesses, and Seattle's wholesale water partners have worked together to reduce water consumption. As a result, consumption has declined since the 1980's and is projected to flatten out. While this accomplishment helps contribute to a sustainable future for the region, it puts financial pressure on the utility because fixed costs, including the costs of the CIP, need to be distributed across fewer units of water sold.
- Transitioning from Major Projects toward Asset Management: The Water Fund is transitioning from a period of building large capital projects, in response to regulatory requirements, to a time of physical infrastructure rehabilitation.

CIP Project Listings Formatting

CIP project pages, located in the departmental sections of Seattle's CIP, provide the most detailed information about a project (see Table H-3).

Table H-3: Project Detail Description

Information Field	Description
Project Type	Projects will have one of three project types: Discrete, Ongoing, or Debt Service. Discrete projects are those with a distinct start and end date and build an individual asset. Ongoing CIP projects are departmental CIP programs that build or maintain a group of similar assets. Debt Service projects show the dedicated funding stream to pay the debt service for a project, or group of projects.
Project No.	Unique number identifying a project in the City's automated financial management system.
Start/End Date	Estimated Start and End year of a discrete project. Projects categorized as "Ongoing" in the Project Type field are programmatic and continue year after year, therefore they not display a Start/End Date. Projects without a determined start or end date may show as "TBD" or "On Hold."

Information Field	Description
BCL (Budget Control Level) – Program Code, BCL – Program Name	A grouping of similar projects into department-specific programs. Also reflects the level at which expenditures are controlled to meet state budget law provisions.
Current Project Stage	The current stage of a discrete CIP Project during budget planning (August of the budget development year).
Project Category	Projects are identified as New Facilities, Improvements to Existing Facilities, or Rehabilitation or Restoration of Existing Facilities. Technology projects, or those that do not fit into the categories above, are identified as New Investments.
Location	Street address, intersection, or general location of a project. If a project has multiple location entries, only one project location entry will be included in the CIP.
Neighborhood District	The City is divided into 13 neighborhood districts. This field indicates in which (if any) neighborhood district(s), a project is located. Some projects are located in more than one neighborhood district or outside the City and are so noted.
Council District	The City is divided into 7 Council districts. This field indicates in which (if any) council district(s), a project is located. Some projects are located in more than one council district or outside the City and are so noted.
Total Project Cost	The expected total project cost estimate of a Discrete project. The Total Project Cost includes any "out year" spending (spending outside the current six-year CIP).
Urban Village	This field indicates whether a project is located in an Urban Village, a designated geographic area expected to accommodate future population and job growth, as defined by the Comprehensive Plan's growth management strategy.
Project Description	Information about the purpose, scope, and history of the project.
Resources	The Resources are all sources of money supporting grants, private donations, debt, Real Estate Excise Taxes, etc. The Resources Table lists the project's revenue sources, life-to-date (LTD) expenditures through 2016; the 2017 revised budget (including 2017 Adopted Budget, carry-forward balances, abandonments, and supplemental appropriations); adopted 2018 appropriations; and estimated appropriation requests for 2019-2023. "TBD" indicates that revenue sources are to be determined.
Fund Appropriations or Allocations	This table lists the appropriating funds, which are those funds through which the department has legal appropriation authority, and dollar information by year. Note that this level of detail on the project pages is for information only. The City appropriates funds at the Budget Control Level.
O&M Costs (Savings)	Estimate of significant increases or decreases in operations and maintenance costs as a result of a capital project. "N/C" denotes that operations and maintenance costs are not calculated.
Spending Plan	This field shows the anticipated project spending as of the current planning year.

Selected Excerpts from CIP Documentation

1. Project Description

CIP Project Page

SPU-Water

Chamber Upgrades - Distribution

Project Type:	Ongoing	**Project No.:**	C1137
Start/End Date:	N/A	**BCL/Program Code:**	C110B
Project Category:	Improved Facility	**BCL/Program Name:**	Distribution
		Location:	Citywide
Neighborhood District:	Not in a Neighborhood District	**Council District:**	Multiple
Total Project Cost:	N/A	**Urban Village:**	Multiple

This ongoing project improves access to water distribution chambers throughout the water distribution system. The replacement and/or enlargement of the entrance to distribution chambers improves the health and safety of workers who need to access chambers and meets Occupational, Safety, and Health Administration (OSHA) and Washington Safety and Health Administration (WSHA) safety and health requirements.

	LTD Actuals	2017 REV	2018	2019	2020	2021	2022	2023	Total
Resources									
Water Rates	224	28	29	29	30	30	30	381	781
Total:	224	28	29	29	30	30	30	381	781

	LTD Actuals	2017 REV	2018	2019	2020	2021	2022	2023	Total
Fund Appropriations/ Allocations*									
Water Fund	224	28	29	29	30	30	30	381	781
Total:	224	28	29	29	30	30	30	381	781

	LTD Actuals	2017 REV	2018	2019	2020	2021	2022	2023	Total
Spending Plan									
Water Fund	224	28	29	29	30	30	30	381	781
Total:	224	28	29	29	30	30	30	381	781

	2018	2019	2020	2021	2022	2023	Total
O & M Costs (Savings)							
Total:	0	0	0	0	0	0	0

** Funds are appropriated through the Adopted Budget at the Budget Control Level. All amounts shown above are in thousands of dollars.*

2. Project Line-Item Summaries

SPU-Water

Project Summary

BCL/Program Name/ Project Title & ID	LTD Actuals	2017	2018	2019	2020	2021	2022	2023	Total
Distribution						**BCL/Program Code:**			**C110B**
Ongoing									
Chamber Upgrades - Distribution (C1137)	224	28	29	29	30	30	30	381	781
Distribution System Improvements (C1128)	11,228	2,010	3,004	3,500	3,000	3,000	3,000	4,000	32,742
Distribution System In-Line Gate Valves (C1136)	1,065	338	345	351	359	366	373	381	3,577
Multiple Utility Relocation (C1133)	6,666	500	505	500	500	500	500	500	10,172
Pump Station Improvements (C1135)	423	800	1,600	1,500	281	500	500	500	6,104
Tank Improvements (C1134)	4,735	265	729	2,747	5,487	800	2,060	4,250	21,072
Water Infrastructure - Distribution System Modifications (C1138)	285	104	115	108	110	113	115	118	1,068
Water Infrastructure - Hydrant Replacement/Relocation (C1110)	5,597	212	216	221	225	230	235	239	7,175
Water Infrastructure - New Hydrants (C1112)	673	13	13	13	14	14	14	15	768
Water Infrastructure - New Taps (C1113)	127,242	8,843	9,020	9,201	9,385	9,572	9,764	9,959	192,986
Water Infrastructure - Service Renewal (C1109)	118,424	7,722	5,837	4,953	5,072	5,193	5,317	5,443	157,962
Water Infrastructure - Watermain Extensions (C1111)	15,149	845	862	879	897	915	897	915	21,359
Watermain Rehabilitation (C1129)	12,554	6,615	12,412	5,542	4,728	4,860	4,999	5,140	56,850
Distribution	304,264	28,295	34,687	29,546	30,086	26,093	27,804	31,840	512,616
Transmission						**BCL/Program Code:**			**C120B**
Ongoing									
Cathodic Protection Program (C1208)	2,577	1,889	1,977	2,112	616	2,320	624	2,428	14,543
Purveyor Meters Replace - SPU (C1206)	1,353	208	213	218	223	100	100	100	2,515

** Funds are appropriated through the Adopted Budget at the Budget Control Level. All amounts shown above are in thousands of dollars.*

3. Project Roll-Up Summaries

2018-2023 Adopted Water Fund CIP by BCL
(In '000s; total may not sum due to rounding)

BCL	2018	2019	2020	2021	2022	2023	Total
Distribution	34,687	29,546	30,086	26,093	27,804	31,840	**180,056**
Habitat Conservation Program	1,959	1,847	1,447	1,504	1,392	1,314	**9,464**
Shared Cost Projects	51,027	41,889	36,702	26,339	17,080	16,878	**189,916**
Technology	7,031	5,485	4,207	4,241	4,241	4,241	**29,446**
Transmission	9,662	11,325	8,029	12,585	4,390	5,198	**51,189**
Water Quality & Treatment	2,363	6,117	20,491	1,989	7,640	19,600	**58,199**
Water Resources	8,553	16,039	3,614	3,756	3,854	5,063	**40,880**
Watershed Stewardship	977	84	165	105	65	75	**1,471**
Total	**116,259**	**112,331**	**104,741**	**76,613**	**66,467**	**84,210**	**560,622**

Appendix I:
Western Municipal Water District Information

Western Municipal Water District (WMWD)

References:

Staff Report: Proposed Fiscal Year 2018-2019 Capital Spending Plan Listing (http://www.wmwd.com/DocumentCenter/View/3155/Capital-Spending-Plan-Fiscal-Year?bidId)

Website: https://www.wmwd.com/

Western Municipal Water District (Western) was formed in 1954, and today provides reliable water and wastewater services to retail customers and wholesale agencies from Corona to Temecula, CA. As a member agency of Metropolitan Water District of Southern California, the state's largest water supplier, Western receives most of its water from the Sacramento-San Joaquin Bay-Delta and from the Colorado River. Most of the Delta water Western receives originates as snowpack in the Sierra Nevadas and travels 444 miles southerly to its final destination in Southern California homes and businesses. Slicing its way through a 200-plus mile journey, Colorado River water travels westward in the aqueduct built by Metropolitan in the 1930s.

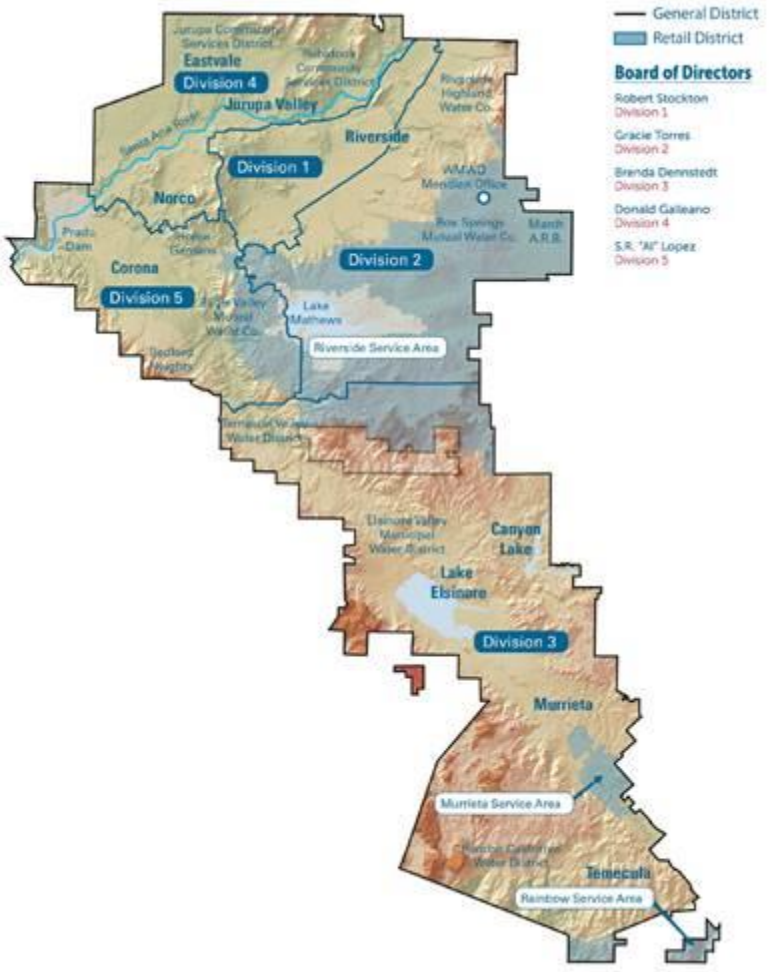
Western has a groundwater supply in its Murrieta Division, which is combined with imported water for the region's residents. Western also has rights to groundwater in the Bunker Hill Basin, which is transported into their Riverside Division through an agreement with the city of Riverside.

General Information

Western supplies water on both a wholesale and a retail basis to a region stretching 527-square miles in western Riverside County with an assessed valuation of $83 billion and a population of more than 880,000 people. This regional area includes the cities of Corona, Norco and Riverside and the water agencies serving Box Springs, Eagle Valley, Lake Elsinore, Temescal Valley and Temecula (see Figure I-1).

Western is governed by a Board of Directors, elected to four-year terms by registered voters in the five election divisions. Western is staffed by approximately 140 employees who represent a variety of divisions of the District - engineering, finance, operations, water resources and administration. Western's current general manager also acts as its court-appointed watermaster.

Figure I-1: Western Municipal Water District Boundary Map



While most of Western's business is in wholesaling of water to water agencies and municipalities, it directly serves approximately 25,000 residential and business customers in the following areas:

- Riverside - home to Western's largest grouping of direct customers. Areas served include a portion of the city of Riverside, Orangecrest, Mission Grove, El Sobrante, Eagle Valley, Woodcrest, Lake Mathews, portions of Mead Valley and Perris, and March Air Reserve Base.

- Murrieta - with the merger of the city's water utility agency in 2005, Western now serves a 6.5-square mile section of western Murrieta, primarily in the historic downtown area of the city.
- Rainbow - Western's most distant served community is an unincorporated area of southern Riverside County bordering San Diego County.

Western currently sells approximately 85,000 acre-feet of water annually. This is equal to about 28 billion gallons of water. One-quarter of Western's sales are to retail customers; three-quarters to wholesale. About two-thirds of the water Western sells is treated; the balance is untreated or raw water. About one-quarter of water sales are for agricultural uses; the balance is for domestic purposes. Nearly all water sold by the District for agricultural purposes is used to irrigate citrus and avocados planted since the 1950s.

Water Sources

About one-fifth of the water Western purchases from the Metropolitan Water District of Southern California comes from the Colorado River Aqueduct. Most of the imported water supply comes from the State Water Project, which transports water from Northern California via the California Aqueduct. Western also imports a very small quantity of water from the San Bernardino basin. Western also has several wells for pumping groundwater in its Murrieta Division.

Santa Ana Watershed Project Authority

Western is one of five of the member agencies of the Santa Ana Watershed Project Authority (SAWPA), a regional water resources planning and project implementation organization.

Watermaster

As a water rights steward for the Santa Ana River Watershed, Western works to protect this important resource by carefully monitoring the quantities of water taken by all regional agencies with rights to this critical resource. Western's general manager also serves as a court-appointed guardian or "watermaster", as required by two 1969 court rulings or adjudications. These judgments determined the rights of the watershed users and other watershed entities.

The court designated four public agencies – including Western – to represent the interests of the upper and lower areas of the Santa Ana River and gave the agencies responsibility to oversee the watershed and fulfill court-ordered obligations.

Western is involved in four watermaster functions:

- Santa Ana River – 1969 surface water rights
- San Bernardino Basin Area – 1969 groundwater adjudication
- Chino Groundwater Basin – 1978 groundwater adjudication
- Santa Margarita River – 1964 surface and groundwater adjudication

Capital Programs

Western is in the process of developing a more formalized Capital Improvement and Facilities Plan (CIP) that will project forward for a period of five (5) fiscal years.

As detailed to their Board in April of 2018, the long-term objective of the Capital Spending Plan is to develop a comprehensive report in the next 12 months (by April of 2019) that provides substantial information pertaining to proposed capital investments in the coming five years. They propose that the document will include details for each project that will be part of the CIP, thoroughly describe the goals and strategies for successful completion, and identify the factors considered in prioritizing each item. Western staff also intend to include discussion of longer-term water supply matters, such as their efforts associated with the development of the Riverside North Aquifer Storage and Recovery Project.

As provided for this comparison, however, was Western's proposed Capital Spending Plan for Fiscal Year 2018-2019, which includes projected expenditures of $37 million. The Capital Spending Plan detailed the type of project (e.g., replacement, system improvements, reliability, equipment, business process improvement, growth-related, Western Riverside County Regional Wastewater Authority (WRCRWA), or other), the project status (e.g., design construction, planning, future, ongoing, equipment, or other) and an indication of whether the project was a new project or the continuation of an existing project.

Since Western is in the process of developing a more comprehensive CIP, for the purpose of this comparison no further discussion is warranted at this point in time.

Selected Excerpts from CIP Documentation

1. Project Line-Item Summaries

Attachment 1

Western Municipal Water District

Proposed Fiscal Year 2018/2019 Capital Spending Plan Listing

Updated 4/23/2018

Ref #	Project Name	Rank	Fund Description	2018/2019	(Offset) 2018/2019	2019/2020	(Offset) 2019/2020	2020/2021	(Offset) 2020/2021	2021/2022	(Offset) 2021/2022	2022/2023	(Offset) 2022/2023	Total
	TOTAL Net Total			37,048,585	(23,146,784) 13,901,801	14,736,134	(2,930,000) 11,806,134	18,435,139	(13,488,000) 4,947,139	7,649,487	(1,400,000) 6,249,487	8,248,648	(2,930,000) 5,318,648	88,817,993
1.0	Active Recharge Project - Sub-Tributaries	FEE	0	Water Resources Development	1,400,000	(1,400,000)	1,400,000	(1,400,000)	1,400,000	(1,400,000)	1,400,000	(1,400,000)	1,400,000	(1,400,000)	-
1.1	2016 Addendum to 2010 EIR for Projects	FEE	0	Water Resources Development	85,000										85,000
3.0	400 Pressure Zone Replacement	FEE	0	All Other Asset Replacement	150,000		150,000		150,000				20,000		470,000
3.1	400 Pressure Zone Improvements	FEE	0	All Other Asset Replacement	150,000		150,000		20,000						320,000
3.2	400 MSP Improvement	FEE	0	All Other Asset Replacement	15,000		15,000								30,000
4.0	Distribution System Improvements at each Treat A, B, and C	FEE	0	Aboveground Storage Replacement	15,000		150,000		50,000		50,000		50,000		315,000
4.1	General Management System	FEE	0	IT Projects	15,000		150,000		50,000		50,000		50,000		315,000
4.2	Conservation Water Smart Hubs Replacement Project	FEE	0	Replacement Asset Undersized			100,000		200,000		100,000		100,000		400,000
3.3	Undersized Backlog Projects - Still Spending Reserves	FEE	0	Water Resources Development	1,500,000	(1,500,000)	1,500,000	(1,500,000)							-
4.0	Facilities Security Improvements	FEE	0	IT Projects	15,000										15,000
5.0	GIS Application Improvements	FEE	0	IT Projects	15,000		50,000		50,000		50,000		50,000		215,000
5.1	Groundwater Database Management System (WISE)	FEE	0	General Plant	300,000		300,000		300,000		300,000		300,000		1,500,000
5.2	Groundwater Database Management System (WISE)	FEE	0	IT Projects	50,000										50,000
2.8	La Sierra Pipeline Oversizing per Settlement	FEE	0	Pre-Water Purchase	16,345,784	(16,345,784)									-
5.0	Valley Pipeline Replacement	FEE	0	Major Asset Rep	500,000		2,000,000								2,500,000
4.6	Water Improvement and Retrofit Project	FEE	0	Recycled System Improvement	1,964,465										1,964,465
3.0	Well Growth Implementation	FEE	0	Well Major Rehab			315,000		150,000				650,000		1,115,000
4.4	Well Emergency Plan	FEE	0	Well Major Rehab	200,000										200,000
3.5	Well Headworks	FEE	0	Well Major Rehab					50,000		100,000		150,000		300,000
4.5	Well Materials for Emergency Repair	FEE	0	Well Major Rehab					150,000		1,000,000				1,150,000
3.1	North Well Rehabilitation	FEE	0	Manhole Asset Replacement	500,000										500,000
7.2	Booster Pump System Replacements	FEE	0	Big Pumper System Improvement	25,000		150,000		150,000						175,000
7.5	Pump Motor Efficiency Program	FEE	0	Big Pumper System Improvement	50,000		150,000		150,000						350,000
4.5	Northern Recycled Water Extension	FEE	0	Recycled System Improvement	48,768		56,744		46,768		48,768				201,048
4.6	Sunnyside New Water Extension	FEE	0	Fuel Dispenser	108,122		108,122		108,122		108,122				432,488
7.0	Skyline Water at Diversion Pump Station	FEE	0	Big Aboveground Asset Replacement	15,000										15,000
7.1	Reservoir Management	FEE	0	Big Pumper System Improvement	300,000		300,000								600,000
3.6	2016 Master Plan	FEE	0	City Asset Replacement	150,000		150,000								300,000
4.0	Plant Turf Protector	FEE	0	Big Pumper System Improvement	250,000		250,000		150,000		150,000				800,000
8.0	Water Use Efficiency Master	FEE	0	Water Resources Development	100,000										100,000
8.1	210 Replacement - Northwest Zone	FEE	0	210 Northwest Asset Replacement	15,000		15,000								30,000
8.2	210 Replacement - Mission Zone	FEE	0	210 Mission Asset Replacement	15,000		15,000								30,000
4.5	Arizona Basin Recharge Project	FEE	0	Aboveground Storage Replacement	409,383	(3,000,000)									1,909,383
3.4	Operations Maintenance Work Area Network (OMAN) Expansion	FEE	0	IT Projects	50,000										50,000
3.5	OMAN Asset Replacement - Controls Upgrade	FEE	0	Control Asset Replacement	17,000		200,000		200,000		100,000		200,000		817,000
3.6	OMAN New Asset Replacement Capital Projects	FEE	0	Network System Improvement	665,000										665,000
4.0	WRP Wash Water Control System	FEE	0	Water System Improvement	200,000										200,000
8.0	WRWF Electrical Upgrades	FEE	0	Water Treatment System Improvement	15,000		15,000								30,000
8.1	WRWF Flood Improvements	FEE	0	Water Treatment System Improvement	15,000										15,000
7.3	Arizona Basin Pipeline and Wells (Phase 1 of Recharge Basin Project)	Pro	0	Aboveground Storage Replacement											-

Ref #	Project Name	Sort		Fund Description	2018/2019	(Offset) 2018/2019	2019/2020	(Offset) 2019/2020	2020/2021	(Offset) 2020/2021	2021/2022	(Offset) 2021/2022	2022/2023	(Offset) 2022/2023	Total
3.0	Meridian Electrical Breaker Installation	ADM	1	HQ Facilities Improvement	220,000										220,000
4.0	L269 Force Main Replacement	ENG	1	WWRF Conveyance West Asset Replacement	142,750		3,000,000								3,142,750
44.0	L269 Jurupa Pump Replacement	OPS	1	WWRF Conveyance East Asset Replacement	90,000		25,000		25,000						140,000
91.0	RPU Potable Intertie to Arlington Decalter (Fillmore/Magnolia	WR	1	Rix Potable System Improvement	130,000		750,000								880,000
96.0	Computer Systems, Servers, & Network Infrastructure	ADM	2	IT Projects	75,000		75,000		75,000		75,000		75,000		375,000
42.0	Tank Maintenance Program - Rainbow	ENG	2	Rainbow Asset Replacement	130,000				755,000		20,000		20,000		925,000
36.0	ADS Well Rehab	OPS	2	Arlington Asset Replacement	250,640		250,640		250,640		250,640		250,640		1,253,200
85.0	Meridian Landscape Update	WR	2	HQ Asset Replacement	250,000		100,000								350,000
2.0	IT Server Room Air Conditioner Replacement	ADM	3	HQ Asset Replacement			112,000								112,000
91.0	Reservoir Management - Murrieta	ENG	3	Murrieta Water	930,000										930,000
60.0	Monochloramine Analyzer	OPS	3	Rix Potable System Improvement	90,000										90,000
90.0	Riverside North Aquifer Storage & Recovery Project	WR	3	Water Resources Development									550,000		550,000
51.0	Meeting Room Technology Upgrade	ADM	4	HQ Facilities Improvement			75,000								75,000
17.0	Grizzly Ridge Rehabilitation	ENG	4	Murrieta Asset Replacement	76,000		674,000								930,000
70.0	Natural Gas Engine Overhaul Program	OPS	4	Rix Potable Asset Replacement	125,000		125,000		125,000		125,000		125,000		625,000
41.0	Tank Maintenance Program Non-Potable ^ Recycled	ENG	5	Rix NonPotable Asset Replacement	280,000		595,000		280,000		600,000		220,000		1,975,000
96.0	WWRF Oxidation Ditch TRC	OPS	5	WWRF Treatment System Improvement	150,000										150,000
57.0	Pipeline Replacement Program potable	ENG	6	Rix Potable Asset Replacement					2,000,000		2,000,000		2,000,000		6,000,000
84.0	WWRF Disinfection PLC Replacement	OPS	6	WWRF Treatment Asset Replacement	120,000										120,000
11.0	Electrical Facilities Upgrades Murrieta	ENG	7	Murrieta Asset Replacement	130,000										130,000
96.0	ADS RO Membrane Replacement	OPS	7	Arlington Asset Replacement			150,000		190,000		150,000				490,000
14.0	Facilities Master Plan Riverside Potable and Recycled	ENG	8	Rix Potable North AFC	210,000										210,000
76.0	Replace Existing Hydro-Vac Truck	OPS	8	Vehicles Asset Replacement			110,000		110,000		110,000		110,000		440,000
13.0	Facilities Master Plan Riverside Retail Sewer	ENG	9	WWRF Treatment AFC	157,500										157,500
61.0	Asphalt Replacement - Orangecrest	OPS	9	Rix Potable System Improvement			150,000								150,000
32.0	Operations Seismic Evaluation	ENG	10	Ops Facilities Improvement			167,500								167,500
61.0	ADS RO Feed Pump Replacement	OPS	10	Arlington Asset Replacement			100,000								100,000
21.0	MARB Sewer Collection System Infiltration Reduction Program	ENG	11	WWRF Conveyance East Asset Replacement	130,000										130,000
61.0	Asphalt Seal Coating Project Potable	OPS	11	Rix Potable System Improvement			50,000		90,000		90,000		90,000		320,000
21.0	Orange Crest Tank No 2	ENG	12	Rix Potable North AFC			400,000								400,000
64.0	Asphalt Seal Coating Project Non-Potable	OPS	12	Rix NonPotable Asset Replacement			25,000		25,000		25,000		25,000		100,000
46.0	WWRF Solids Handling	ENG	13	WWRF Treatment System Improvement			80,300								80,300
71.0	Operations Workspace Improvements	OPS	13	Ops Asset Replacement	30,000										30,000
11.0	Electrical Facilities Upgrades Riverside	ENG	14	Rix Potable Asset Replacement			100,000								100,000
91.0	Water Systems Operations Plan Implementation	OPS	14	Rix Potable System Improvement			100,000		100,000						200,000
41.0	Tank Maintenance Program - Murrieta	ENG	15	Murrieta Asset Replacement			80,000		595,000		220,000		220,000		1,115,000
96.0	District Metered Areas (DMA's)	OPS	15	Rix Potable System Improvement					150,000		150,000		80,000		380,000
95.0	Recycled Water System Air Vac Replacement	ENG	16	Rix NonPotable Asset Replacement			45,000		145,000						190,000
88.0	PRP Turnout at Western Way	ENG	17	Water Resources Development					1,075,000						1,075,000
5.0	L269 Lift Station	ENG	18	WWRF Conveyance East Asset Replacement					44,678		89,167				181,746
64.0	Tank Maintenance Program Potable	ENG	19	Rix Potable Asset Replacement					655,000		280,000		595,000		1,530,000
0.0	Bergamont Pump Station Upgrade	ENG	20	Rix Potable North AFC	220,000										220,000