



METROPOLITAN WATER DISTRICT



Biennial Budget

Fiscal Years
2018/19 and
2019/20

Realizing the
Benefit of Sound
Investments

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GOVERNMENT FINANCE OFFICERS ASSOCIATION

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PRESENTED TO

**Metropolitan Water District of Southern California
California**

For the Biennium Beginning

July 1, 2016

Christopher P. Morill

Executive Director

MWD AT A GLANCE

ORGANIZATION

Authority: The Metropolitan Water District Act (California Statutes 1927).

Incorporated: Dec. 6, 1928.

First Board Meeting: Dec. 29, 1928.

Mission: To provide Metropolitan's service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

Imported Water Sources: Colorado River and California State Water Project.

Service Area: About 5,200 square miles in Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties.

Population Served: Approximately 19 million.

Member Agencies: 26.

Founding Cities (December 1928): Anaheim, Beverly Hills, Burbank, Colton*, Glendale, Los Angeles, Pasadena, San Bernardino*, San Marino, Santa Ana and Santa Monica.
* Withdrew in 1931.

Subsequent Member Agency Cities: Cities of Fullerton (joined 1931), Long Beach (1931), Torrance (1931), Compton (1931), and San Fernando (1971).

Municipal Water Districts: West Basin MWD (1948), Inland Empire Utilities Agency (1950), Three Valleys MWD (1950), Eastern MWD (1951), MWD of Orange County (1951), Foothill MWD (1953), Central Basin MWD (1954), Western MWD (1954), Calleguas MWD (1960), Las Virgenes MWD (1960), and Upper San Gabriel Valley MWD (1963).

County Water Authority: San Diego (1946).

GOVERNANCE

Authority: 38. Each member agency is entitled to at least one director; additional directors are based on the agency's assessed valuation. Board meetings are generally held on the second Tuesday of each month. Check www.mwdh2o.com for meeting times and agendas.

FACILITIES

Colorado River Aqueduct: 242 miles from Lake Havasu to Lake Mathews, Riverside.

Construction: Began 1933, completed 1939; CRA and regional distribution system operational 1941.

Capacity: 1.3 million acre-feet[†] annually.

Pumping Plants (east to west): Whitsett Intake (lift 291 ft.); Gene (303 ft.); Iron Mountain (144 ft.); Eagle Mountain (438 ft.); Julian Hinds (441 ft.); Total lift 1,617 feet.

Siphons: 144, totaling 29 miles.

Tunnels: 29, totaling 92 miles.

Canals: 63 miles.

Conduits and Pipeline: 58 miles.

Design Capacity: 1,605 cubic feet per second.

Water Treatment Plants: Joseph Jensen, Granada Hills (capacity 750 million gallons per day); Robert A. Skinner, Winchester (630 mgd); F.E. Weymouth, La Verne (520 mgd); Robert B. Diemer, Yorba Linda (520 mgd); and Henry J. Mills, Riverside (220 mgd)

Reservoirs: Diamond Valley Lake, Hemet, capacity 810,000 AF; Lake Mathews, Riverside, 182,000 AF; Lake Skinner, Winchester, 44,000 AF; Copper Basin, Gene, 24,200 AF; Gene Wash, Gene, 6,300 AF; Live Oak, La Verne, 2,500 AF; Garvey, Monterey Park, 1,600 AF; Palos Verdes, Rolling Hills, 1,100 AF; and Orange County, Brea, 212 AF.

Total Reservoir Storage Capacity: 1,072,000 AF

Distribution System: 830 miles of pipelines and tunnels; about 400 connections to member agencies.

Hydroelectric Plants: 16; nameplate capacity 131 megawatts.

State Water Project: Metropolitan has rights to use SWP facilities under the State Water Contract.

SUPPLY, DELIVERIES AND WATER TRANSACTIONS

Average Daily Delivery: 4,900 AF (5-year avg. as of Dec. 31, 2017).

Record Daily Delivery: 9,872 AF on June 28, 1994.

Record Annual Water Transactions: 2.5 million AF in 1990.

Unit Price (full service): Effective Jan. 1, 2018, rates are \$1,015 per AF for treated water, and \$695 per AF for untreated water. Effective Jan. 1, 2019, rates are \$1,050 per AF (treated) and \$731 per AF (untreated), and effective Jan. 1, 2020, rates are \$1,078 per AF (treated) and \$755 per AF (untreated).

Budgeted Water Transactions Assumption: 1.65 MAF for FY 2018/19 and 1.75 MAF in FY 2019/20.

FINANCE AND ADMINISTRATION

Water Revenue Bond Ratings: Standard & Poor's AAA; Moody's Aa1; Fitch AA+.

Budget: July 1, 2018 – June 30, 2019: \$1.692 billion
July 1, 2019 – June 30, 2020: \$1.743 billion

Capital Projects: \$200 million (FY 2018/19)
\$200 million (FY 2019/20).

Employees: 1,900 budgeted regular employees FY 2018/19 (full-time equivalent positions); 1,905 employees (FTEs) FY 2019/20

Fund Sources: Water rates and charges, 81%; fund withdrawals, 6%; taxes, 6%; hydroelectric sales and miscellaneous income, 2%; other, 5% (Biennial Budget 2018/19, 2019/20).

Uses of Funds: State Water project payments, 29%; operations & maintenance, 24%; debt service, 17%; construction, 10%; fund deposits, 10%; demand management programs, 4%; supply programs, 3%; and Colorado River power, 3% (biennial budget 2018/19, 2019/20).

[†]Acre-foot=325,851.4 gallons

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GENERAL MANAGER'S TRANSMITTAL LETTER

July 2018

This document presents Metropolitan's fiscal year (FY) 2018/19 and FY 2019/20 Biennial Budget and associated Ten-Year Financial Forecast. The Board, Finance and Insurance (F&I) Committee, and member agencies have reviewed and evaluated Metropolitan's Biennial Budget and the rates and charges necessary to support the proposed expenditures. The Ten-Year Financial Forecast of expenditures and revenues also present the implications of near-term actions on long-term revenue requirements.

The budgeted expenditures and revenues were provided to the Board and posted online on February 1, 2018. Board workshops were held on February 12, 2018, February 27, 2018, March 12, 2018, and March 27, 2018 at the F&I Committee and these included extensive budget and revenue discussions. Public testimony was provided and considered at the public workshops, the public hearing on March 13, 2018, as well as the board meeting on April 10, 2018. Detailed information, including the proposed budget, proposed rates and charges, cost of service analysis, and cost of service report, was made available to the public on our website during the process and was considered by the Board, the F&I Committee and member agencies.

BIENNIAL BUDGET

Based on the Board discussions over several months, the Biennial Budget for FY 2018/19 and FY 2019/20 meets the fixed charge coverage target, makes progress towards meeting the revenue bond coverage target, provides funding from revenues for the Capital Investment Plan (CIP), and promotes long-term fiscal sustainability goals as reflected in the Ten-Year Financial Forecast.

Calendar year (CY) 2018 was anticipated to provide a 35 percent allocation on the State Water Project (SWP) due to below normal rains and snow in Northern California in 2017-2018. The conditions in the Colorado River watershed are also below normal. However, storage reserves are healthy and water demands are below average due to the very wet conditions of 2017, which improved local supplies.

Metropolitan continues to be prepared to meet the challenges of reliably providing water to its service area throughout a variety of hydrologic conditions. Metropolitan has a diverse portfolio of water supplies, which have been augmented by additional programs approved by the Board over the last several years, and Metropolitan has made substantial investments in storage and supply programs to store water should CY 2018 be hydrologically wet.

As a result of hydrologic variability, Metropolitan's water transactions can vary widely. Accordingly, it is reasonable for Metropolitan to determine its biennial budget and rate setting processes on average potential conditions and rely on water storage and cash reserves to buffer water demand, revenue and cost volatility. Water transactions, which include sales, exchanges and wheeling, are projected to be 1.65 million acre-feet (MAF) for FY 2018/19 and 1.75 MAF for FY 2019/20. SWP supplies and Colorado River diversions are projected to be approximately 900 TAF, respectively, for each of FY 2018/19 and FY 2019/20. Variations in revenues and costs due to hydrology will be managed by use of financial reserves established for this purpose.

The Board approved the FY 2018/19 and FY 2019/20 Biennial Budget and water rates and charges on April 10, 2018 and authorized the following actions as summarized in Table 1:

- Appropriate \$2,532.4 million for Metropolitan Operations and Maintenance (O&M) and operating equipment, power costs on the Colorado River Aqueduct, SWP operations, maintenance, power and replacement costs and SWP capital charges; Demand Management Programs including the local resources and conservation credits program; and costs associated with supply programs;
- Appropriate as a continuing appropriation, \$662.9 million for (FY 2018/19 and FY 2019/20) debt service on Metropolitan general obligation and revenue bonds;
- Authorize the use of \$240 million in operating revenues to fund the CIP;
- Adopt an overall rate increase of 3.0 percent effective January 1, 2019, and an additional 3.0 percent on January 1, 2020.

Table 1: FY 2018/19 and FY 2019/20 Operating and Capital Appropriations, \$ millions

Adopted Budget	2018/19 Budget	2019/20 Budget	Total Biennium
Operating Budget	\$1,240.3	\$1,292.1	\$2,532.4
Debt Service	332.0	330.9	662.9
PayGo	120.0	120.0	240.0
Grand Total	\$1,692.3	\$1,743.0	\$3,435.3

The FY 2018/19 and FY 2019/20 Biennial Budget assumes the Board maintains the ad valorem tax rate at its current level when the rate is set in August of 2018 and 2019. The current ad valorem tax rate is estimated to generate \$235 million over the next two fiscal years, providing \$52 million to pay for general obligation and SWC Burns-Porter bond debt service and \$183 million to offset other SWC costs. In addition, maintaining the ad valorem tax rate helps to maintain a balance between fixed and variable revenues and mitigates the need for future water rate increases.

The Metropolitan Water District Act limits property tax collections, but permits the Board to suspend this limitation if, following a public hearing, the Board finds that a tax in excess of the limitation is essential to the fiscal integrity of the District. The Board held a public hearing on March 13, 2018 and in April 2018 adopted the necessary finding to suspend the limitation. The Board sets the tax rate in August. If the ad valorem tax is not maintained, the projected overall rate increases in FY 2018/19 and FY 2019/20 will need to be 6 percent higher.

The budget continues funding of the Board’s key priorities including:

- Increased support for the Conservation Credits Program (CCP), with proposed spending to increase by \$5 million to \$43 million annually for the biennial budget and ten-year forecast period. In addition, it is proposed that the remaining balance in the Water Management Fund be transferred to the Water Stewardship Fund to provide additional support for the CCP;
- Debt service costs, which decrease by \$13 million over the biennial budget period compared to the FY 2017/18 budget and trend lower over the near term of the Ten-Year Forecast. While the Ten-Year Forecast projects \$1 billion in new debt issuance, existing debt will be paid down at a faster rate resulting in outstanding debt decreasing by \$800 million to \$3.5 billion by the end of the ten-year forecast period;

- Planned capital spending of \$514 million over the biennium to ensure our facilities are well maintained and reliable. The capital program is now made up of nearly 400 projects that are focused on addressing seismic vulnerabilities, meeting all regulatory requirements, and replacement and refurbishment of aging infrastructure;
- \$116 million over the biennium for Supply Programs in the region, the Central Valley, and the Colorado River system to cover the costs of storing or withdrawing supplies. This funding helps reduce the likelihood that Metropolitan will need to declare a Water Supply Allocation in future dry years;
- Demand Management Programs at \$175 million over the biennium to help ensure that Metropolitan's member agencies and their retail water subagencies meet the 20 percent by 2020 goal of reduced per capita water consumption;
- \$974 million over the biennium for O&M, including labor and benefits, water treatment chemicals, solids handling, professional services, and operating equipment purchases. The O&M funding includes increased benefit costs, including retirement-related benefits and merit increases;
- \$1,268 million for the SWC and Colorado River power costs over the biennium to ensure a reliable water supply to southern California;
- Metropolitan's share of CA WaterFix costs as approved by the Board in April 2018, totaling \$17 million over the biennium ;
- Meeting financial targets for Fixed Charge Coverage during the biennium and achieving Revenue Bond Coverage targets during the ten-year forecast period; and
- Rate increases of 3.0 percent in FY 2018/19 and 3.0 percent in FY 2019/20 and in the range of 3 to 5 percent over the remaining 8 years of the ten-year forecast period.

TEN-YEAR FINANCIAL FORECAST

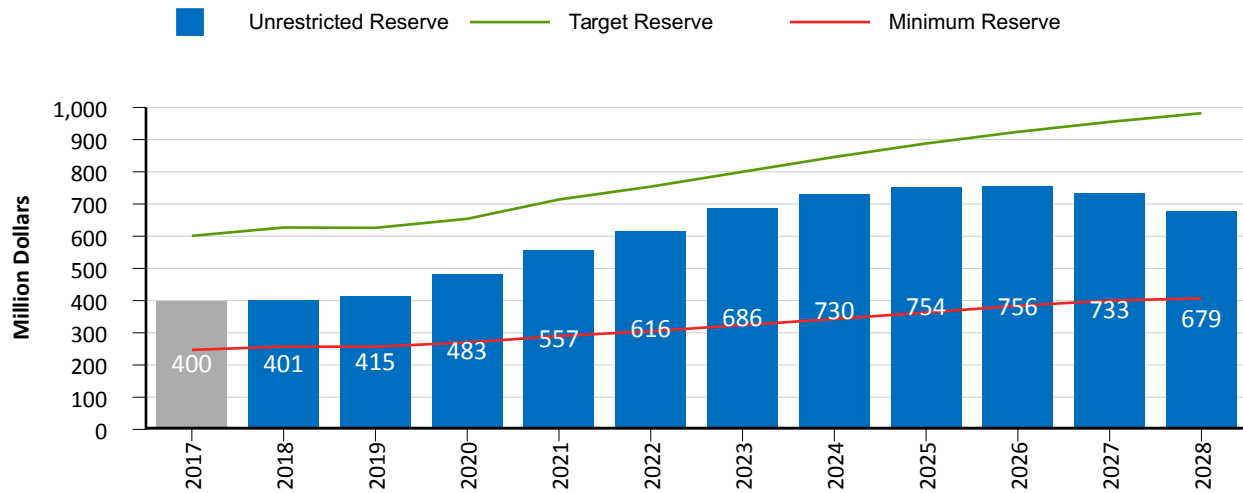
The Biennial Budget and Ten-Year Financial Forecast comprise Metropolitan's long-range financial plan. The Biennial Budget establishes the foundation for a ten-year forecast of water transactions, expenditures, revenues, projected rate increases and financial indicators. Incorporating a ten-year forecast within the biennial budget process helps ensure that long-range financial plan is continuously updated every two years to reflect any changes in underlying assumptions and/or financial policies. This approach is well suited to the dynamic environment Metropolitan operates in, rather than periodic updates of a stand-alone, long-term financial planning document.

The Biennial Budget sets the stage for predictable and reasonable rate increases over the ten-year planning period. Use of operating revenue funding for the CIP will result in lower revenue requirements in later years of the forecast, as the use of operating revenues to fund the CIP will reduce the amount of new money bond issues resulting in lower debt service and improved financial flexibility over the ten-year forecast. These lower costs combined with maintaining the ad valorem tax rate at its current level throughout the ten-year period will mitigate increases in future water rates and charges.

Included in the Ten-Year Financial Forecast is Metropolitan's forecasted share of the cost of the California WaterFix (CA WaterFix) as the project moves forward. Rate increases from FY 2018/19 through FY 2027/28 are projected to be approximately 4.0 percent each year.

Key financial indicators of the Ten-Year Financial Forecast are summarized in Figure 1.

Figure 1: Projected Rate Increases, Reserves, and Financial Indicators



	Fiscal Year Ending											
Ave Rate Increase	4.0%	4.0%	3.0%	3.0%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Water Transactions* (MAF)	1.54	1.55	1.65	1.75	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Rev. Bond Cvg	1.6	1.5	1.6	1.9	2.1	2.1	2.2	2.3	2.5	2.5	2.6	2.7
Fixed Chg Cvg	1.4	1.4	1.5	1.7	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
PAYGO, \$M	132	108	120	120	150	150	150	154	158	162	167	171

The Ten-Year Financial Forecast assumes the following:

- Water transactions are forecasted to range from 1.65 MAF in FY 2018/19 to 1.80 MAF in FY 2027/28;
- 60 percent of the CIP is revenue funded. Revenue-funding a percentage of the CIP costs rather than using a fixed dollar amount allows revenue-based funding to adjust to changes in the CIP over time;
- Metropolitan’s investments in storage programs continue, providing regional supply reliability;
- Demand Management Programs continue to be funded to help ensure that Metropolitan's member agencies and their retail water subagencies meet the 20 percent by 2020 goal of reduced per capital water consumptions;
- Metropolitan pays its share of the proposed CA WaterFix;
- The Board's established Revenue Bond Coverage and Fixed Charge Coverage targets are met; and
- Resulting rate increases are in a range of 3 percent to 5 percent each year.

Additional detail regarding Metropolitan’s ten-year forecast is contained in the Ten-Year Financial Forecast section of this Biennial Budget Document.

RESERVES

Fund balances are budgeted to be \$1.19 billion at June 30, 2019. Of that total, \$683.6 million is restricted by bond covenants, contracts, or board policy, and \$506.6 million is unrestricted. Fund balances are budgeted to be \$1.31 billion at June 30, 2020. Of that total, \$712 million is restricted by bond covenants, contracts, or board policy, and \$595.6 million is unrestricted.

On June 30, 2019, the targets for the minimum and target reserve funds are estimated to be \$256.9 million and \$626.4 million, respectively. Based on projected revenues and expenditures, it is estimated that the balance in the Water Rate Stabilization Fund (WRSF) and Revenue Remainder Fund will total about \$415.2 million, about \$158.3 million over the minimum level.

On June 30, 2020, the targets for the minimum and target reserve funds are estimated to be \$269.5 million and \$654.4 million, respectively. Based on projected revenues and expenditures, it is estimated that the balance in the WRSF and Revenue Remainder Fund will total about \$483.0 million, about \$269.5 million over the minimum level.

GENERAL MANAGER'S BUSINESS PLAN

The biennial budget is intended to provide funding for Metropolitan's operations, capital programs and all ancillary functions of Metropolitan for FY 2018/19 and FY 2019/20.

Over the next 24 months of the 2018-2020 budget cycle, Metropolitan will continue to face challenges in sustaining water supply reliability, investing in critical infrastructure, maintaining financial stability and transitioning to a younger and more diverse workforce. Also in this period, it will be timely for Metropolitan's Board to review policies regarding Metropolitan's role in funding and participating in local resources, review the lessons of the most severe drought in California's history and determine what policy adjustments are needed in preparation for development of the 2020 Integrated Resources Plan update. The following strategic priorities in the General Manager's Business Plan reflect the funding emphasis in the budget and highlight items that will be the focus of Board and staff attention over the next two years.

Strategic Priority #1: Enhance Infrastructure Safety, Security and Resiliency

Metropolitan's vast network of aqueducts, pipelines, pumps and treatment facilities are the backbone of Southern California's regional water system. Metropolitan's flexible and adaptable system enables Metropolitan to move water across six counties from where it is sourced to where it is needed. Our robust treatment and delivery infrastructure allowed Metropolitan to supply Southern California almost entirely with Colorado River water in 2015 and then flip to delivering almost all Northern California water in 2017. However, this vital infrastructure is aging and heightened reinvestment in this system is essential to ensure Metropolitan can continue to deliver on its promise of reliability in the coming decades.

In the past, the bulk of Metropolitan's CIP was focused on large-scale projects such as Diamond Valley Lake, the Inland Feeder and the Ozone Retrofit Program with repair and replacement projects being secondary. The focus of our CIP has now shifted largely to reinvestment in our existing infrastructure. These projects will ensure the long-term reliability of Metropolitan's critical infrastructure and build seismic resilience into our facilities. In 2000, Metropolitan's annual CIP was nearly \$600 million for approximately 100 projects. Over the next budget cycle, Metropolitan will be managing nearly 400 individual capital projects for a \$200 million CIP. This requires changes in organization and management of our capital program and is reflected in our budgeting actions and staffing plans. The four critical areas of focus will be the ongoing rehabilitation of the Colorado River Aqueduct (CRA), pre-stressed concrete cylinder pipe (PCCP) replacement, system seismic hardening and physical and cyber security. Staff will be bringing numerous action items to the Board in these areas and will be discussing with the Board strategies on best management techniques for handling the shifting nature of our CIP.

Strategic Priority #2: Prepare for More Extreme Hydrology

Maximize Storage Opportunities: The recent historic drought cycle sequence highlighted the enormous value of Metropolitan's regional storage investments. Over the past decade, California has had eight drought years with two wet years. To meet regional demands, Metropolitan drew on storage heavily in most years over this period but was able to take full advantage of the wetter years to restore storage reserves. But for Metropolitan's robust storage portfolio and conveyance capabilities, Southern California would have faced severe shortages this past decade. Regional storage has become increasingly critical to maintaining water supply reliability in the face of increasing water supply volatility due to climate change. Staff will work closely with the Board to assess Metropolitan's storage capabilities, current strategies and review future needs to identify whether new strategies and/or new investments are needed.

Promote Innovation and Efficiency in Water Use: Water use efficiency and conservation investments were also essential to managing through the historic drought by reducing regional demands nearly 25 percent. Metropolitan is a national leader in water conservation and reached a significant milestone in 2017 by achieving more than one million acre-feet per year in annual water savings. Most of this progress was built on Metropolitan's successful rebate programs and advocacy to change codes and standards. To build on that success, Metropolitan will examine new opportunities to leverage technology and innovation to promote conservation, efficient water use and water stewardship through a comprehensive demand management program that includes investments in research, innovation and public education along with targeted incentives for the residential, commercial, industrial and institutional sectors.

Strategic Priority #3: Ensure Imported Supply Reliability

Southern California's foundational water supply remains the Colorado River and the SWP and their ongoing reliability is critical for the region. Important decisions on both supplies need to be made over the next two years.

The emphasis for the SWP will be on maintaining the momentum of the decisions by water contractors regarding financing CA WaterFix and beginning the logistical and management work for project construction. Simultaneously, staff will be working with the state to extend the SWC, complete repairs at Oroville reservoir and review the status and upkeep of all SWP facilities. Also essential will be strategic investments regarding science and restoration of the Delta ecosystem in support of the co-equal goals of water supply reliability and environmental restoration. This includes support for California EcoRestore projects, salmon and smelt resiliency plans, and development of a multiuse, long-term plan for Metropolitan's Delta Islands.

On the Colorado River, the emphasis over the next year will be on completing the Drought Contingency Plan to provide stability on the Colorado River while protecting Metropolitan's supplies and access to storage in Lake Mead. Additionally, staff will analyze the combined impacts of long-term hydrological conditions and various competing demands, including pending tribal water rights litigation and environmental interests, such as the Salton Sea, to ensure Metropolitan's Colorado River water supplies remain protected and reliable. Finally, Metropolitan will continue to work proactively to manage its Palo Verde lands in a way that supports long-term water supply goals and a vibrant agricultural economy in the region.

Strategic Priority #4: Maximize Local Resources

In 2018, construction of the Regional Recycled Water Advanced Purification Center demonstration facility in partnership with the Sanitation Districts of Los Angeles County will be completed. While Metropolitan learns about the technical and water quality aspects of the project to optimize design of treatment processes for a full-scale facility, staff will begin work with the Board and member agencies on a review of the institutional issues associated with the Regional Recycled Water Program (RRWP) and its relationship to Metropolitan's ongoing Local Resources Program (LRP). This review will address a variety of issues related to the Program and seek Board policy direction. The issues addressed will include how project costs would be allocated, how

revenues would be collected, what form water delivery would take to local agencies, cooperation and cost sharing with non-member agencies, and other policy issues.

Strategic Priority #5: Promote Environmental Stewardship and Sustainability

Metropolitan has undertaken a comprehensive program of environmental stewardship both internally and externally. In the course of accomplishing its mission and mitigating for impacts of its projects and operations, Metropolitan establishes and manages open space, and partners with other organizations to preserve and support native species and habitat. In the coming years, Metropolitan will continue to lead with programs that promote actions that support sustainable practices, reduce greenhouse gas emissions and protect natural habitat and water quality. A comprehensive risk management strategy is needed to address the uncertainty and threat associated with climate change. As understanding of climate change impacts advances, Metropolitan will develop and implement strategies to improve resiliency, reduce risk and increase sustainability for infrastructure, water systems and the ecosystems.

Strategic Priority #6: Foster Leadership and Strengthen Workforce Capabilities

More than half of Metropolitan's workforce has reached retirement age, including many members of Metropolitan's executive management team. The retirement rate at Metropolitan is now slightly more than 100 employees a year and will remain at that level through this budget cycle. This is a challenge to the District's capacity to adequately train and prepare its workforce but is also an opportunity to build a workforce geared for the challenges of the future. To retain essential agency knowledge capture and ensure smooth leadership transitions, Metropolitan will expedite internal promotions and recruitment processes, and augment employee development training programs to ensure employees have the knowledge and technological skills to compete in today's competitive job environment. Succession planning actions will be enhanced to increase the availability of experienced and capable employees prepared to assume critical roles as they become available, building on Metropolitan's current successful apprenticeship program and management academies. While Metropolitan's workforce is becoming increasingly more diverse, Metropolitan will continue to foster an inclusive workplace, promoting a safe and discrimination-free work environment, and provide opportunities for all employees to use their diverse talents to support the District's mission.

Strategic Priority #7: Maintain Sound Business Practices and Fiscal Integrity

Metropolitan will continue its longstanding practice of operating in a productive, cost-effective, transparent and efficient manner to ensure sound financial stability. Metropolitan holds some of the nation's highest credit ratings for government agencies by maintaining strong reserves and limiting its use of debt. Long-term investments will be made through a prudent combination of long-term funding sources as well as annual rate revenues. Capital expenses will continue to be funded at a significant level on a pay as-you-go (PAYGo) basis per Board policy. Potential investments such as modernizing the SWP with CA WaterFix would be phased in over time and have been prudently built into Metropolitan's rate projections. Staff will ensure that expenditures on CA WaterFix will be regularly reported to the Board and the public in a clear and transparent manner. After a decade of virtually no rate increases, then a few steep catch up years in 2009 and 2010, Metropolitan's overall rate increases have stabilized over the past four years to close to the rate of inflation. Thanks to prudent management of Metropolitan's capital program, reduction in debt load and management of labor costs, the budget limits overall rate increases to three percent in each year while it continues funding Metropolitan's PAYGo policy, paying down Metropolitan's Pension and Other Post Employment Benefit liability, and expanding Metropolitan's conservation and demand management programs. Most importantly, due to the continued sound financial management practices of Metropolitan, the ten-year financial forecast predicts overall rate increases will remain within the three to five percent range over the next decade.



Jeffrey Kightlinger

General Manager



Gary Breaux

Chief Financial Officer

DISTRICT OVERVIEW

District Profile

The Metropolitan Water District of Southern California (Metropolitan) is a metropolitan water district created in 1928 under authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended (the Act)). Metropolitan has 26 member public agencies and its primary purpose is to provide its members with a supplemental wholesale water supply service for domestic and municipal uses. To do so, Metropolitan imports water from the Colorado River and Northern California. Metropolitan also helps its member agencies develop increased water conservation, recycling, storage and other local resource programs.

Metropolitan is authorized to develop, store, and distribute water for domestic and municipal purposes and other beneficial uses if excess water is available, and may provide, generate, and deliver electric power within or without the state for the purpose of developing, storing, and distributing water. All powers, privileges and duties vested in or imposed upon Metropolitan are exercised and performed by and through its Board of Directors. Metropolitan is governed by a 38-member Board of Directors representing the 26 member agencies. Metropolitan directors are selected by their respective member agencies and some of those directors also serve on the governing body of their member agency. Board and committee meetings are open to the public and are broadcast on the Internet through Metropolitan's website, www.mwdh2o.com. A schedule of Board and committee meetings, as well as current and archived Board materials, is available at the same website.

Metropolitan was established to obtain an allotment of Colorado River water and to construct and operate the 242-mile Colorado River Aqueduct (CRA), which runs from an intake at Lake Havasu on the California-Arizona border, to an endpoint at Metropolitan's Lake Mathews reservoir in Riverside County. Metropolitan owns and operates an extensive portfolio of capital facilities including the CRA, 16 hydroelectric facilities, nine reservoirs, 830 miles of large-scale pipes, and five water treatment plants.

In 1960, Metropolitan, followed by other public agencies, signed a long-term contract with the state Department of Water Resources (DWR) to participate in the SWP. The SWP is the largest state-built, user-financed water supply and transportation project in the country. Its facilities were constructed with several general types of financing, the repayment of which is made by the 29 agencies and districts that participate in the SWP through long-term contracts (the State Water Contractors). The State Water Contractors also pay for the operations, maintenance, power, and replacement costs of the SWP, as the SWCs are the basis for all SWP construction and ongoing operations and DWR manages and operates the SWP. As the largest of the now 29 contractors, Metropolitan is entitled to slightly less than half of all SWP supplies. Water supplies from the SWP are conveyed to Metropolitan via the SWP's 444-mile California Aqueduct, which was made possible pursuant to Metropolitan's SWC. The SWP serves urban and agricultural agencies from the San Francisco Bay area to Southern California.

To secure additional supplies, Metropolitan also has groundwater banking partnerships and water transfer arrangements within and outside of its service area. Metropolitan also provides financial incentives to its member agencies for local investments in water management projects and programs. An increasing percentage of Southern California's water supply comes from these local resources, including conservation, water recycling and recovered groundwater.

To pay for its costs, the Act authorizes Metropolitan to: levy property taxes within its service area; establish water rates; collect charges for water standby and service availability; incur general obligation bonded indebtedness and issue revenue bonds, notes and short-term revenue certificates; execute contracts; and

exercise the power of eminent domain for the purpose of acquiring property. In addition, Metropolitan's Board is authorized to establish terms and conditions under which additional areas may be annexed to Metropolitan's service area.

Mission

The mission of Metropolitan is to provide its 5,200-square-mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

Core Values

Metropolitan's core values include the following:

- Integrity
- Stewardship
- Diversity
- Open Communication
- Leadership
- Teamwork

Metropolitan Service Area

Metropolitan's service area comprises approximately 5,200 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura. When Metropolitan began delivering water in 1941, its service area consisted of approximately 625 square miles. Its service area has increased by 4,500 square miles since that time. The expansion was primarily the result of annexation of the service areas of additional member agencies. Metropolitan has historically provided between 40 and 60 percent of the water used annually within its service area.

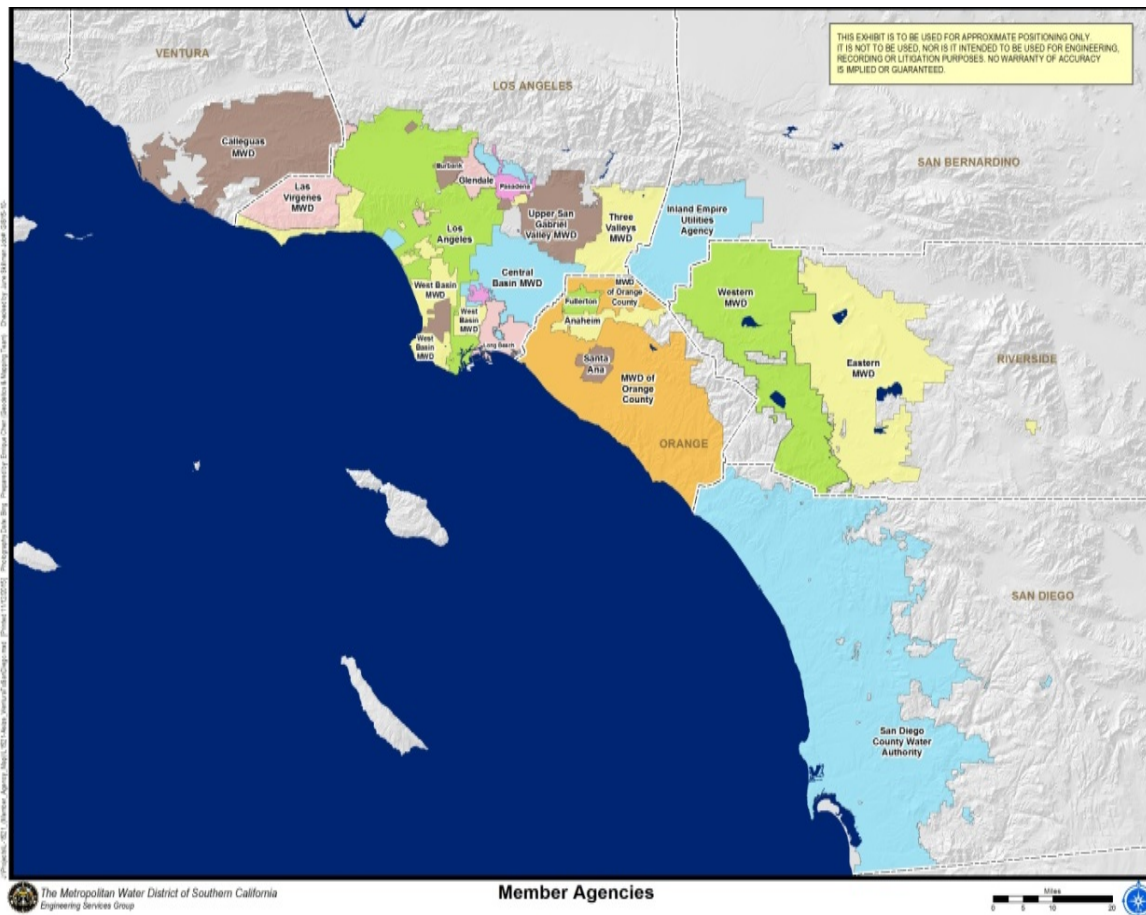
The area served by Metropolitan represents the most densely populated and heavily industrialized portions of Southern California. Metropolitan estimates that approximately 18.9 million people lived in Metropolitan's service area in 2017, based on official estimates from the California Department of Finance and on population distribution estimates from the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG). Population projections prepared by SCAG in 2012 and SANDAG in 2013, as part of their planning process to update regional transportation and land use plans, show expected population growth of about 18 percent in Metropolitan's service area between 2010 and 2035.

The economy of Metropolitan's service area is exceptionally diverse. In 2015, the economy of the six counties which contain Metropolitan's service area had a gross domestic product larger than all but eleven nations of the world. The Six County Area economy ranked between Australia (\$1.34 trillion) and the Russian Federation (\$1.33 trillion), with an estimated gross domestic product (GDP) of just over \$1.34 trillion. The Six County Area's gross domestic product in 2015 was larger than all states except California, Texas, and New York.

The climate in Metropolitan's service area ranges from moderate temperatures throughout the year in the coastal areas to hot and dry summers in the inland areas. Annual rainfall in an average year has historically been approximately 13 to 15 inches along the coastal area, up to 20 inches in foothill areas and less than 10 inches inland.

Service Area Map

The map below shows the area served by Metropolitan. It includes parts of six of the ten counties that comprise Southern California (Six County Area) consisting of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Although these counties comprise Metropolitan's service area, Metropolitan's territory does not encompass all of the area within each of the six counties.



Selected Demographic and Economic Information for Metropolitan's Service Area

The area served by Metropolitan represents the most densely populated and heavily industrialized portions of Southern California. Metropolitan estimates that approximately 18.9 million people lived in Metropolitan's service area in 2017, based on official estimates from the California Department of Finance and on population distribution estimates from the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG). Population projections prepared by SCAG in 2012 and SANDAG in 2013, as part of their planning process to update regional transportation and land use plans, show expected population growth of about 18 percent in Metropolitan's service area between 2010 and 2035.

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Summary of Recent Trends and Outlook for the Six County Area Economy

The Six County Area economy is affected by trends in the national and world economies. The U.S. economy is producing strong job gains while GDP growth has remained well below the average for past recoveries. Private sector nonfarm wage and salary job levels in December 2016 were 6.9 million above the pre-recession peak level and 15.2 million above the recession low. The unemployment rate in the nation has declined from near 9.8% in November 2010 to 4.7% in December 2016.

Consumer price increases have remained 2% annually and interest rates continue at historically low levels although the Federal Reserve Bank has increased the federal funds rate in December and more rate hikes are anticipated on 2017 and 2018. First-time unemployment claims were below 300,000 for the 96 weeks ending December 31, 2016 while job openings have reached record levels. Job growth will slow in coming years as more baby boomers retire. World economic conditions remain uncertain in 2017.

The Six County Area has regained all the jobs lost during the recession and were 395,000 above pre-recession levels in November 2016. Year-over-year job gains continued in 2016 and between November 2015 and November 2016 ranged from a high of 2.5% in Riverside-San Bernardino metro area to a low of 1.1% in Ventura County. Job growth for the entire Six County Area was 171,800 jobs or a gain of 1.9% compared to a 1.6% increase in jobs for the nation for the comparable period.

Unemployment rates in the Six County Area have declined sharply between 2010 and November 2016. In November unemployment rates ranged from a low of 3.7% in Orange County to a high of 5.7% in Riverside County. Income, taxable sales, assessed valuation and housing prices rose in 2014 and 2015. Residential building permits rebounded in 2014 and 2015. Nonresidential permit levels reached a record \$12.6 billion in 2014 and declined slightly to \$11.9 billion in 2015. Permit levels in 2016 were near 2015 levels.

The Six County Area is experiencing growth in both domestic and foreign visitors. In 2015 Los Angeles County set tourism records for the second year in a row in visitors (45.52 million), hotel occupancy rates (79.7%) and average daily rate (\$158.35) according to data from the Los Angeles Tourism and Convention Board. In 2015 passenger travel at Los Angeles International Airport was up 5.9% to 74.7 million trips to set an all-time record. Air passenger travel at the major airports in the Six County Area reached record levels in 2015 and is up 6.5% in 2016 through November.

Population growth in the Six County Area since 2010 has exceeded the national average according to both the California Department of Finance ("DOF") estimates and those published by the Census Bureau. Population growth averaged 176,300 between 2010 and 2016 according to the DOF estimates, although growth slowed in 2016 as birth rates and migration fell. The Six County Area had 22.1 million residents in 2016, approximately 56% of the State's population.

Income, taxable sales and assessed valuation in the Six County Area increased in 2014, 2015 and 2016 along with growth in foreign trade and film permits. Gains in income, taxable sales and assessed valuation are all outpacing the growth in consumer price indices in the Six County Area all of which are helping local government revenue growth.

Long-term job growth is driven by the Six County Area's economic base—those sectors that sell most of their goods and services in national and world markets outside of the Six County Area. Recent projections by the Center for Continuing Study of the California Economy ("CCSCE"), the Southern California Association of Governments ("SCAG") and the San Diego Association of Governments ("SANDAG") report that the Six County Area will see job growth that slightly exceeds the national average during the next 10 to 30 years, led by gains in Professional and Business Services, Wholesale Trade, Tourism and Entertainment and Health Care.

For more demographic and economic information for Metropolitan's service area or the Six County Area, please refer to the Service Area Economy section, which includes information on:

- Job growth trends
- Construction activity
- Housing trends
- Assessed valuation
- International Trade
- Income & Wages
- Population
- Economic structure and long term prospects

Strategic Plan Summary

The General Manager submits to the Board of Directors a business plan containing the General Manager's key priorities for the coming year for review and approval.

Five strategic priorities support Metropolitan's mission for fiscal years 2018/19 and 2019/20:

Strategic Priority #1: Enhance Infrastructure Safety, Security and Resiliency

Strategic Priority #2: Prepare for More Extreme Hydrology

Strategic Priority #3: Ensure Imported Supply Reliability

Strategic Priority #4: Maximize Local Resources

Strategic Priority #5: Promote Environmental Stewardship and Sustainability

Strategic Priority #6: Foster Leadership and Strengthen Workforce Capabilities

Strategic Priority #7: Maintain Sound Business Practices and Fiscal Integrity

For more detail on the GM's strategic priorities, please refer to the General Manager's Transmittal Letter.

The General Counsel, General Auditor and Ethics Officer also submit to the Board of Directors a business plan containing their department's key priorities for the coming year for review and approval.

The groups within the General Manager department submit their business plans to the General Manager annually for review and approval. These business plans include a group mission statement and Objectives and Actions to support the relevant General Manager's strategic priorities.

Performance Indicators

Metropolitan has developed a series of performance measures that are used to measure and maintain mission-critical processes as well as support internal decision making. These include financial, water quality, human resource, legislative, outreach, etc. measures which are closely aligned with Metropolitan’s business plans, key priorities and objectives.

Please see the Operating Expenditures section for Metropolitan’s performance measures including fiscal year results and targets.

Organization Structure

Member Agencies

The following table lists the 26 member agencies of Metropolitan which include 11 municipal water districts, 14 cities and one county water authority.

Municipal Water Districts	Cities	County Water Authority
Calleguas	Anaheim	San Diego
Central Basin	Beverly Hills	
Eastern	Burbank	
Foothill	Compton	
Inland Empire Utilities Agency	Fullerton	
Upper San Gabriel Valley	Glendale	
Western of Riverside County	Long Beach	
Las Virgenes	Los Angeles	
Orange County	Pasadena	
Three Valleys	San Fernando	
West Basin	San Marino	
	Santa Ana	
	Santa Monica	
	Torrance	

Board of Directors

Metropolitan is governed by a 38-member Board of Directors. Each member public agency is entitled to have at least one representative on the Board, plus an additional representative for each full five percent of the total assessed valuation of property in Metropolitan’s service area that is within the member public agency. Changes in relative assessed valuation do not terminate any director’s term. Accordingly, the Board may, from time to time, have more or less than 38 directors.

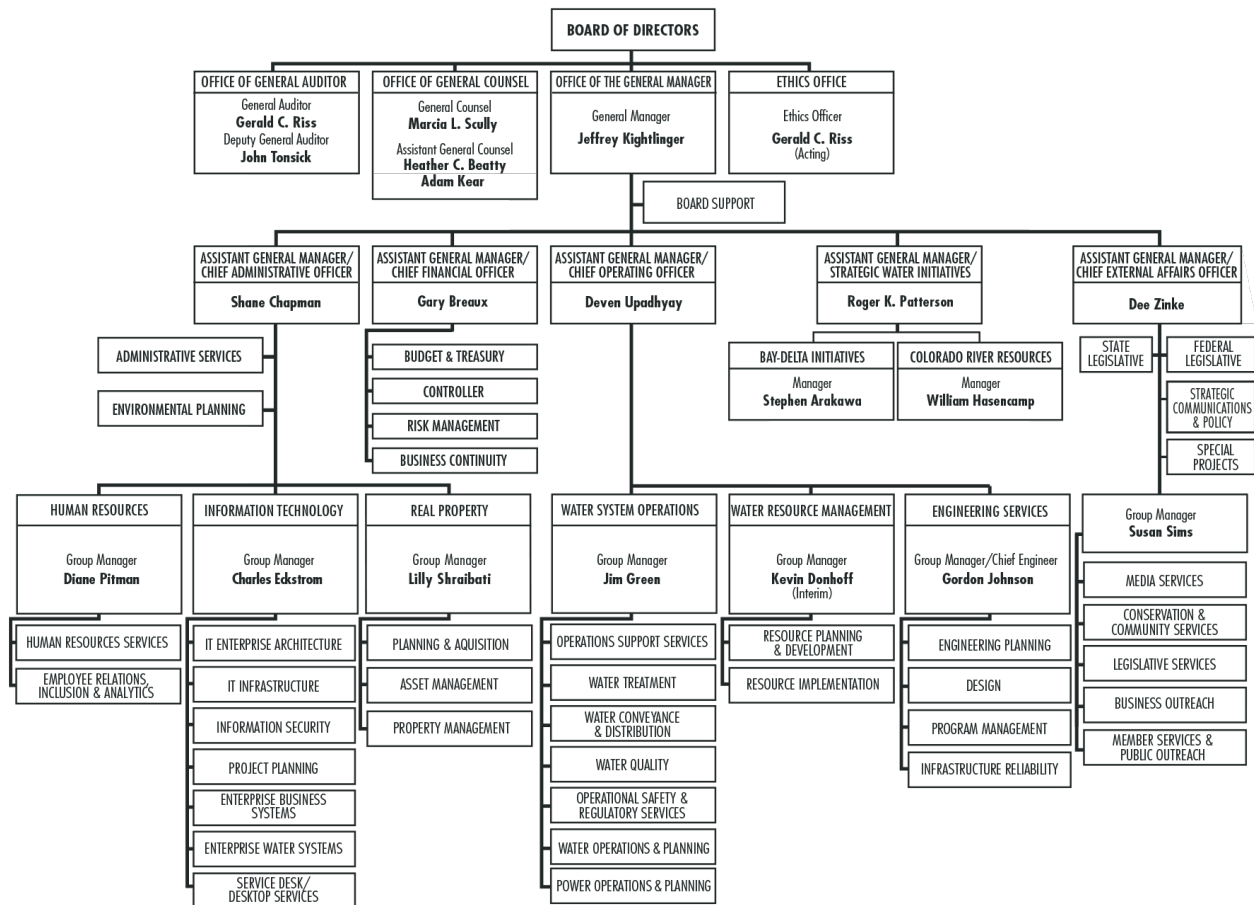
The Board includes business, professional and civic leaders. Directors serve on the Board without compensation from Metropolitan. Voting is based on assessed valuation, with each member agency being entitled to cast one vote for each \$10 million or major fractional part of \$10 million of assessed valuation of property within the member agency, as shown by the assessment records of the county in which the member agency is located. The Board administers its policies through the Metropolitan Water District Administrative Code (the Administrative Code), which the Board adopted in 1977. The Board periodically amends the Administrative Code to reflect new policies or changes in existing policies that occur from time to time.

Metropolitan’s day-to-day management is under the direction of its General Manager, who serves at the pleasure of the Board, as do Metropolitan’s General Counsel, General Auditor, and Ethics Officer.

Organization Chart

A larger version is provided on the inside back cover of the Biennial Budget document.

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA



Updated as of January 25, 2018

Metropolitan Senior Management

Jeffrey Kightlinger	General Manager
Marcia Scully	General Counsel
Gerald Riss	General Auditor/Acting Ethics Officer
Gary Breaux	Assistant General Manager/Chief Financial Officer
Deven Upadhyay	Assistant General Manager/Chief Operating Officer
Shane Chapman	Assistant General Manager/Chief Administrative Officer
Roger Patterson	Assistant General Manager/Strategic Water Initiatives
Dee Zinke	Assistant General Manager/External Affairs
Rosa Castro	Board Executive Secretary

Workforce

Metropolitan employs approximately 1,850 people. Most are represented by the American Federation of State, County and Municipal Employees (AFSCME), Local 1902; the Management and Professional Employees Association (MAPA), Local 1001; the Supervisors Association; and the Association of Confidential Employees (ACE). The four bargaining units represent approximately 99 percent of Metropolitan’s employees. The remaining one percent is unrepresented.

Offices

Metropolitan’s headquarters are located at 700 N. Alameda St., Los Angeles, California 90012. Metropolitan has legislative offices in Sacramento and Washington D.C.



Financial Organization

Fund Structure and Descriptions (from Metropolitan's Administrative Code)

To provide for accountability of public moneys in accordance with applicable federal and state law and regulations and Board policies, the following funds active or prospectively active have been established in the Treasury of the District:

- **General Fund** (Fund No. 1001, established 1929).
 - Moneys not specifically allocated or appropriated may be placed in this fund and used for general purposes of the District.
 - Expenditures for reimbursable work and water conservation capital and indirect costs under the contract with Imperial Irrigation District are paid from this fund.
- **Replacement and Refurbishment Fund** (Fund No. 5001, established 1988).
 - Used to finance certain capital program expenditures from current revenues in accordance with Section 5109, subject to the conditions contained in Section 5202(b).
- **State Contract Fund** (Fund No. 5701, established 1960).
 - Used for the payment of capital charges under the SWC, including the capital charges for off-aqueduct power facilities, subject to the conditions contained in Section 5201(d).
- **Special Tax Fund** (Fund No. 5702, established 1951).
 - Annexation fees (cash payments and special tax collections) are deposited in this fund and transferred to the State Contract Fund to pay a portion of SWC capital charges.
- **Water Revenue Fund** (Fund No. 1002, established 1975).
 - Receipts from water sales are deposited in this fund and are transferred to various other funds in accordance with revenue bond covenants and Board resolutions to pay in order of priority:
 1. Operation and maintenance expenditures;
 2. Principal of, premium, if any, and interest on the Prior Lien Waterworks Revenue Bonds and any required deposits into any reserve funds or accounts therefore;
 3. The interest on and bond obligation of Subordinate Lien Water Revenue Bonds and Parity Obligations issued pursuant to Master Resolution 8329 (the Master Resolution) adopted by the Board on July 9, 1991 and any Supplemental Resolutions thereto;
 4. All other payments required for compliance with the Master Resolution, and any Supplemental Resolutions;
 5. Principal of and interest on Commercial Paper Notes and other amounts due a provider of a liquidity facility;

- 6. Deposits into the Water Standby Charge Fund in accordance with resolutions imposing such charges; and
- 7. Any other obligations which are charges, liens, or encumbrances upon or payable from net operating revenues.
 - Moneys remaining at the end of each month, after the foregoing transfers, are transferred to the Revenue Remainder Fund.
- **Operation and Maintenance Fund** (Fund No. 1003, established 1975).
 - Used to pay all operation and maintenance expenditures, including SWC operation, maintenance, power and replacement charges, subject to the conditions contained in Section 5201(f).
- **Revenue Remainder Fund** (Fund No. 1004, established 1975).
 - Used to maintain working capital and may be used for any lawful purpose by the District, subject to the conditions contained in Section 5202.
- **Water Rate Stabilization Fund** (Fund No. 5501, established 1987).
 - Used to reduce future water revenue requirements or, as directed by the Board, for other lawful purposes, in accordance with Section 5202.
- **Water Treatment Surcharge Stabilization Fund** (Fund No. 5502, established 1988).
 - Used to mitigate required increases in the surcharge for water treatment or, as directed by the Board, for other lawful purposes, in accordance with Section 5202.
- **Revolving Construction Fund** (Fund No. 5003, established 1988).
 - Capital expenditures made from this fund are to be reimbursed from proceeds of security sales to the extent such expenditures are authorized uses of debt proceeds under the Act, subject to the conditions and restrictions contained in Section 5201(g).
- **Employee Deferred Compensation Fund** (Fund No. 6003, established 1976).
 - Compensation deferred by employees under Section 457 of the Internal Revenue Code of 1986, as amended, is deposited in this fund and is withdrawn in accordance with Articles 2 and 3 of Chapter 7 of Division VI of this Administrative Code.
- **Iron Mountain Landfill Closure/Postclosure Maintenance Trust Fund** (Fund No. 6005, established 1990).
 - Used as a trust fund to maintain moneys sufficient to cover the costs of closure and postclosure maintenance of the District's solid waste landfill facility at Iron Mountain, in accordance with regulations of the California Integrated Waste Management Board, and subject to the conditions contained in Section 5201(l).
- **Water Standby Charge Fund** (Fund No. 1005, established 1992).
 - Used to separately hold revenues attributable to water standby charges; amounts deposited in this fund are used exclusively for the purpose for which the water standby charge was authorized.

- **Water Transfer Fund** (Fund No. 1007, established 1995).
 - Used for moneys set aside for the purchase of water through transfers or similar arrangements, and for the costs of filling the Eastside Reservoir Project.
- **Self-Insured Retention Fund** (Fund No. 1008, established 1999).
 - Used to separately hold amounts set aside for emergency repairs and claims against the District as provided in Section 5201(o).
- **Lake Matthews Multi Species Reserve Trust Fund** (Fund 6101, established 1997.)
 - Used as set forth in agreement between Metropolitan and the Riverside County Habitat Conservation Agency for the Multi Species Reserve.
- **Other Funds to be established for bond issues, notes or other obligations of the District**
 - There shall be established in the Treasury of the District such funds and accounts as are required pursuant to bond covenants, tax and non-arbitrage certificates, bond counsel letters of instruction and related documents, to provide for accountability of District funds and compliance with applicable federal and state law and regulations. Such funds and accounts shall be established for each issue of bonds, notes or other obligations of the District as required in the respective bond or note resolution and closing documents.
- **Water Stewardship Fund** (Fund No. 1009 established 2005).
 - Used to collect revenue from the Water Stewardship Rate and to pay costs associated with water recycling, seawater desalination, conservation, brackish water desalination, or other demand management programs. These funds can also be used to fund administrative costs associated with these programs. Funds may be used as directed by the Board, for other lawful purposes, in accordance with Section 5201(p) and Section 5202(d).

Financial Reporting

Metropolitan prepares its financial reports in conformity with generally accepted accounting principles (GAAP). The Office of the Chief Financial Officer prepares, at the conclusion of each fiscal year, the Comprehensive Annual Financial Report (CAFR) in compliance with principles and standards for financial reporting set forth by the Governmental Accounting Standards Board (GASB).

Budgetary and Accounting Basis

The budget is developed and monitored on a modified accrual basis. This means that revenues and expenses are recognized in the period they are earned and incurred regardless of whether cash has been received or disbursed. Differences between the basis of budgeting and the financial statements are minimal. Depreciation and amortization will not be recorded and payments of debt service will be recorded when due and payable. The modified-accrual basis of accounting provides a better match of revenues and expenses for budgeting and reporting.

Financial Planning

In conjunction with the development of the Biennial Budget, Metropolitan prepares a ten-year forecast (Ten-Year Financial Forecast). The ten-year forecast supports long range resource, capital investment and operational planning. It includes a forecast of future costs and the revenues necessary to support operations

and investments in infrastructure and resources that are derived from the most recent Integrated Resources Plan and other planning processes.

To support Metropolitan's Biennial Budget, Ten-Year Financial Forecast, and financial planning, revenue requirements are evaluated to determine the level of rate adjustments required for the upcoming budget year. To the extent possible, increases in rates are adjusted to avoid large fluctuations.

Financial, Administrative and Operating Policies

Metropolitan establishes policies and resolutions to comply with the stipulations set forth in the Metropolitan Water District Act and Administrative Code.

The following policies are included in the appendices as a reference:

Metropolitan Water District Administrative Code:

- §. 4301(a). Cost of Service and Revenue Requirement
- §. 4304. Apportionment of Revenues and Setting of Water Rates
- §. 5101. Investment of Surplus Funds
- §. 5107. Biennial Budget Process
- §. 5109. Capital Funding from Current Revenues
- §. 5114 (a). Reporting Requirements of the Treasurer
- §. 5200. Funds Established
- §. 5201. Restricted Funds
- §. 5202. Fund Parameters
- §. 5203. Indirect Credit of District
- §. 5204. Compliance with Fund Requirements and Bond Indenture Provisions

Metropolitan Water District Act:

- §. 61: Ordinances, Resolutions and Orders
- §. 123: Borrowing, Limitation
- §. 124: Taxes, Levy & Limitation
- §. 124.5: Ad Valorem Tax Limitation
- §. 130: General Powers to Provide Water Service
- §. 133: Fixing of Water Rates
- §. 134: Adequacy of Water Rates; Uniformity of Rates

- §. 134.5: Water Standby or Availability of Service Charge
- §. 239.2: Limitation on Amount of Revenue Bonds

Other:

- Operating policy F-01. Operating, Expensed and Capital Equipment
- Operating policy F-07. Capitalization & Retirement of Plant Assets
- Statement of Investment Policy

§. 61. **Ordinances, Resolutions and Orders** grants the Board authority to make and pass ordinances, resolutions and orders.

§. 123. **Borrowing, Limitation** grants authority to a district to borrow money and incur indebtedness and issue bonds with limitation.

§. 124. **Taxes, Levy & Limitation** grants authority to a district to levy and collect taxes on all property within the district with limitation.

§. 124.5. **Ad Valorem Tax Limitation** sets forth the restrictions of a district in levying ad valorem property tax on taxable property tax within the district.

§. 130. **General Powers to Provide Water Service** sets forth the general powers of a district to provide water services.

§. 133. **Fixing of Water Rates** grants the Board authority to fix water rates.

§. 134. **Adequacy of Water Rates; Uniformity of Rates** sets forth the requirements of the Board in ensuring adequacy and uniformity of water rates.

§. 134.5 **Water Standby or Availability of Service Charge** grants the Board authority to impose a water standby charge or availability of service charge within the district.

§. 239.2. **Limitation on Amount of Revenue Bonds** sets forth limitation on amount of revenue bonds that can be issued.

§. 4301(a). **Cost of Service and Revenue Requirement** sets forth the revenue requirement for fixing rates for water and that such rates and charges shall reflect the costs of the District's major service functions.

§. 4304. **Apportionment of Revenues and Setting of Water Rates** sets forth the process, requirements and timeline in which the water rates and charges are ultimately adopted by the Board.

§. 5101. **Investment of Surplus Funds** delegates to the Treasurer of the District the authority to invest or to reinvest funds of the District subject to the terms and conditions set forth in Section 5101.

§. 5107. **Biennial Budget Process** sets forth the process, requirements and timeline in which the Biennial Budget must be submitted to and adopted by the Board.

§. 5109. **Capital Funding from Current Revenues** sets forth the requirements for funding capital from current revenues.

§. 5114(a). **Reporting Requirement of the Treasurer** sets forth the requirement of the Treasurer to render a Statement of Investment Policy for the following year, to be considered for approval by the Board.

§. 5200. **Funds Established** sets forth the active or prospectively active funds that have been established in the Treasury of the District.

§. 5201. **Restricted Funds** sets forth the conditions under which cash and securities are held in the various ledger funds.

§. 5202. **Fund Parameters** sets forth the parameters for the minimum cash and securities to be held in the various ledger funds as of June 30 of each year.

§. 5203. **Indirect Credit of District** gives the Chief Executive Officer authority to negotiate with the Department of Water Resources on the basis of using the indirect credit of the District to finance State Revenue Bonds.

§. 5204. **Compliance with Fund Requirements and Bond Indenture Provisions** sets forth the conditions under which the Chief Executive Officer assures annual compliance with minimum fund requirements and with the provisions of the covenants for all outstanding District bond issues during the preceding fiscal year.

Operating policy F–01. Operating, Expensed and Capital Equipment governs the purchase, assignment, tracking, maintenance and retirement of operating, expensed and capital equipment.

Operating Policy F–07. Capitalization & Retirement of Plant Assets establishes the policies governing the capitalization and retirement of plant assets. .

Statement of Investment Policy. Per Section 5114 of the Administrative Code, the Treasurer is required to render a Statement of Investment Policy for the following fiscal year for approval by the Board and to obtain the Board’s annual delegation of authority to the Treasurer to make investments on behalf of Metropolitan.

Budget Process

The budget process provides an opportunity to align shorter–term Objectives and Actions in the department and group level business plans to Metropolitan's longer–term Mission, Values, and Strategic Priorities and the needs of our member agencies. Each even numbered year, under the direction of the General Manager, a Biennial Budget is prepared for Metropolitan operations covering the following two fiscal years. The Board does have the opportunity to amend the budget as it sees fit to changing fiscal and climatic changes.

The budget is presented to the Board for consideration and adoption in April in order to align it with the adoption of water rates also approved in April. This permits incorporation of approved O&M budget expenditures into the Revenue Requirements process, which facilitates the setting of water rates. The Board and member agencies conduct extensive reviews of and provide significant input to the budget over three months from January to April. This year's budget review process included board workshops on February 12, February 27, March 12, March 27, a public hearing on March 13, and several other presentations and caucuses with member agencies, with final approval occurring at the April 10 Board meeting.

The O&M budget is presented in an organizational format and is described in terms of its scope of work, personnel requirements, and allocation by expense category. The budget serves to identify the resource requirements for the actions and tasks each group will engage in to support the General Manager’s Business Plan. The overall emphasis, consistent with Metropolitan’s mission, has been on providing high quality and reliable water supplies at a fair and competitive price and in an environmental and economically responsible way.

Balanced Budget

Metropolitan considers the budget to be balanced when the sources of funds equals the uses of funds. That is, budgeted operating revenues, and on occasion the use of water rate stabilization funds, are equal to or greater than budgeted operating expenditures including debt service, and ending fund balances meet minimum policy levels. Rates and charges are set to ensure that revenues are sufficient to recover the total cash needs in a given fiscal year.

Budget Calendar

Due Date	Activity
July - November	Identification of major maintenance and capital projects and CIP Evaluation Team review of new and continuing projects.
August - October	Budget instructions issued to all groups. Personnel complements are developed including full-time, part-time, temporary, and overtime estimates. Group managers begin proposed budget presentations to senior management.
November	CIP Evaluation Team completes review of project proposals for the CIP. O&M budgets, CIP estimates, and operating equipment budgets are developed. Senior management reviews and makes final recommendations on group budgets.
December	Group budgets are revised as necessary. Proposed budget is finalized and materials and presentations are developed for presentation to the Board of Directors.
January-March	Proposed budget is presented to the Board of Directors and member agency managers. Proposed group and department budgets are presented to the relevant Board committees. Proposed annual budget workshops are conducted with the full Board and budget estimates are revised as necessary.
April	Business and Finance Committee recommends action on the Biennial Budget. Board of Directors takes action on adoption of the Biennial Budget.

Starting in the summer, the groups identify needed major maintenance and new capital projects and develop cost estimates. In August, the budget guidelines and a calendar of budget process deadlines are issued to group, assistant group, and section managers by Budget and Financial Planning staff outlining major budget priorities consistent with the General Manager’s Business Plan, staffing and operational objectives.

The development phase begins with overall program formulation and identification of individual projects, staffing, and equipment needs. Personnel budgets, including requests for temporary and part-time help, are then prepared and professional services requirements are identified. All requests for personnel, equipment purchases, and projects must be submitted with formal justifications, which address a standard set of questions developed by Budget and Financial Planning staff.

Each organization is required to identify the extent to which its proposed budget supports the General Manager’s strategic priorities as outlined in the Business Plan. This information is later used to update the Business Plan in the late spring in an iterative process.

The procedures for preparation of each element of the budget are outlined below.

Labor and Professional Services Budget

The labor budget consists of regular full-time payroll, overtime, premium pay, and part-time and temporary employees. The professional services budget consists of planned payments to outside consultants for specialized skills. Personnel complements reflect the staffing of on-going work with regular employees rather than temporary employees or consultants. In addition, each group provides detailed information on consultant, overtime, and temporary employee usage. This enables senior management to examine the level and types of resources being committed to the business plan strategic priorities and make appropriate determinations for the allocation of labor resources.

Adjustments to the proposed budget are made following the review by senior management and the General Manager.

Equipment Budgets

Operating equipment is any equipment, machine, vehicle, tool, or other item that is portable, costs more than \$5,000, and has an anticipated useful life of at least five years. Expensed equipment is similar to operating equipment except that it costs less than \$5,000. All operating equipment is tracked while the tracking of expensed equipment is required for only certain classes of equipment (e.g., workstation/laptop computers, communications equipment, etc.).

The justification for equipment requests includes a description of the item, where it will be used, what it will be used for, and whether or not the item is new or a replacement. If the item is a replacement, the frequency of downtime and cost of repair of the old item versus purchasing a new one must be provided. If the item is required equipment for expanded functions or additional personnel, this must also be explained. A cost/benefit analysis is performed for new equipment costing more than \$35,000 or for replacement equipment costing more than \$50,000.

Depending on the nature of the equipment, the requests may be evaluated by several groups. For example, each group manager and the fleet equipment coordinator review vehicle requests.

Finance Department Responsibilities

Treasury and Debt Management

- Recommend procedures for revenue collection, payment of approved demands, reporting and other actions associated with the prudent management of Metropolitan's financial resources.
- Provide for the issuance of debt to fund the capital improvement program.

Controller and Accounting Operations

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

Budget and Financial Planning

- Support the development of the Strategic Plan that includes projections of short range and long range financial needs, and recommend methods for meeting those needs.

- Support the development of annual water rates and charges, Metropolitan’s biennial operating and capital improvement program budget and ten year forecast.
- Prepare Metropolitan’s proposed biennial operating budget and budget documents.
- Prepare budget performance reports on a monthly, quarterly, semi–annual and annual basis.
- Develop procedures and controls to monitor and assure compliance with the budget.
- Assist departments throughout the year with their budgets and financial issues.
- Prepare financial projections, schedules of rates and charges, tax rate proposals and other financial materials.

Other Department Responsibilities

Engineering

- Prepare Metropolitan’s capital improvement program budgets and CIP budget document.

General Manager 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.
- Prepare annual business plan containing General Manager’s key priorities for the coming year.
- Implement emergency financial procedures within approved limits, when necessary.

Budgetary Controls

Budget requests are evaluated at several management levels. Managers and staff review budget requests during each phase of the budget process. Each request for a new project, additional personnel, or piece of operating equipment is scrutinized by each group and further reviewed by Budget and Financial Planning staff during the budget process.

All budget submittals are reviewed collectively by the group and section managers. Only those items that are deemed appropriate to support the initiatives of the General Manager’s Business Plan are included in the budget recommendation.

Once the budget is completed, the expenditures for each group are monitored on a monthly basis to ensure that the groups do not exceed the authorized operating budget for the fiscal year or biennial period, unless approved by the General Manager.

Budget Adjustments

The budget may be amended outside of the normal budget cycle when overall expenditures are anticipated to significantly exceed estimates. A report outlining the reasons for increasing the budget appropriation is prepared and submitted to the Board of Directors for consideration. The Board of Directors must approve any increases in the overall budget appropriations.

Capital Investment Plan (CIP)

The CIP communicates the capital priorities of Metropolitan for the next two fiscal years. Within the Ten Year Financial Forecast, the CIP projects have been carefully reviewed, scored and ranked to ensure water reliability and safety while meeting all regulatory requirements.

Structure

The highest level of the CIP structure is Program. Under each CIP Program, there is one to several appropriations, each with multiple projects.

There are 12 capital programs which include:

- System Flexibility/Supply Reliability
- Water Quality/Oxidation Retrofit
- Colorado River Aqueduct (CRA) Reliability
- Treatment Plant Reliability
- Distribution System Reliability
- Right of Way & Infrastructure Protection
- Prestressed Concrete Cylinder Pipe Reliability
- Regulatory Compliance
- Minor Capital Projects
- Cost Efficiency & Productivity
- System Reliability
- Regional Recycled Water Program

Definitions of the 12 capital programs can be found in the CIP Section of this budget book.

Preparation

The Capital Improvement Program (CIP) is prepared as part of Metropolitan's biennial budget process.

The CIP is updated to provide an overview of the financial, design, and construction status of existing projects on a quarterly basis, as well as proposals for new projects on an annual basis. All projects are reviewed and prioritized on a biennial basis by the CIP Evaluation Team.

When the need for a project is recognized, a justification is prepared which provides information regarding the expected benefits, how the work will be accomplished, the consequences of not approving the project,

alternative levels of effort and cost to accomplish the project, a discussion of the impact of the project on future O&M costs, and a cost estimate for the project.

Many of the major capital projects are developed through the planning process, which include area studies that identify capital facilities needed to meet projected water demands. New and proposed water quality regulations also have resulted in the need for major capital projects. These projects or requirements may also be identified in detailed analyses such as the System Overview Study and the Integrated Resources Plan.

Capital projects include new facilities, betterments, and replacements that cost at least \$50,000 and have an anticipated useful life of at least five years. In the case of information technology capital projects, the cost must exceed \$250,000 and the resulting asset must have an anticipated useful life of at least three years.

Projects can be further differentiated into three general categories: major capital, minor capital, and major O&M projects. Major capital projects cost at least \$250,000 and are brought to the Board for approval prior to funding. Minor capital projects cost between \$50,000 and \$250,000 and are included in the CIP and are within the General Manager's authority to approve from a Board-approved appropriation for minor capital projects. Major O&M projects involve costs and scopes that are deemed significant and/or non-routine by the proposing organization and track expenditures in support of significant programs but do not necessarily extend the useful life of the asset. Examples of Major O&M projects include managing quagga mussels in the aqueduct, repairing a roof, and maintaining emergency management programs.

Additional information on project budgeting can be found in the CIP Section of this budget book.

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BIENNIAL BUDGET SUMMARY

APPROPRIATIONS

The FY 2018/19 appropriation of \$1,692.3 million is comprised of \$1,240.3 million or 73.3% percent for operations expense, \$332.0 million or 19.6% percent for debt service expense, and \$120.0 million or 7.1% percent for the CIP expenses . The FY 2019/20 appropriation of \$1,743.0 million is comprised of \$1,292.1 million or 74.1% percent for operations expense, \$330.9 million or 19.0% percent for debt service expense, and \$120.0 million or 6.9% percent for the CIP expenses. The table below provides a comparison of FY 2018/19 and FY 2019/20 and illustrates the total appropriations for the operating, debt service and CIP expenses.

FY 2018/19 and FY 2019/20 Operating and Capital Appropriations, \$ millions

Adopted Budget	FY 2018/19	FY 2019/20	Total Biennium
Operating Budget	\$1,240.3	\$1,292.1	\$2,532.4
Debt Service	332.0	330.9	662.9
PAYGo	120.0	120.0	240.0
Grand Total	\$1,692.3	\$1,743.0	\$3,435.3

The Biennial Budget for FY 2018/19 and FY 2019/20 provides funding for Metropolitan’s strategic priorities while meeting most financial policy guidelines, with overall rate increases of 3.0 percent in each year of the Biennial Budget. The overall rate increases of 3.0 percent are in line with recent increases, consistent with rate projections of 3 to 5 percent increases, and reflect the current environment of lower water demands as southern California is coming off a record wet year and local supplies are robust.

The Biennial Budget is developed and monitored on a modified accrual basis. Revenues and expenses are recognized in the period they are earned and incurred. Depreciation and amortization are not included; payment of debt service is included. The modified–accrual basis of accounting provides a better match of revenues and expenses for budgeting and reporting.

FUND SUMMARY

The following tables show fund balance, and projected revenues and expenditures for Metropolitan for each fiscal year of the Biennial Budget.

FY 2018/19 Fund Summary, \$ millions

Fiscal Year Ending June 30th, 2019 (\$ in Millions)	All Funds	Operating Funds	Debt Service and Construction Funds	Reserve Funds (1)	Other Funds (2)
Beginning of Year Balance	1,151.6	373.9	283.9	401.4	92.4
USES OF FUNDS					
Expenses					
State Water Contract	566.7	566.7	—	—	—
Supply Programs	61.2	61.2	—	—	—
Colorado River Power	45.8	45.8	—	—	—
Debt Service	332.0	6.5	325.5	—	—
Demand Management	89.1	89.1	—	—	—
Departmental O&M	441.9	441.9	—	—	—
Treatment Chemicals, Sludge & Power	27.1	27.1	—	—	—
Other O&M	8.5	8.5	—	—	—
Sub-total Expenses	1,572.2	1,246.8	325.5	—	—
Capital Investment Plan	200.0	20.0	180.0	—	—
Fund Deposits					
R&R and General Fund	120.0	20.0	100.0	—	—
Treatment Surcharge Stabilization Fund	6.6	—	—	—	6.6
Interest for Construction & Trust Funds	0.2	—	0.2	—	—
Increase in Required Reserves	31.6	28.8	3.2	(0.4)	—
Increase in Rate Stabilization Fund	14.2	—	—	14.2	—
Sub-total Fund Deposits	172.7	48.8	103.4	13.8	6.6
TOTAL USES OF FUNDS	1,944.9	1,315.6	608.9	13.8	6.6
SOURCES OF FUNDS					
Revenues					
Taxes	116.6	102.3	14.4	—	—
Interest Income	16.9	5.9	4.3	5.4	1.3
Hydro Power	20.9	20.9	—	—	—
Fixed Charges (RTS & Capacity Charge)	170.3	170.3	—	—	—
Water Revenue (3)	1,395.5	1,395.5	—	—	—
Miscellaneous Revenue	11.1	11.1	—	—	—
Bond Proceeds	79.4	—	79.4	—	—
Sub-total Revenues	1,810.8	1,705.9	98.1	5.4	1.3
Fund Withdrawals					
R&R and General Fund	120.0	20.0	100.0	—	—
Bond Funds for Construction	0.6	—	0.6	—	—
Water Stewardship Fund	13.6	—	—	—	13.6
Sub-total Fund Withdrawals	134.1	20.0	100.6	—	13.6
TOTAL SOURCES OF FUNDS	1,944.9	1,725.9	198.7	5.4	14.9
Inter-Fund Transfers	—	(410.4)	410.2	8.4	(8.3)
End of Year Balance	1,190.2	402.7	286.8	415.2	85.5

Totals may not foot due to rounding.

(1) includes Water Rate Stabilization Fund and Revenue Remainder Fund.

(2) includes Water Stewardship, Water Management, Water Treatment Stabilization and Trust Funds.

(3) includes revenues from water sales, exchanges and wheeling

FY 2019/20 Fund Summary, \$ millions

Fiscal Year Ending June 30th, 2020 (\$ in Millions)	All Funds	Operating Funds	Debt Service and Construction Funds	Reserve Funds (1)	Other Funds (2)
Beginning of Year Balance	1,190.2	402.7	286.8	415.2	85.5
USES OF FUNDS					
Expenses					
State Water Contract	602.5	602.5	—	—	—
Supply Programs	54.4	54.4	—	—	—
Colorado River Power	52.9	52.9	—	—	—
Debt Service	330.9	6.9	324.0	—	—
Demand Management	85.8	85.8	—	—	—
Departmental O&M	461.7	461.7	—	—	—
Treatment Chemicals, Sludge & Power	27.7	27.7	—	—	—
Other O&M	7.0	7.0	—	—	—
Sub-total Expenses	1,623.0	1,299.0	324.0	—	—
Capital Investment Plan	200.0	20.0	180.0	—	—
Fund Deposits					
R&R and General Fund	120.0	20.0	100.0	—	—
Water Stewardship Fund	4.8	—	—	—	4.8
Treatment Surcharge Stabilization Fund	16.5	—	—	—	16.5
Interest for Construction & Trust Funds	0.2	—	0.2	—	—
Increase in Required Reserves	41.3	31.8	(3.1)	12.6	—
Increase in Rate Stabilization Fund	55.2	—	—	55.2	—
Sub-total Fund Deposits	238.0	51.8	97.1	67.8	21.2
TOTAL USES OF FUNDS	2,060.9	1,370.8	601.1	67.8	21.2
SOURCES OF FUNDS					
Revenues					
Taxes	118.1	103.7	14.3	—	—
Interest Income	18.1	6.3	4.3	6.0	1.5
Hydro Power	19.1	19.1	—	—	—
Fixed Charges (RTS & Capacity Charge)	165.8	165.8	—	—	—
Water Revenue (3)	1,528.5	1,528.5	—	—	—
Miscellaneous Revenue	11.5	11.5	—	—	—
Bond Proceeds	79.4	—	79.4	—	—
Sub-total Revenues	1,940.4	1,834.9	98.1	6.0	1.5
Fund Withdrawals					
R&R and General Fund	120.0	20.0	100.0	—	—
Bond Funds for Construction	0.6	—	0.6	—	—
Sub-total Fund Withdrawals	120.6	20.0	100.6	—	—
TOTAL SOURCES OF FUNDS	2,060.9	1,854.9	198.6	6.0	1.5
Inter-Fund Transfers	—	(484.0)	402.5	61.8	19.8
End of Year Balance	1,307.5	434.5	283.3	483.0	106.7

Totals may not foot due to rounding.

(1) includes Water Rate Stabilization Fund and Revenue Remainder Fund.

(2) includes Water Stewardship, Water Management, Water Treatment Stabilization and Trust Funds.

(3) includes revenues from water sales, exchanges and wheeling

SOURCES OF FUNDS

Total Sources of FY 2018/19 and FY 2019/20 Funds, \$ millions

	2017/18 Budget	2018/19 Budget	2019/20 Budget	2018/19 Budget Compared to 2017/18 Budget	2019/20 Budget Compared to 2018/19 Budget
SOURCES OF FUNDS					
Revenues					
Taxes	100.5	116.6	118.1	16.1	1.4
Interest Income	12.4	16.9	18.1	4.5	1.2
Hydro Power	21.6	20.9	19.1	(0.7)	(1.9)
Fixed Charges (RTS & Capacity Charge)	172.7	170.3	165.8	(2.4)	(4.5)
Water Revenues (1)	1,375.5	1,395.5	1,528.5	20.0	133.0
Miscellaneous Revenue	12.1	11.1	11.5	(1.1)	0.4
Bond Proceeds and Reimbursements	79.7	79.4	79.4	(0.2)	—
Working Capital Borrowing	47.4	—	—	(47.4)	—
Sub-total Revenues	1,822.0	1,810.8	1,940.4	(11.2)	129.6
Fund Withdrawals					
R&R and General Fund	120.0	120.0	120.0	—	—
Bond Funds for Construction	0.3	0.6	0.6	0.2	—
Water Stewardship Fund	—	13.6	—	13.6	(13.6)
Treatment Surcharge Stabilization Fund	3.2	—	—	(3.2)	—
Decrease in Water Rate Stabilization Fund	23.0	—	—	(23.0)	—
Sub-total Fund Withdrawals	146.5	134.1	120.6	(12.4)	(13.6)
TOTAL SOURCES OF FUNDS	1,968.5	1,944.9	2,060.9	(23.6)	116.1

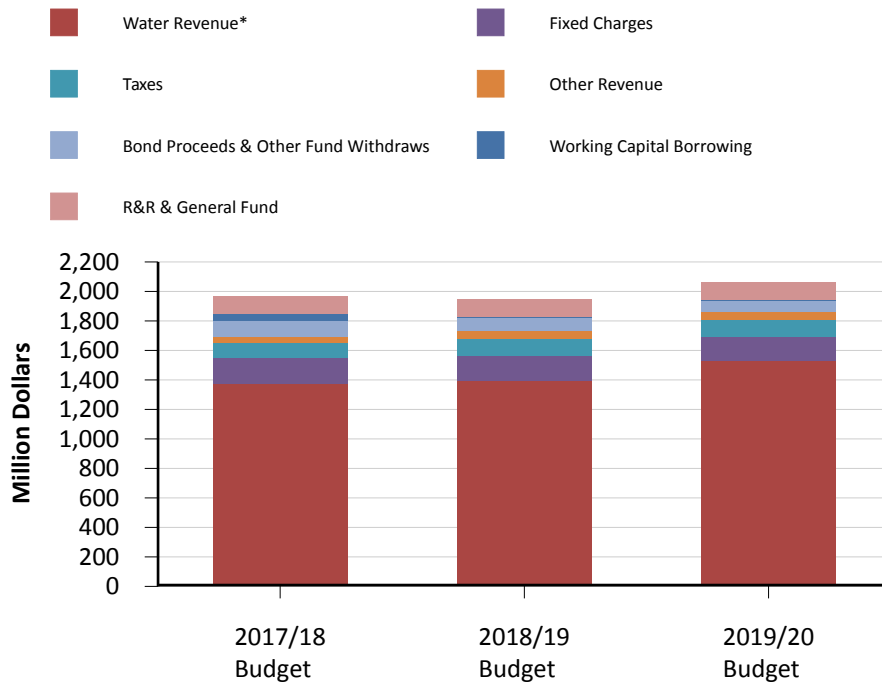
Totals may not foot due to rounding.

(1) includes revenues from water sales, exchanges and wheeling

OPERATING REVENUE

Estimated revenues from water rates, fixed charges (Readiness-To-Serve Charge and Capacity Charge), taxes and annexation fees, and other miscellaneous income (interest income, power recovery, etc.) are projected to be \$1.73 billion for FY 2018/19 and \$1.86 billion for FY 2019/20. For FY 2018/19, this is \$36.4 million more than the FY 2017/18 budget, and for FY 2019/20, this is \$129.6 million more than FY 2018/19. The increase in revenues for FY 2018/19 is due to higher tax revenues and higher water rates and charges in Calendar Year 2019. For FY 2019/20, the revenue is higher due to higher water rates and charges in calendar year 2019 and calendar year 2020. In addition, the forecast assumes the ad valorem tax rate is maintained at .0035 percent of assessed valuations. A description of each revenue source is included in the Glossary of Terms.

Sources of Funds FY 2018/19 and FY 2019/20, \$ millions

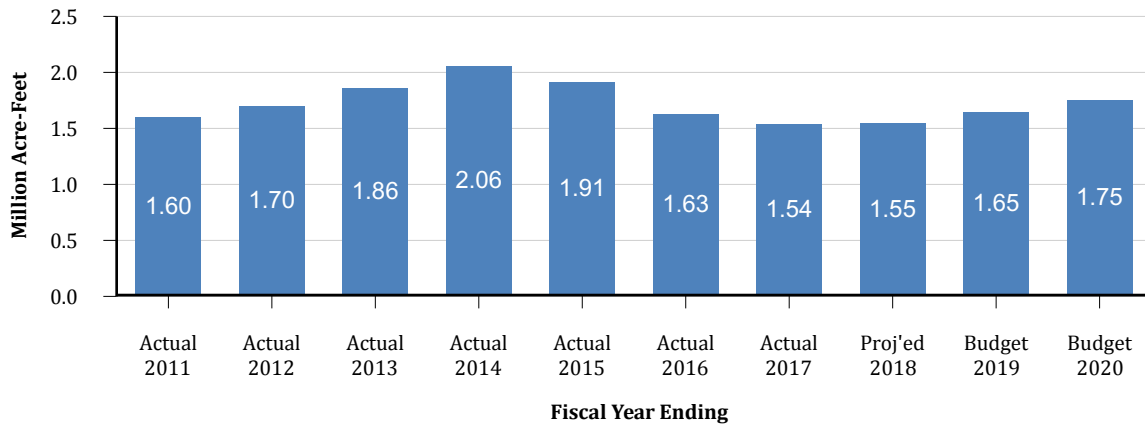


* includes revenues from water sales, exchanges and wheeling

Water Revenues

Revenues from water transactions are budgeted at \$1,395.5 million in FY 2018/19 and \$1,528.5 million in FY 2019/20. Water rates and charges are to increase by 3.0 percent overall effective January 1, 2019 and 3.0 percent overall effective January 1, 2020. Water transactions for FY 2018/19 are estimated to be 1.65 million acre-feet (MAF), a decrease of 50 thousand acre-feet (TAF) from the FY 2017/18 budget. Water transactions for FY 2019/20 are estimated to be 1.75 million acre-feet (MAF), an increase of 100 thousand acre-feet (TAF) from the FY 2018/19 budget. Water transactions are forecasted to be lower than the FY 2017/18 budget as southern California is coming off a record wet year and local supplies are robust.

Water Transactions Trend, MAF



The FY 2018/19 fiscal year water transactions include 1.42 MAF of firm sales and 227 TAF of exchange water to the San Diego County Water Authority (SDCWA) pursuant to the 2003 Amended and Restated Exchange Agreement (exchange water). Treated water sales are estimated at 839 TAF, or 51 percent of total water transactions in FY 2018/19. The FY 2019/20 fiscal year water transactions include 1.49 MAF of firm sales and 258 TAF of exchange water. Treated sales are estimated at 884 TAF, or 51 percent of total water transactions in FY 2019/20. The figure above shows the trend of water transactions.

Taxes and Annexation Fees

Revenues from taxes, which will be used to pay voter-approved debt service on general obligation bonds and a portion of the capital costs of the SWP, are estimated to be \$116.6 million in FY 2018/19 and \$118.1 million in FY 2019/20.

The ad valorem tax rate is assumed to remain at the current level of .0035 percent of assessed value in both fiscal years; assessed valuations are projected to increase by 2.5 percent each fiscal year.

Fixed Charges

Fixed charges include the Capacity Charge and Readiness-to-Serve Charge. In FY 2018/19, these charges are estimated to generate \$33.8 million and \$136.5 million, respectively. In FY 2019/20, these charges are estimated to generate \$31.3 million and \$134.5 million, respectively. In total this represents a \$2.4 million decrease from the FY 2017/18 to FY 2018/19 budget, and a \$4.5 million decrease from the FY 2018/19 to the FY 2019/20 budget. Fixed charges are decreasing due to lower peak demands on the distribution system, and lower SWP transportation capital costs.

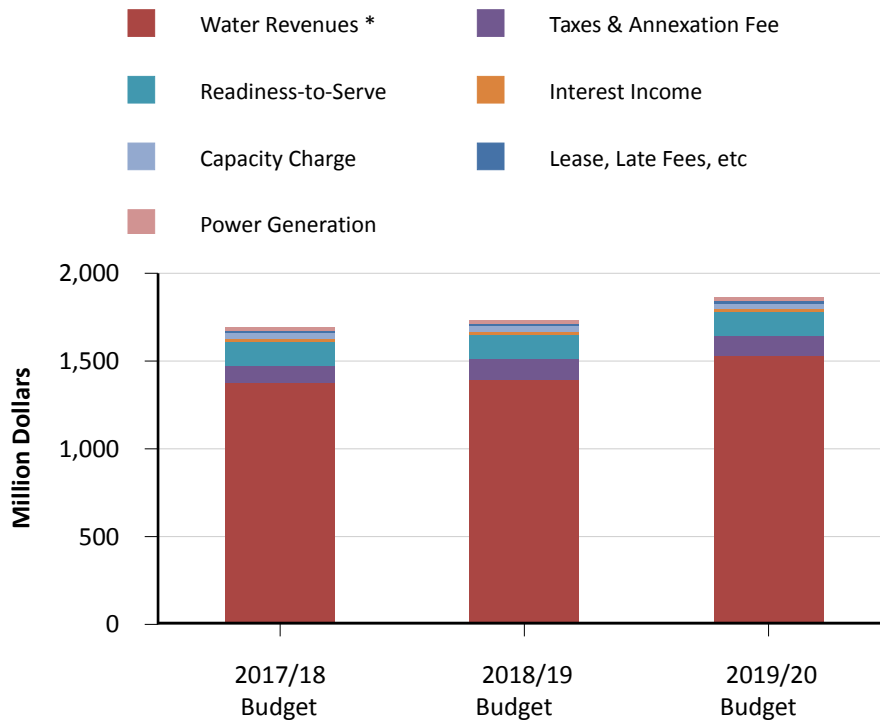
All Other Revenue

Revenues from hydroelectric and CRA power sales are estimated to be \$20.9 million for FY 2018/19 and \$19.1 million for FY 2019/20. FY 2018/19 is lower than the FY 2017/18 budgeted amount of \$21.6 million due to lower deliveries through the distribution system and lower wholesale prices.

Miscellaneous revenues, including interest income and lease revenues, are estimated to total \$28.2 million for FY 2018/19 and \$29.8 million for FY 2019/20 (including trust accounts and construction funds), higher than the FY 2017/18 budgeted amounts of \$24.6 million, mainly due to higher assumed interest rates.

A summary of operating revenues is shown in the graph below.

Operating Revenues, \$ millions



* includes revenues from water sales, exchanges and wheeling

CAPITAL FUNDING

The FY 2018/19 and FY 2019/20 CIP will be funded with bond proceeds and current operating revenues (PAYGo). It is anticipated that Metropolitan will issue \$80 million in new revenue bonds in FY 2018/19 and \$80 million in new revenue bonds in FY 2019/20. Combined with revenue funded capital of \$120.0 million in FY 2018/19 and \$120.0 million in FY 2019/20, Metropolitan will be able to fully fund the CIP.

Please refer to the section on debt financing for additional details on debt funding of capital projects.

Capital Funding Source Descriptions

New Bond Issues

Metropolitan has the ability to issue long-term bonds to fund its capital programs. The proceeds of the bond sales can be used to pay for capital expenses over several years. The repayment of the bonds is generally over 30 years and is paid from water rate revenues.

Revenue Funded Capital

Annual capital expenses that are not paid from debt funding, grants, or loans must be paid from revenues, either from current year revenues or from the R&R fund, if funds exist.

USES OF FUNDS

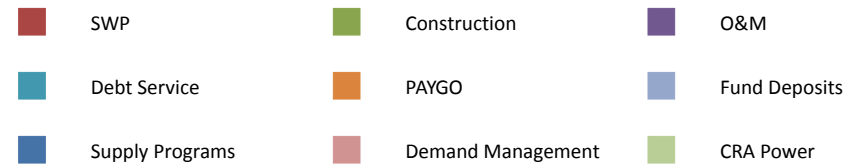
Total uses of funds are \$1.94 billion for FY 2018/19 and \$2.06 billion for FY 2019/20. The table and graph below show the breakdown of expenditures and other obligations that make up the Uses of Funds.

Total Uses of FY 2018/19 and FY 2019/20 Funds, \$ millions

	2017/18 Budget	2018/19 Budget	2019/20 Budget	2018/19 Budget Compared to 2017/18 Budget	2019/20 Budget Compared to 2018/19 Budget
USES OF FUNDS					
Expenses					
State Water Contract	599.4	566.7	602.5	(32.7)	35.8
Supply Programs	81.7	61.2	54.4	(20.6)	(6.8)
Colorado River Power	54.4	45.8	52.9	(8.5)	7.1
Debt Service	344.1	332.0	330.9	(12.1)	(1.0)
Demand Management	75.9	89.1	85.8	13.1	(3.2)
Departmental O&M	388.7	441.9	461.7	53.2	19.8
Treatment Chemicals, Sludge & Power	24.6	27.1	27.7	2.5	0.6
Other O&M	6.4	8.5	7.0	2.1	(1.6)
Sub-total Expenses	1,575.3	1,572.2	1,623.0	(3.1)	50.8
Capital Investment Plan	200.0	200.0	200.0	—	—
Fund Deposits					
R&R and General Fund	120.0	120.0	120.0	—	—
Water Stewardship Fund	—	—	4.8	—	4.8
Exchange Agreement Set-aside	47.4	—	—	(47.4)	—
Treatment Surcharge Stabilization Fund	—	6.6	16.5	6.6	9.9
Interest for Construction & Trust Funds	0.4	0.2	0.2	(0.1)	—
Increase in Required Reserves	25.4	31.6	41.3	6.2	9.7
Increase in Water Rate Stabilization Fund	—	14.2	55.2	14.2	41.0
Sub-total Fund Deposits	193.2	172.7	238.0	(20.5)	65.3
TOTAL USES OF FUNDS	1,968.5	1,944.9	2,060.9	(23.6)	116.1

Totals may not foot due to rounding.

Total Uses of FY 2018/19 and FY 2019/20 Funds, \$ millions



Colorado River Aqueduct Power

CRA power costs are projected to be \$45.8 million in FY 2018/19 and \$52.9 million in FY 2019/20 based on diversions of approximately 838 TAF in FY 2018/19 and 915 TAF in FY 2019/20. FY 2018/19 is lower than the FY 2017/18 budget due to lower diversions at Intake. FY 2019/20 is \$7.1 million higher due to higher costs for Hoover and Parker federal contracts and more supplemental power purchases and associated costs.

Please refer to the section on the CRA for additional details on this expense.

State Water Project

SWP expenditures are budgeted at \$566.7 million for FY 2018/19 and \$602.5 million in FY 2019/20. This is based on Metropolitan's supplies of 908 TAF in FY 2018/19 and 907 TAF in FY 2019/20. SWP power costs are expected to be \$167.3 million for FY 2018/19 and \$174.8 million for FY 2019/20. Power costs are lower due to favorable markets for wholesale power and natural gas, and renewable solar and wind projects.

The forecasted amount for SWP expenditures reflects incorporation of rate management credits into the forecast. Rate management credits result from a provision of the SWC that provides for the reduction of capital charges based on differences between the Department of Water Resources' collections from the SWP contractors and the actual amounts paid for capital-related charges.

Please refer to the section on the SWP for additional details on this expense.

Demand Management Costs

Metropolitan provides financial incentives to its member agencies for the development of local water recycling and groundwater recovery projects through the Local Resource Program (LRP). Metropolitan also provides financial incentives for the development of conservation programs through the CCP. Total expenditures are budgeted at \$89.1 million for FY 2018/19 and \$85.8 million in FY 2019/20.

Please refer to the section on Demand Management for additional details on this expense.

Supply Programs

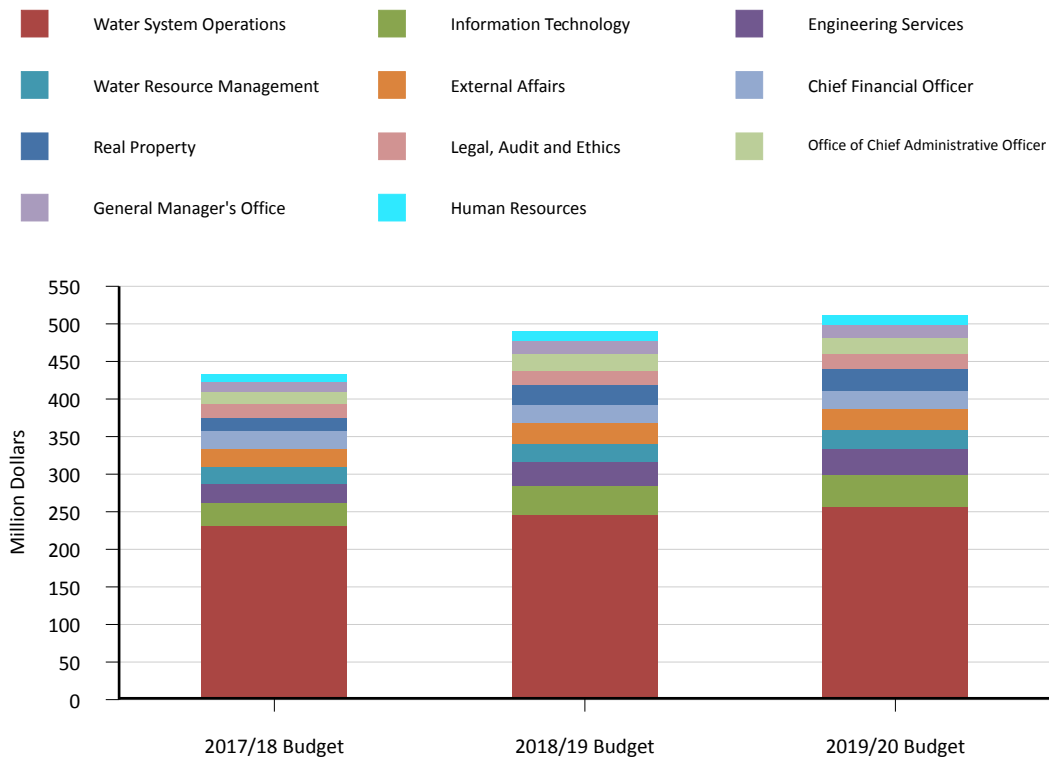
Metropolitan’s two principal sources of supply draw from two different watersheds. This has allowed Metropolitan to draw more heavily on one source in the event the other is experiencing a drought. To further ensure regional supply reliability, Metropolitan has developed a portfolio of additional supply programs on both watersheds. Total expenditures are budgeted at \$61.2 million for FY 2018/19 and \$54.4 million in FY 2019/20.

Please refer to the section on the Supply Programs for additional details on this expense.

OPERATIONS AND MAINTENANCE

The FY 2018/19 O&M budget, including operating equipment purchases, is \$477.5 million. This is \$57.7 million, or 13.8% percent, higher than the FY 2017/18 budget of \$419.8 million. The FY 2019/20 O&M budget is \$496.4 million, an increase of \$18.9 million, or 3.9% percent, over the FY 2018/19 budget.

Departmental Budget by Organization (without operating equipment and overhead credit), \$ millions



Operations and Maintenance Budget by Organization, \$ thousands

Departmental Units	2017/18 Budget	2018/19 Budget	2019/20 Budget	2017/18 Budget vs. 2018/19 Budget	% Change	2018/19 Budget vs. 2019/20 Budget	% Change
Office of the General Manager	\$13,430.9	\$18,083.1	\$17,470.3	\$4,652.2	34.6%	(\$612.8)	(3.4%)
Water System Operations w/o Variable Treatment	204,657.0	218,696.1	228,606.7	14,039.1	6.9%	9,910.6	4.5%
Water Resource Management	22,040.6	23,946.2	25,066.0	1,905.6	8.6%	1,119.8	4.7%
Engineering Services	25,312.4	32,937.7	33,865.0	7,625.3	30.1%	927.3	2.8%
Office of Chief Administrative Officer	16,448.1	21,648.0	21,428.7	5,199.9	31.6%	(219.3)	(1.0%)
Information Technology	31,359.8	38,009.1	43,261.5	6,649.3	21.2%	5,252.4	13.8%
Real Property	18,262.7	26,338.3	28,209.3	8,075.6	44.2%	1,871.0	7.1%
Human Resources	10,221.3	12,342.4	12,881.5	2,121.2	20.8%	539.1	4.4%
Chief Financial Officer	23,082.3	24,561.4	25,198.1	1,479.1	6.4%	636.7	2.6%
External Affairs	24,335.1	27,604.6	27,752.2	3,269.5	13.4%	147.7	0.5%
Subtotal - General Manager's Dep.	389,150.3	444,167.0	463,739.3	55,016.7	14.1%	19,572.3	4.4%
General Counsel	13,777.0	14,211.0	15,202.3	433.9	3.1%	991.4	7.0%
Office of the General Auditor	3,140.8	3,620.8	3,855.0	480.0	15.3%	234.2	6.5%
Ethics Department	1,376.0	1,396.0	1,448.4	20.0	1.5%	52.4	3.8%
Overhead Credit from Construction	(20,427.4)	(21,510.2)	(22,554.0)	(1,082.8)	5.3%	(1,043.8)	4.9%
Total Departmental Budget	387,016.7	441,884.5	461,691.0	54,867.8	14.2%	19,806.5	4.5%
Operating Equipment	6,426.0	8,522.1	6,955.4	2,096.1	32.6%	(1,566.7)	(18.4%)
Variable Treatment	26,317.6	27,098.3	27,713.9	780.8	3.0%	615.6	2.3%
GRAND TOTAL	\$419,760.2	\$477,504.9	\$496,360.3	\$57,744.7	13.8%	\$18,855.4	3.9%

Totals may not foot due to rounding

The graph above depicts the distribution of the departmental O&M by organization without the overhead credit and operating equipment. Including treatment costs, the Water System Operations (WSO) group accounts for 50 percent of the total departmental budget for FY 2018/19 and FY 2019/20. Information Technology is the second largest departmental expenditure area, accounting for 8 percent of the total departmental budget for FY 2018/19 and FY 2019/20. A summary of the O&M budget by organization is shown in the table above. The table below summarizes the O&M budget by expenditure type. A more detailed discussion of significant factors impacting the O&M budget follows.

FY 2018/19 and FY 2019/20 Operations & Maintenance Annual Budget by Expenditure Type, \$ thousands

	2017/18 Budget	2018/19 Budget	2019/20 Budget	2017/18 Budget vs. 2018/19 Budget	2018/19 Budget vs. 2019/20 Budget
Salaries & Benefits (1)	\$273,061.3	\$303,703.7	\$322,637.6	\$30,642.5	\$18,933.9
Chemicals, Sludge and Power (2)	26,317.6	27,098.3	27,713.9	780.8	615.6
Outside Services	38,996.1	50,908.0	53,025.3	11,912.0	2,117.3
Materials & Supplies (3)	23,738.4	27,418.5	27,278.8	3,680.1	(139.7)
Other	51,221.0	59,854.3	58,749.3	8,633.3	(1,105.0)
Operating Equipment	6,426.0	8,522.1	6,955.4	2,096.1	(1,566.7)
Total	\$419,760.2	\$477,504.9	\$496,360.3	\$57,744.7	\$18,855.4

Totals may not foot due to rounding

(1) Includes overhead credit for construction.

(2) Costs associated with treatment only.

(3) Without chemicals associated with treatment plants.

FY 2018/19 O&M Budget

The FY 2018/19 O&M budget includes \$477.5 million for labor and benefits, water treatment chemicals, power, and solids handling, materials and supplies, professional services, and operating equipment purchases. This is \$57.7 million, or 13.8 percent, higher than the FY 2017/18 budget of \$419.8.

Salaries and Benefits: Labor costs, not including those charged to construction are \$303.7 million. This is \$30.6 million, or 11.2 percent, higher than the FY 2017/18 budget of \$273.1 million. Negotiated labor increases represent \$18.7 million, or 61.1 percent of the increase. Increases in retirement, medical and other benefits represent \$7.3 million, or 23.7 percent of the increase. The remaining \$4.6 million increase, or 15.2 percent, is primarily attributable to funding 14 new and 8 previously unfunded regular full time positions in the FY 2017/18 budget.

The total authorized personnel complement for the FY 2018/19 budget is 1,927 authorized positions, including 27 agency and district temporary full-time equivalents (FTEs), and reflects an increase of 14 net regular full-time positions and 3 net temporary positions from the FY 2017/18 budget. Incorporating unfunded positions and positions that are planned to be vacant for portions of the year, the total funded positions are 1,862 FTEs.

Over the biennium a total of 19 regular full-time positions will be added to accommodate increased recruitment, Board and Bay Delta support, enhanced security and land management efforts, SWP and CRA program support, increased outreach, environmental planning and business technology support, and succession planning for future vacancies.

Outside Services and Materials & Supplies: Outside Services are anticipated to increase by \$11.9 million and Materials & Supplies by \$3.7 million primarily as a result of the RRWP, Seismic Headquarters Relocation Project and enhanced security, land management and maintenance efforts.

Other O&M and Operating Equipment: Chemicals, solids, and power reflect the cost of the water treatment process and are anticipated to increase by \$0.8 million in FY 2018/19, driven by an increase in treated water deliveries. Environmental remediation and mitigation costs are anticipated to be \$3.0 million higher due to the Foothill Feeder Dewatering project and Diemer Basin Rehabilitation project. Property taxes are increasing by \$1.5 million for the previously unbudgeted Delta Islands and PVID properties. The FY 2018/19 budget reflects funds of \$1.2 million, which were not previously budgeted, contributed by Metropolitan to advance efforts on collaborative science through various State, Federal and other agencies. In addition, the FY 2018/19 budget reflects an anticipated increase of \$1.0 million in tuition reimbursement and professional development costs. Operating equipment is higher by \$2.1 million primarily due to the purchase of analytical instrumentation in support of the RRWP and the replacement of critical IT infrastructure for District facilities.

FY 2019/20 O&M Budget

The FY 2019/20 O&M budget is \$496.4 million, an increase of \$18.9 million, or 3.9% percent, compared to the FY 2018/19 budget. This increase is primarily due to negotiated labor increases and increases in retirement, medical and other benefits. The increase in outside services is offset by a decrease in environmental remediation and operating equipment costs.

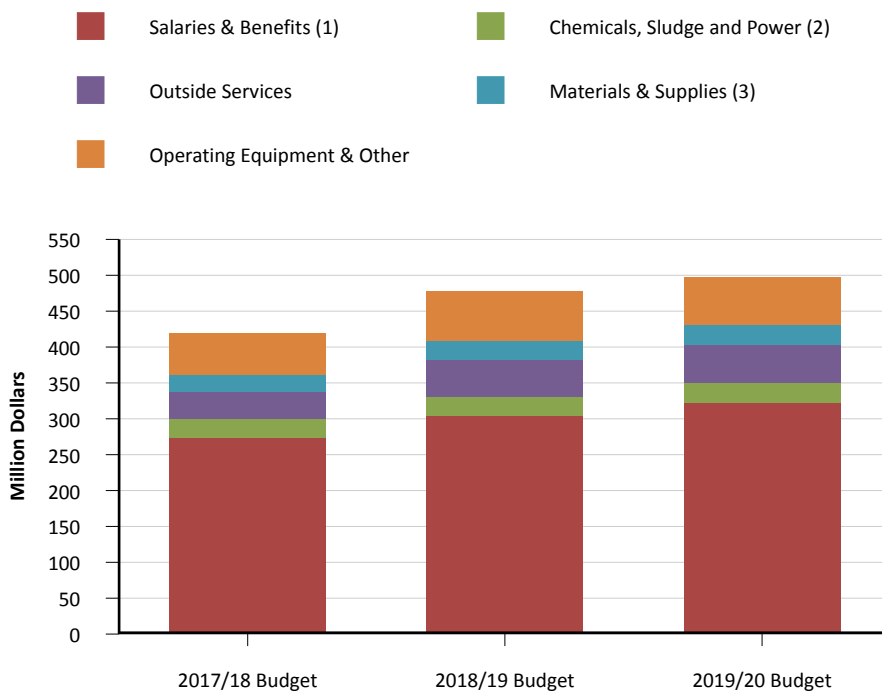
Salaries and Benefits: The FY 2019/20 O&M labor budget is about \$18.9 million or 6.2 percent higher than the FY 2018/19 budget. Negotiated labor increases represent \$12.5 million, or 66.2 percent of the increase. Increases in retirement, medical and other benefits represent \$5.9 million, or 31.4 percent of the increase. The remaining \$0.5 million increase, or 2.4 percent, is primarily attributable to funding 5 new and 1 previously unfunded regular full time position in the FY 2018/19 budget.

The total authorized personnel complement for FY 2019/20 is increased by 5 net regular full-time positions to 1,932 positions. Incorporating unfunded positions and positions that are planned to be vacant for portions of the year, the total funded positions are 1,868 FTEs.

Outside Services: Outside Services are anticipated to increase by \$2.1 million due to the first year of a ten-year planned effort to refurbish all of the floors at Metropolitan's headquarters.

Other O&M and Operating Equipment –The cost of chemicals, power, and sludge disposal incurred in the water treatment process is anticipated to increase slightly by \$0.6 million in FY 2019/20 due primarily to higher treated water deliveries. Other O&M is lower primarily due to the one time environmental remediation cost of \$1.5 million in FY 2018/19 for the Foothill Feeder Dewatering project. Operating equipment is lower by \$1.6 million from FY 2018/19. FY 2019/20 includes \$2.7 million for the replacement of a plane that has reached end of life but decreases in heavy equipment, trucks, monitoring equipment and IT infrastructure more than offsets this purchase.

Departmental Budget by Expenditure Type, \$ millions



- (1) Includes overhead credit for construction.
- (2) Costs associated with treatment only.
- (3) Without chemicals associated with treatment plants.

The figure above summarizes the total departmental O&M budget by expenditure type, of which about 64 percent is for salaries and benefits in both FY 2018/19 and FY 2019/20.

STAFFING PLAN

Total authorized positions (including temporary workers) for FY 2018/19 and FY 2019/20 are 1,927 and 1,932 positions respectively. Total personnel are up by 14 new full time positions and 2 district temporary positions (rounded) to 1,927 in 2018/19 and increase by 5 regular full time positions and 1 district temporary position (rounded) to a total of 1,932 in FY 2019/20.

Over the biennium, positions dedicated to O&M work are expected to increase by 28 regular full time positions in large part to support the RRWP, CA WaterFix, dam safety monitoring, enhanced security and land management efforts, environmental planning and business technology, and increased recruitment efforts. Positions dedicated to capital work are expected to decrease slightly over the biennium.

The FY 2018/19 and FY 2019/20 budget includes unfunded positions and positions that are planned to be vacant for portions of the year in order to manage O&M labor costs. Therefore, funded positions are lower than the authorized complement. The personnel complement is shown in the following tables.

Regular and Temporary Positions

	2016/17 Budget	2017/18 Budget	2018/19 Budget	2019/20 Budget	2017/18 Budget vs. 2018/19 Budget	2018/19 Budget vs. 2019/20 Budget
Regular Full Time Positions	1,886	1,886	1,900	1,905	14	5
District Temporary Positions	22	20	22	23	2	1
Agency Temporary Positions	4	4	5	4	1	—
Total	1,912	1,910	1,927	1,932	17	5

Totals may not foot due to rounding.

O&M and Capital Staffing Levels

	2017/18 Budget	2018/19 Budget	2019/20 Budget
O&M Positions			
Regular Full Time Positions	1,592	1,618	1,620
District & Agency Temporary Positions	23	25	25
Total O&M	1,615	1,643	1,645
Capital Positions			
Regular Full Time Positions	294	282	285
District & Agency Temporary Positions	1	2	2
Total Capital	295	284	287
GRAND TOTAL	1,910	1,927	1,932

Totals may not foot due to rounding.

CAPITAL INVESTMENT PLAN

The CIP budget for FY 2018/19 and FY 2019/20 is forecasted at \$200.0 million in both fiscal years. It is anticipated to be funded by current operating revenues (i.e., PAYGo) and by issuing new revenue bonds. The FY 2019/20 capital budget is flat with the FY 2017/18 budget.

The largest area of expenditures in the FY 2018/19 and FY 2019/20 CIP is Infrastructure Reliability. It is currently anticipated that infrastructure expenditures will continue to grow as more facilities reach the end of their service life and require rehabilitation and refurbishment.

The CIP is discussed in more detail in the CIP supplemental volume.

Cash Funded Capital

Overall, the CIP is anticipated to be funded 60 percent by current operating revenues (PAYGo). The PAYGO funding for FY 2018/19 and FY 2019/20 is budgeted at \$200.0 million in each fiscal year.

Debt Funded Capital

Overall, the CIP is anticipated to be funded 40 percent by revenue bond proceeds. New debt issues are planned in FY 2018/19 in the amount of \$80 million, and in FY 2019/20 in the amount of \$80 million. Given construction funds expected to be available at the beginning of the biennial budget period and planned PAYGo amounts, these bond issues should provide sufficient funds to meet CIP expenditures over the two years.

Debt Service

For FY 2018/19 and FY 2019/20 Metropolitan plans to issue new revenue bond debt as described above. Debt service payments in FY 2018/19 are budgeted at \$332.0 million and \$330.9 million in FY 2019/20. Please refer to the section on Capital Financing for additional details on this expense.

FUND BALANCES AND RESERVES

Metropolitan operates as a single enterprise fund for financial statements and budgeting purposes. Through its administrative code, Metropolitan identifies a number of accounts, which are referred to as funds, to separately track uses of monies for specific purposes as summarized in the table below.

The FY 2018/19 budget forecasts a \$13.8 million increase in reserves by June 30, 2019 and includes the Water Rate Stabilization Fund (WRSF) and the Revenue Remainder Fund. In addition, required reserves and increases to the Treatment Surcharge Stabilization Fund (TSSF), Water Management Fund (WMF) and the Water Stewardship Fund (WSF) are projected to decrease by \$7.0 million.

The FY 2019/20 budget forecasts a \$67.8 million increase in reserves by June 30, 2020 and includes the WRSF and the Revenue Remainder Fund. In addition, required reserves and changes to the TSSF and WSF are expected to increase by a net of \$21.2 million.

Fund balances are budgeted to be \$1.19 billion at June 30, 2019. Of that total, \$683.6 million is restricted by bond covenants, contracts, or board policy, and \$506.6 million is unrestricted. Fund balances are budgeted to be \$1.31 billion at June 30, 2020. Of that total, \$712 million is restricted by bond covenants, contracts, or board policy, and \$595.6 million is unrestricted.

On June 30, 2019, the targets for the minimum and target reserve funds are estimated to be \$256.9 million and \$626.4 million, respectively. Based on projected revenues and expenditures, it is estimated that the balance in the WRSF and Revenue Remainder Fund will total about \$415.2 million, about \$158.3 million over the minimum level.

On June 30, 2020, the targets for the minimum and target reserve funds are estimated to be \$269.5 million and \$654.4 million, respectively. Based on projected revenues and expenditures, it is estimated that the balance in the WRSF and Revenue Remainder Fund will total about \$483.0 million, about \$213.5 million over the minimum level.

Projected Fund Balances, \$ millions

	Restricted	Designated	Unrestricted	Total
2018/19 Budget				
Operating Funds	332.7	0.0	0.0	332.7
Debt Service Funds	264.3	0.0	0.0	264.3
Construction Funds	15.6	6.8	0.0	22.4
Reserve Funds (1)	0.0	0.0	415.2	415.2
Rate Stabilization Funds (2)	0.0	84.6	0.0	84.6
Trust and Other Funds	70.9	0.0	0.0	70.9
Total June 30, 2019	683.6	91.3	415.2	1,190.2
2019/20 Budget				
Operating Funds	364.5	0.0	0.0	364.5
Debt Service Funds	261.2	0.0	0.0	261.2
Construction Funds	15.3	6.8	0.0	22.1
Reserve Funds (1)	0.0	0.0	483.0	483.0
Rate Stabilization Funds (2)	0.0	105.8	0.0	105.8
Trust and Other Funds	70.9	0.0	0.0	70.9
Total June 30, 2020	712.0	112.6	483.0	1,307.5

Totals may not foot due to rounding.

(1) includes Water Rate Stabilization Fund and Revenue Remainder Fund.

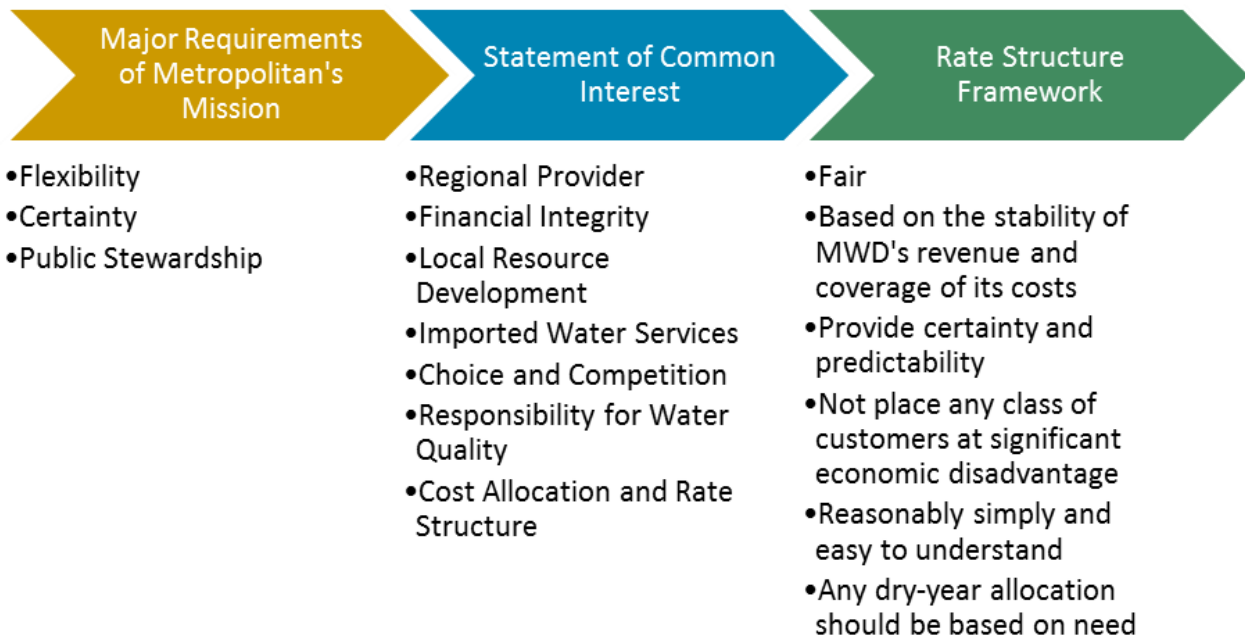
(2) includes Water Stewardship Fund and Treatment Surcharge Stabilization Fund

RATE STRUCTURE OVERVIEW

Framework

The Rate Structure Framework evolved through a comprehensive strategic planning process initiated in 1998. As depicted in the following figure, the first step of the process was to identify the “Major Requirements of Metropolitan’s Mission,” which was reflected in the Strategic Plan Policy Principles. The Statement of Common Interests formed the basis of Metropolitan’s strategic plan to address these mission requirements. One of the most important common interests was “Cost Allocation and Rate Structure.” In determining the most appropriate Cost of Service (COS) and rate structure, a set of pricing objectives, or guiding rate principles, was developed. These guiding rate principles defined Metropolitan’s Rate Structure Framework by which various COS and rate-setting methodologies could be evaluated.

Development of the Rate Structure Framework



The strategic planning process which established the foundation of the Rate Structure Framework is discussed below.

Major Requirements of Metropolitan’s Mission

As one of the first steps in the strategic planning process in 1998, the Board developed a list of three mission requirements in its Metropolitan vision statement - flexibility, certainty, and public stewardship:

- **Flexibility.** Metropolitan is aware of the legislative and economic pressures which make flexibility in providing water services for a changing demand and in a competitive water market paramount. Fair compensation for wheeling through Metropolitan’s conveyance systems is an essential element of Southern California’s developing market.
- **Certainty.** The certainty that Metropolitan’s water supply is reliable and that the COS is appropriate is of utmost importance to member agencies and their retailers who are endeavoring to provide not only water, but value to the residents in their service area.
- **Public Stewardship.** As public stewards of much of Southern California’s water supply, Metropolitan and its member agencies are responsible for making certain that the water is provided in a cost-effective and environmentally sound manner.

Statement of Common Interests

From the strategic planning mission requirements, the Board developed a list of seven areas of common interest that formed the major focus elements of the Metropolitan strategic plan:

- **Regional provider.** This area includes the concerns of protecting regional infrastructure and providing service during drought periods. Regional water must be provided to meet the needs of the member agencies, and water supplies must be equitably allocated during drought periods based on the Water Surplus and Drought Management Plan principles.
- **Financial integrity.** It is a common interest of the members for Metropolitan to assure the financial integrity of the agency in all aspects of its operations.
- **Local resource development.** Metropolitan supports local resources development by working in partnership with its member agencies and by providing member agencies with financial incentives for water conservation and for local projects.
- **Imported water service.** Metropolitan is responsible for providing imported water to meet the committed needs of its member agencies.
- **Choice and competition.** After Metropolitan provides imported water for the member agencies’ committed demands, a member agency can choose the most cost-effective additional water supplies for its customers. These choices include either Metropolitan, local resource development, market transfers, or some combination of these secondary options. Metropolitan and its member agencies can decide how to provide these additional supplies collaboratively while balancing local, imported, and market opportunities with affordability.
- **Responsibility for water quality.** Metropolitan must advocate source water quality and implement in-basin water quality for the imported water it supplies. This is necessary to guarantee compliance with primary drinking water standards and to meet the water quality requirements for water recycling and ground water replenishment.
- **Cost allocation and rate structure.** The framework for a revised rate structure will be established to address allocation of costs, financial commitment, unbundling of services, and fair compensation for services including wheeling, peaking, growth, and others.

Rate Structure Framework

A major element of common interest was “*Cost Allocation and Rate Structure.*” In addressing this element a set of pricing objectives, or guiding rate principles, had to be developed to evaluate alternative COS and rate setting approaches, or methodologies. As a result, the Board adopted a set of rate principles which was defined as the *Rate Structure Framework*. The Rate Structure Framework provided the principles for the Strategic Planning Steering Committee to develop a preferred rate structure. The Rate Structure Framework includes the following principles:

- The rate structure should be *fair*;
- It should be based on the *stability* of Metropolitan’s revenue and coverage of its costs;
- It should provide certainty and predictability;
- It should not place any class of customers at *significant economic disadvantage*;
- It should be reasonably *simple and easy to understand*; and
- Any dry-year allocation should be *based on need*.

The 2001 COS and rate structure was adopted by the Board to address the Rate Structure Framework.

RATE STRUCTURE DESIGN

The elements of the rate structure, and the rates and charges for calendar year 2018, 2019, and 2020 are summarized in Table 14.

Table 14. Rate Elements

Rate Design Elements	Functional Costs Recovered	Type of Charge	2018*	2019*	2020*
Tier 1 Supply Rate	Supply	Volumetric (\$/af)	\$209	\$209	\$208
Tier 2 Supply Rate	Supply	Volumetric (\$/af)	\$295	\$295	\$295
System Access Rate	Conveyance/Distribution (Average Capacity)	Volumetric (\$/af)	\$299	\$326	\$346
Water Stewardship Rate	Demand Management	Volumetric (\$/af)	\$55	\$69	\$65
System Power Rate	Power	Volumetric (\$/af)	\$132	\$127	\$136
Treatment Surcharge	Treatment	Volumetric (\$/af)	\$320	\$319	\$323
Capacity Charge	Peak Distribution Capacity	Fixed (\$/cfs)	\$8,700	\$8,600	\$8,800
Readiness-to-Serve Charge	Conv./Distr./Emergency Storage & Available Capacity	Fixed (\$M)	\$140	\$133	\$136

*Rates and Charges effective January 1st

Supply Rates

Purpose

The rate structure recovers supply costs through a two-tiered price structure. The amount of water a member agency may purchase at the lower Tier 1 Supply Rate, which is water within a member agency's Tier 1 maximum, is established by either a purchase order agreement or calculated as 60% of its Revised Base Firm Demand.

Tier 1 Supply Rate

The Tier 1 Supply Rate is a volumetric rate charged on Metropolitan's water sales that are within a member agency's Tier 1 maximum. The Tier 1 Supply Rate supports a regional approach through the uniform, postage stamp rate. The Tier 1 Supply Rate is calculated as the amount of the total supply revenue requirement that is not recovered by the Tier 2 supply Rate divided by the estimated amount of Tier 1 water sales.

Tier 2 Supply Rate

The Tier 2 Supply Rate is a volumetric rate that reflects Metropolitan's cost of purchasing water transfers north of the Delta. The Tier 2 Supply Rate is charged on Metropolitan water sales that exceed a member agency's Tier 1 maximum. The Tier 2 Supply Rate encourages the member agencies and their customers to maintain existing local supplies and develop cost-effective local supply resources and conservation.

Implementation

Because the Tier 1 maximum is set at a total member agency level and not at a meter level, all system water delivered will be billed at the Tier 1 Supply Rate. Any water delivered that exceeds the Tier 1 maximum will be billed an additional amount equivalent to the difference between the Tier 2 and Tier 1 Supply Rates.

For member agencies without purchase orders and member agencies with purchase orders that accrue a cumulative Tier 2 obligation at the end of year five of the purchase order, the Tier 2 Supply Rate will be applied in the month where the Tier 1 maximum is surpassed on all applicable deliveries. Otherwise, any obligation to pay the Tier 2 Supply Rate will be calculated over the ten-year period, consistent with the calculation of any purchase order commitment obligation.

Benefits

The use of the two-tiered structure for Supply Rates provides several benefits including (1) efficient resource management, and (2) clear price signals to accommodate a water transfer market.

System Access Rate (SAR)

Purpose

The SAR recovers the cost of the Conveyance and Distribution System that is used on an average annual basis through a uniform, volumetric rate. All users (member agencies and third-party wheelers) pay the SAR for access to conveyance and distribution capacity in the Metropolitan system.

Implementation

The SAR is charged for each acre-foot of water transported by Metropolitan, regardless of the ownership of the water being transported. All users (member agencies and third-party wheelers) using the Metropolitan system to transport water pay the same SAR for the use of the system conveyance and distribution capacity used to meet average annual demands.

Benefits

There are several benefits to the SAR, including (1) support of a regional approach, (2) accommodates a water transfer market that does not unfairly advantage one user over another, (3) provides a clear linkage between costs and benefits, and (4) establishes a simple approach to recovering the costs of conveyance service.

Water Stewardship Rate (WSR)

Purpose

The WSR provides a dedicated source of funding for conservation and local resources development through a uniform, volumetric rate. The WSR supports past and future conservation and local resources projects. Because of the uniform benefits conferred on all system users by investments in conservation and local resources, all users of Metropolitan's conveyance and distribution system pay the WSR.

Implementation

The WSR is charged to each acre-foot of water delivered by Metropolitan, regardless of the water being transported. All users (member agencies and third-party wheelers) benefit from avoided system infrastructure costs through conservation and local resources development, and from the system capacity made available by investments in Demand Management Programs like Metropolitan's CCP and LRP. Therefore, all users pay the WSR.

Benefits

The WSR provides significant benefits including (1) support of a regional approach, and (2) providing a dedicated source of funding for the development of local resources.

System Power Rate (SPR)

Purpose

The SPR recovers the costs of energy required to pump water to Southern California through the SWP and CRA. The cost of power is recovered through a uniform, volumetric rate.

Implementation

The SPR is applied to all deliveries of Metropolitan water to member agencies. Wheeling parties pay for actual cost (not system average) of power needed to move the water. Member agencies engaging in wheeling transactions of up to one year pay the wheeling rate (consisting of the actual cost of power, SAR, WSR, and an administrative fee). Other wheeling transactions are pursuant to individual contracts. For example, a party wheeling water through the California Aqueduct would pay the variable power cost associated with using the SWP transportation facilities.

Benefits

The primary benefit of the SPR is that it clearly identifies Metropolitan's average cost of power.

Treatment Surcharge

Purpose

The Treatment Surcharge recovers all of the costs of providing treatment capacity and operations through a uniform, volumetric rate per acre-foot of treated water transactions.

Implementation

The Treatment Surcharge is charged to all treated water transactions.

Benefits

There are several benefits provided by the treatment surcharge, including that (1) only treated water users pay for the costs of treatment, and (2) by averaging the costs of providing treated water service over the entire system the regional economies of scale are preserved.

Capacity Charge

Purpose

The Capacity Charge recovers the costs incurred to provide peak capacity within the Distribution System. The Capacity Charge provides a price signal to encourage agencies to reduce peak demands on the Distribution System and to shift demands that occur during the May 1 through September 30 period into the October 1 through April 30 period, resulting in more efficient utilization of Metropolitan's existing infrastructure and deferring capacity expansion costs.

Implementation

Each member agency will pay the Capacity Charge per cubic feet per second (cfs) based on a three-year trailing peak (maximum) day demand, measured in cfs. Each member agency's peak day is likely to occur on different days; therefore this measure approximates peak week demands on Metropolitan.

Benefits

The Capacity Charge provides several benefits including (1) increasing the overall efficiency of water use, (2) improving the fair allocation of costs among member agencies based upon the demand imposed by each agency, and (3) providing a source of fixed revenue.

Readiness-To-Serve Charge (RTS)

Purpose

The RTS recovers the cost of the portion of system that is available to provide emergency service and available capacity during outages and hydrologic variability.

Implementation

The RTS is a fixed charge that is allocated among the member agencies based on a ten-fiscal-year rolling average of firm demands. Water transfers and exchanges are included for purposes of calculating the ten-year rolling average. The Standby Charge will continue to be collected at the request of the member agency and applied as a direct offset to the member agency's RTS obligation.

Benefits

The RTS provides two major benefits, which includes (1) a better matching of costs and benefits, and (2) a SAR that recovers only those costs associated with providing average annual service.

Purchase Order Option

The current rate structure allows member agencies to choose to purchase water from Metropolitan by means of a Purchase Order. Purchase Orders are voluntary agreements that determine the amount of water that a member agency can purchase at the Tier 1 Supply Rate. They allow member agencies to purchase a greater amount of water at the lower Tier 1 Supply Rate than would otherwise be authorized by the Administrative Code. In exchange for the higher Tier 1 Maximum, the member agency commits to purchase a specific amount of water (based on past purchase levels) over the term of the agreement. Such agreements allow member agencies to manage costs and provide Metropolitan with a measure of secure revenue.

In November 2014, the Metropolitan Board approved new Purchase Orders effective January 1, 2015 through December 31, 2024 (the "Purchase Order Term"). Twenty-one of the twenty-six member agencies have Purchase Orders, which commit the member agencies to purchase a minimum amount of supply from Metropolitan (the "Purchase Order Commitment").

The key terms of the Purchase Orders include:

- A ten-year term, effective January 1, 2015 through December 31, 2024;
- A higher Tier 1 limit based on the Base Period Demand, determined by the member agency's choice between (1) the Revised Base Firm Demand, which is the highest fiscal year purchases during the 13-year period of fiscal year 1990 through fiscal year 2002, or (2) the highest year purchases in the most recent 12-year period of fiscal year 2003 through 2014. The demand base is unique for each member agency, reflecting the use of Metropolitan's system water over time;
- An overall purchase commitment by the member agency based on the Demand Base period chosen, times ten to reflect the ten-year Purchase Order term. Those agencies choosing the more recent 12-year period may have a higher Tier 1 Maximum and commitment. The commitment is also unique for each member agency.
- The opportunity to reset the Base Period Demand using a five-year rolling average;
- Any obligation to pay the Tier 2 Supply Rate will be calculated over the ten-year period, consistent with the calculation of any Purchase Order commitment obligation; and
- An appeals process for agencies with unmet purchase commitments that will allow each acre-foot of unmet commitment to be reduced by the amount of production from a local resource project that commences operation on or after January 1, 2014.

Member agencies that do not have Purchase Orders in effect are subject to Tier 2 Supply Rates for amounts exceeding 60 percent of their base amount (equal to the member agency's highest fiscal year demand between 1989-90 and 2001-02) annually.

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UNDERSTANDING THE LAYOUT OF THE DEPARTMENTAL BUDGET

DEPARTMENTAL/GROUP BUDGET

The Departmental Section provides detailed information about the Operations and Maintenance (O&M) budget of each group and department and consists of the following:

Mission

Describes, at a high level, the scope of the organization's functions.

Programs

Describes the organizations roles and responsibilities by program or section and provides a summary organizational chart.

Goals & Objectives

Summarizes the goals & objectives each organization proposes to accomplish in the upcoming fiscal years.

O&M Financial Summary

Provides a summary of the organization's O&M budgets. For FY 2018/19 and FY 2019/20, O&M expenditures are identified by expense categories such as salaries and benefits, professional services, and "other" expenditures and incorporate the group objectives.

Expense Category

Category	Description
<i>Salaries and Benefits</i>	Labor costs and fringe benefits for Metropolitan's regular, district temporary, and agency temporary employees. Total salaries and benefits, direct charges to capital, and O&M salaries are shown.
<i>Professional Services</i>	All costs associated with work performed by outside contractors and consultants.
<i>Operating Equipment</i>	Costs associated with the purchase of capitalized portable equipment, including automobiles, trucks, servers, and other applicable portable equipment.
<i>Other</i>	Cost of purchasing chemicals, materials and supplies, reprographics, travel, telephone, and other necessary items for effective operation of Metropolitan. A breakdown has been provided to itemize those expense categories that are five percent or more of the "other" category.

O&M Budget by Section

Provides a summary of the organization's O&M budget and personnel count by section or program.

Personnel Summary

Provides a breakdown for the organization of total personnel involved in O&M and capital work.

Budget Highlights

Identifies the major factors of the budget variance over the biennium as well as any significant changes by budget year.

OFFICE OF THE GENERAL MANAGER

The Office of the General Manager manages and administers all Metropolitan activities except those functions specifically delegated by statutes and Board order to the General Counsel, General Auditor, or Ethics Officer.

PROGRAMS

The Office of the General Manager provides overall leadership and management of Metropolitan’s mission. This includes the management of all matters pertaining to the business of the Board and research on actions and policies of the Board by staff for directors, member agencies, and the public.

The General Manager’s Business Plan outlines the strategic priorities that this office and Metropolitan will focus on for the period covered by the Biennial Budget.

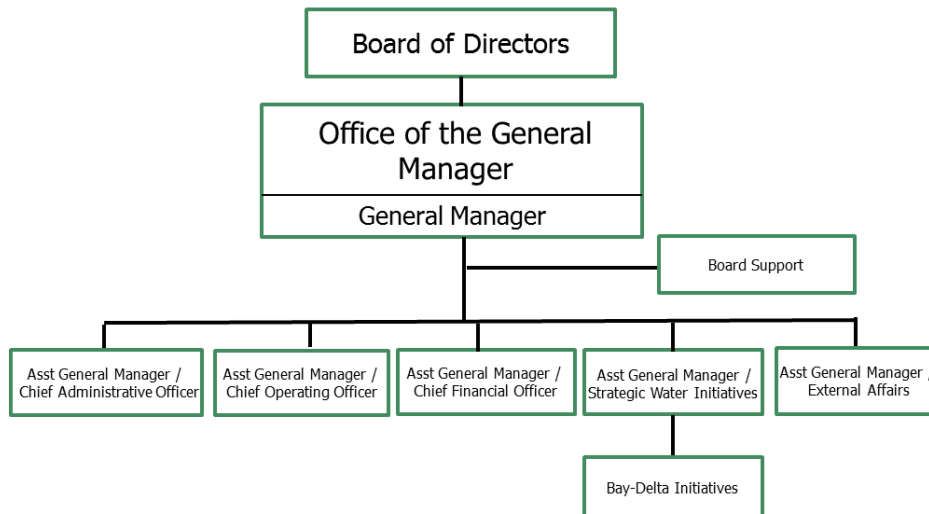
The Office of the General Manager accomplishes its mission through the following programs or sections:

Office of the General Manager is responsible for the management and administration of Metropolitan’s activities including the management

of all matters pertaining to the business of the Board and research on actions and policies of the Board by staff for directors, member agencies, and the public.

Bay-Delta Initiatives spearheads efforts toward advancement of the State’s Proposed Delta Improvements, including the CA WaterFix and EcoRestore and the pursuit of the best scientific research to protect and restore fish, wildlife, and the Delta’s ecosystem while ensuring water supply reliability.

Board of Directors provides policy and direction as the governing body of the Metropolitan Water District. The Board Support Team provides administrative support to the business of the Board.



GOALS AND OBJECTIVES

The following strategic priorities in the General Manager's Business Plan reflect the funding emphasis in the budget and highlight items that will be the focus of Board and staff attention over the next two years.

Strategic Priority #1: Enhance Infrastructure Safety, Security and Resiliency

Metropolitan's vast network of aqueducts, pipelines, pumps and treatment facilities are the backbone of Southern California's regional water system. Metropolitan's flexible and adaptable system enables Metropolitan to move water across six counties from where it is sourced to where it is needed. Our robust treatment and delivery infrastructure allowed Metropolitan to supply Southern California almost entirely with Colorado River water in 2015 and then flip to delivering almost all Northern California water in 2017. However, this vital infrastructure is aging and heightened reinvestment in this system is essential to ensure Metropolitan can continue to deliver on its promise of reliability in the coming decades.

In the past, the bulk of Metropolitan's Capital Investment Program was focused on large-scale projects such as Diamond Valley Lake, the Inland Feeder and the Ozone Retrofit Program with repair and replacement projects being secondary. The focus of our CIP has now shifted largely to reinvestment in our existing infrastructure. These projects will ensure the long-term reliability of Metropolitan's critical infrastructure and build seismic resilience into our facilities. In 2000, Metropolitan's annual CIP was nearly \$600 million for approximately 100 projects. Over the next budget cycle, Metropolitan will be managing nearly 400 individual capital projects for a \$200 million CIP. This requires changes in organization and management of our capital program and is reflected in our budgeting actions and staffing plans.

The four critical areas of focus will be the ongoing rehabilitation of the Colorado River Aqueduct, PCCP replacement, system seismic hardening and physical and cyber security. Staff will be bringing numerous action items to the Board in these areas and will be discussing with the Board strategies on best management techniques for handling the shifting nature of our CIP.

Strategic Priority #2: Prepare for More Extreme Hydrology

Maximize Storage Opportunities: The recent historic drought cycle sequence highlighted the enormous value of Metropolitan's regional storage investments. Over the past decade, California has had eight drought years with two wet years. To meet regional demands, Metropolitan drew on storage heavily in most years over this period but was able to take full advantage of the wetter years to restore storage reserves. But for Metropolitan's robust storage portfolio and conveyance capabilities, Southern California would have faced severe shortages this past decade. Regional storage has become increasingly critical to maintaining water supply reliability in the face of increasing water supply volatility due to climate change. Staff will work closely with the Board to assess Metropolitan's storage capabilities, current strategies and review future needs to identify whether new strategies and/or new investments are needed.

Promote Innovation and Efficiency in Water Use: Water use efficiency and conservation investments were also essential to managing through the historic drought by reducing regional demands nearly 25 percent. Metropolitan is a national leader in water conservation and reached a significant milestone in 2017 by achieving more than one million acre-feet per year in annual water savings. Most of this progress was built on Metropolitan's successful rebate programs and advocacy to change codes and standards. To build on that success, Metropolitan will examine new opportunities to leverage technology and innovation to promote conservation, efficient water use and water stewardship through a comprehensive demand management program that includes investments in research, innovation and public education along with targeted incentives for the residential, commercial, industrial and institutional sectors.

Strategic Priority #3: Ensure Imported Supply Reliability

Southern California's foundational water supply remains the Colorado River and the SWP and their ongoing reliability is critical for the region.

Important decisions on both supplies need to be made over the next two years.

The emphasis for the SWP will be on maintaining the momentum of the decisions by water contractors regarding financing CA WaterFix and beginning the logistical and management work for project construction. Simultaneously, staff will be working with the state to extend the SWP Contract, complete repairs at Oroville reservoir and review the status and upkeep of all SWP facilities. Also essential will be strategic investments regarding science and restoration of the Delta ecosystem in support of the co-equal goals of water supply reliability and environmental restoration. This includes support for California EcoRestore projects, salmon and smelt resiliency plans, and development of a multiuse, long-term plan for Metropolitan's Delta Islands.

On the Colorado River, the emphasis over the next year will be on completing the Drought Contingency Plan to provide stability on the Colorado River while protecting Metropolitan's supplies and access to storage in Lake Mead. Additionally, staff will analyze the combined impacts of long-term hydrological conditions and various competing demands, including pending tribal water rights litigation and environmental interests, such as the Salton Sea, to ensure Metropolitan's Colorado River water supplies remain protected and reliable. Finally, Metropolitan will continue to work proactively to manage its Palo Verde lands in a way that supports long-term water supply goals and a vibrant agricultural economy in the region.

Strategic Priority #4: Maximize Local Resources

In 2018, construction of the Regional Recycled Water Advanced Purification Center demonstration facility in partnership with the Sanitation Districts of Los Angeles County will be completed. While Metropolitan learns about the technical and water quality aspects of the project to optimize design of treatment processes for a full-scale facility, staff will begin work with the Board and member agencies on a review of the institutional issues associated with the RRWP and its relationship to Metropolitan's ongoing LRP. This review will address a variety of issues related to the Program and seek Board policy direction. The issues addressed will include how project costs would be

allocated, how revenues would be collected, what form water delivery would take to local agencies, cooperation and cost sharing with non-member agencies, and other policy issues.

Strategic Priority #5: Promote Environmental Stewardship and Sustainability

Metropolitan has undertaken a comprehensive program of environmental stewardship both internally and externally. In the course of accomplishing its mission and mitigating for impacts of its projects and operations, Metropolitan establishes and manages open space, and partners with other organizations to preserve and support native species and habitat. In the coming years, Metropolitan will continue to lead with programs that promote actions that support sustainable practices, reduce greenhouse gas emissions and protect natural habitat and water quality. A comprehensive risk management strategy is needed to address the uncertainty and threat associated with climate change. As understanding of climate change impacts advances, Metropolitan will develop and implement strategies to improve resiliency, reduce risk and increase sustainability for infrastructure, water systems and the ecosystems.

Strategic Priority #6: Foster Leadership and Strengthen Workforce Capabilities

More than half of Metropolitan's workforce has reached retirement age, including many members of Metropolitan's executive management team. The retirement rate at Metropolitan is now slightly more than 100 employees a year and will remain at that level through this budget cycle. This is a challenge to the District's capacity to adequately train and prepare its workforce but is also an opportunity to build a workforce geared for the challenges of the future. To retain essential agency knowledge capture and ensure smooth leadership transitions, Metropolitan will expedite internal promotions and recruitment processes, and augment employee development training programs to ensure employees have the knowledge and technological skills to compete in today's competitive job environment. Succession planning actions will be enhanced to increase the availability of experienced and capable employees prepared to assume critical roles as they become available, building on Metropolitan's current successful apprenticeship program and management

academies. While Metropolitan's workforce is becoming increasingly more diverse, Metropolitan will continue to foster an inclusive workplace, promoting a safe and discrimination-free work environment, and provide opportunities for all employees to use their diverse talents to support the District's mission.

Strategic Priority #7: Maintain Sound Business Practices and Fiscal Integrity

Metropolitan will continue its longstanding practice of operating in a productive, cost-effective, transparent and efficient manner to ensure sound financial stability. Metropolitan holds some of the nation's highest credit ratings for government agencies by maintaining strong reserves and limiting its use of debt. Long-term investments will be made through a prudent combination of long-term funding sources as well as annual rate revenues. Capital expenses will continue to be funded at a significant level on a pay as-you-go (PAYGO) basis per Board policy. Potential investments such as modernizing the SWP with CA WaterFix would be phased in over time and have been prudently built into Metropolitan's rate projections. Staff will ensure that expenditures on WaterFix will be regularly reported to the Board and the public in a clear and transparent manner.

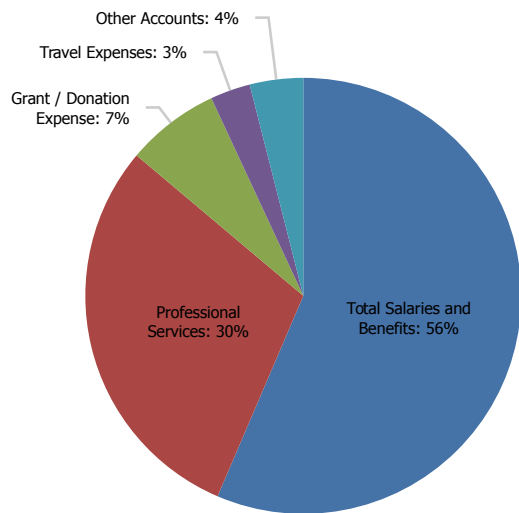
After a decade of virtually no rate increases, then a few steep catch up years in 2009 and 2010, Metropolitan's overall rate increases have stabilized over the past four years to close to the rate of inflation. Thanks to prudent management of Metropolitan's capital program, reduction in debt load and management of labor costs, the budget limits overall rate increases to three percent in each year while it continues funding Metropolitan's PAYGO policy, paying down Metropolitan's Pension and Other Post Employment Benefit liability, and expanding Metropolitan's conservation and demand management programs. Most importantly, due to the continued sound financial management practices of Metropolitan, the ten-year financial forecast predicts overall rate increases will remain within the three to five percent range over the next decade.

O&M FINANCIAL SUMMARY

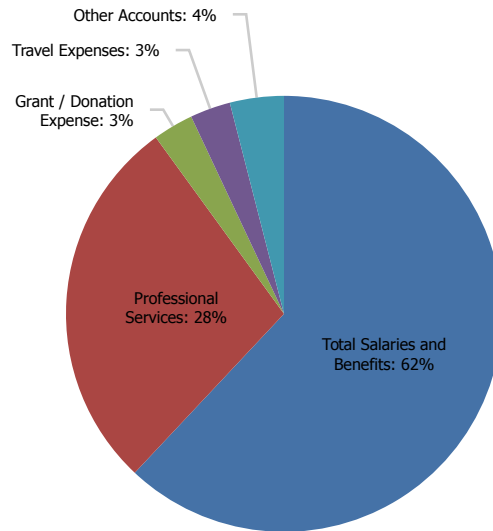
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	9,346,100	9,169,600	10,381,400	1,211,800	10,980,400	599,000
Direct Charges to Capital	0	0	(87,900)	(87,900)	(93,100)	(5,200)
Total Salaries and Benefits	9,346,100	9,169,600	10,293,500	1,123,900	10,887,300	593,800
% Change		(1.9%)		12.3%		5.8%
Professional Services	3,522,900	3,353,600	5,337,500	1,983,900	4,920,000	(417,500)
Conferences & Meetings	100,000	108,400	115,200	6,800	114,800	(400)
Grant / Donation Expense	423,300	—	1,225,000	1,225,000	525,000	(700,000)
Materials & Supplies	52,300	33,600	269,300	235,700	261,100	(8,200)
Travel Expenses	476,700	571,900	573,100	1,200	508,400	(64,700)
Other Accounts	157,800	193,900	269,500	75,600	253,700	(15,800)
Total O&M	14,079,100	13,431,000	18,083,100	4,652,100	17,470,300	(612,800)
% Change		(4.6%)		34.6%		(3.4%)

Note – Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

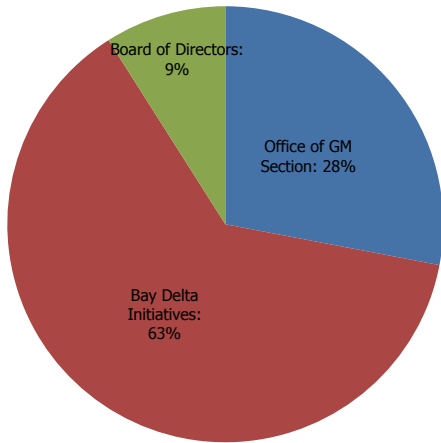


FY 2019/20 BUDGET BY EXPENDITURE

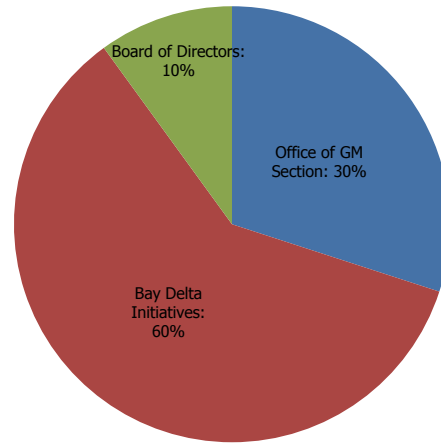


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Office of GM Section	4,273,200	5,001,700	728,400	5,224,100	222,500	12	13	13
Bay Delta Initiatives	7,939,100	11,432,500	3,493,400	10,545,800	(886,700)	19	19	19
Board of Directors	1,218,500	1,649,000	430,400	1,700,400	51,400	5	6	6
Total O&M	13,430,900	18,083,100	4,652,200	17,470,300	(612,800)	36	38	38

Note – Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
		Regular		32.8	35.0	37.0	2.0
	O&M	32.8	35.0	36.5	1.5	36.5	—
	Capital	—	—	0.5	0.5	0.5	—
Temporary		1.3	0.5	1.1	0.6	1.1	—
	O&M	1.3	0.5	1.1	0.6	1.1	—
	Capital	—	—	—	—	—	—
Total Personnel		34.1	35.5	38.1	2.6	38.1	—
	O&M	34.1	35.5	37.6	2.1	37.6	—
	Capital	—	—	0.5	0.5	0.5	—

Note – Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

The Office of the General Manager's O&M Biennial Budget is \$18.1 million in FY 2018/19 and \$17.5 million in FY 2019/20 or an increase of 34.6% and a decrease of 3.4% respectively from the prior budget years. The main factors affecting these changes:

- Increase in staffing by two positions to accommodate increased support for the Board and Bay Delta efforts.
- Professional services reflect ramped up activities related to Bay Delta science, Delta Islands operations, regulatory activities and Colorado River supply activities.
- Grant expense reflects funds, which were not previously budgeted, contributed by Metropolitan to advance efforts on collaborative science through various State, Federal and other agencies.

The following are the significant changes by budget year.

FY 2018/19

Personnel-related issues

Total personnel count increased by one regular position in the Board Support Team and one regular position for Bay Delta efforts.

Capital labor (one regular FTE) is budgeted for Delta Islands projects.

Salaries and Benefits reflect negotiated labor increases.

Professional Services

The budget reflects ramped up activities related to Bay Delta science, Delta Islands operations, regulatory activities and Colorado River supply activities.

Grant Expense

Contributions to various agencies were not budgeted in FY 2017/18 but since 2016, Metropolitan has been contributing funds to advance efforts on collaborative science through agencies such as SFCWA (State and Federal Contractors Water Authority), NCWA (Northern California Water Association), USGS (United States Geological Study) and others. Staff foresees increased funding requirements during FY 2018/19.

Materials & Supplies

The budget reflects purchase of software for Board support team and electronic equipment for Board members.

FY 2019/20

Personnel-related issues

Total personnel count remains flat with FY 2019/20.

Salaries and benefits reflect negotiated labor increases.

Professional Services

The budget reflects a reduction in Bay Delta science studies, data management and modeling efforts.

Grant Expense

The budget reflects a reduction in Metropolitan funding of science grants due to anticipated completion of some efforts.

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WATER SYSTEM OPERATIONS

Water System Operations (WSO) reliably treats and delivers high-quality water to Metropolitan's member agencies in an efficient, sustainable, and environmentally responsible manner.

PROGRAMS

Water System Operations treats and delivers water from the Colorado River and the SWP through a raw water conveyance system, five treatment plants, and an extensive treated water distribution network. This flexible system provides reliable deliveries to the member agencies and moves available supplies and storage reserves to meet Metropolitan's mission. Water quality remains paramount and all functions focus on surpassing drinking water standards.

WSO accomplishes its mission through the following programs or sections:

Office of Manager provides day-to-day operational management as well as strategic and organizational leadership, directing all initiatives and core business efforts of WSO. The office also provides support functions such as budgeting, administration, and District wide support through their Security and Fleet Services units. The security function ensures that Metropolitan's employees, water infrastructure, and equipment are adequately protected, and provides emergency management support. The fleet function acquires and maintains vehicles, equipment, aircraft, and emergency generators.

Operations Support Services provides a diverse range of support to Metropolitan's core operational reliability functions and, on a reimbursable basis, to public entities such as DWR and member agencies. The Manufacturing Services unit performs fabrication, machining, coating, valve and pump refurbishment, underwater maintenance, and crane safety and certification. Construction Services unit performs general construction, large equipment transportation, equipment installation, and emergency response. The Power & Equipment Reliability unit provides maintenance services

which include: predictive, preventive, and corrective maintenance analysis for critical equipment, including all treatment plants, pumping plants, hydroelectric power plants, pressure control structures, high voltage equipment, and heating, ventilation, and air conditioning (HVAC) systems. Additionally, the section helps member agencies with service connection requests.

Water Treatment operates and maintains five water treatment plants with a combined capacity of over 2.3 billion gallons per day. The section oversees treatment processes to ensure high-quality water is reliably produced that complies with drinking water regulations. All five treatment plants are staffed and operated 24 hours a day, seven days a week to meet about half of Metropolitan's annual deliveries. All five of the treatment plants (Jensen, Mills, Skinner, Weymouth and Diemer) have been retrofitted to use ozone as the primary disinfectant.

Water Conveyance and Distribution meets delivery requirements of member agencies by moving water throughout Metropolitan's 5,200 square mile service area and performing a wide range of operations and maintenance activities to ensure system reliability. The section's work encompasses the Colorado River Aqueduct system and its five pumping plants as well as the distribution system of about 830 miles of pipelines, approximately 350 service connections to member agencies, 16 hydroelectric plants, and 9 storage and regulatory reservoirs that help Metropolitan meet peak flow periods and provide dry year and emergency supply reliability.

Water Quality ensures that Metropolitan provides safe and aesthetically pleasing water through the following activities: conducting chemical and biological analyses; optimizing existing treatment processes; testing new technologies to assure compliance with current and future regulations; and providing technical expertise, laboratory services, and troubleshooting of water quality issues for Metropolitan and its member agencies. Water Quality also works to preserve and improve source water quality through rigorous watershed surveys and advocate for measures to reduce the risk of point and non-point source pollution.

Water Operations and Planning plans and implements the movement and use of water resources. These plans incorporate infrastructure and supply limitations, agency demands, changing water quality requirements, and storage program economics. Operational scenarios that encompass a broad range of potential supplies and demands are developed and refined on a weekly basis throughout the year. This process prepares WSO for a wide variety of possible outcomes as the year develops while maintaining reliable deliveries and balancing water storage reserves at reasonable cost.

In addition, the section programs and maintains Metropolitan’s control system, known as the SCADA system.

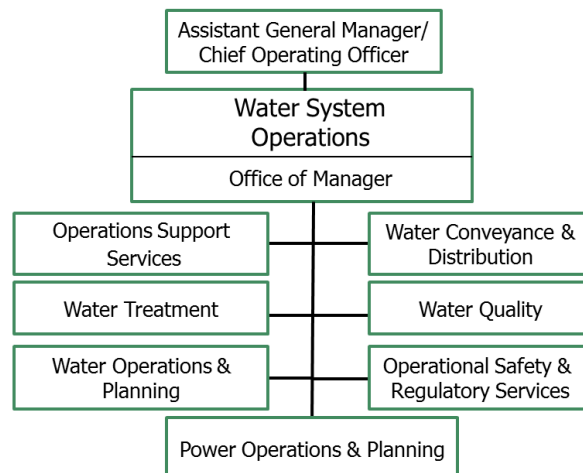
Operational Safety and Environmental Regulatory Services is responsible for ensuring a safe working environment for employees through programs and training, ensuring business

operations are conducted in an environmentally responsible way, and complying with all regulatory and occupational health and safety rules and requirements. The section integrates environmental, health and safety practices into Metropolitan’s operations and culture with the goal of achieving a safe work place and eliminating regulatory incidents.

In addition, the section manages technical skills training for maintenance craft employees and sponsors an accredited apprenticeship program which is a cornerstone of WSO’s proactive succession planning efforts; by training industrial mechanics and electricians over a four-year period of classroom and hands-on instruction.

Power Operations and Planning plans, acquires and accounts for the energy required to operate the Colorado River Aqueduct (CRA). This activity includes energy transactions with electric utilities and marketers. The section also negotiates and manages the contracts and energy accounting of Renewable Energy Credits and Greenhouse Gas Allowances for 16 small hydroelectric power plants and the CRA.

In addition, the section is responsible for most wholesale energy activities including evaluation of proposed energy-related regulations and legislation; analysis of state and regional transmission plans and impacts to the CRA transmission system; and reporting on compliance with regional and national electric reliability standards. Finally, the section works closely with energy staff at DWR on energy and transmission issues for the SWP.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/2020, WSO will focus on the following key issues:

System Reliability

Manage and maintain the water system to ensure operational reliability for all reasonably expected demands.

Develop and distribute the annual operating plan and rebuild water storage where possible into accounts that provide the greatest delivery flexibility and cost effectiveness. Build on strategies such as employing operational flexibility to mitigate drought condition impacts on water availability.

Plan, schedule, and execute the Annual Shutdown Plan to ensure reliable operation of the water delivery system, including a strategy to manage longer shutdowns to support the refurbishment of pre-stressed concrete cylinder pipelines.

Maintain eight-pump flow readiness and manage storage accounts to capture all available Colorado River supplies and balanced with water supplies from other sources.

With member agency and regional partners, develop new water supplies to supplement the core SWP and Colorado River supplies including groundwater recovery, ocean desalination, and indirect potable reuse.

Support the RRWP by achieving regulatory acceptance for the process design. Develop demonstration testing plan and perform optimization studies.

Participate with the California Department of Water Resources (DWR) on value-engineering efforts to ensure cost-effective rehabilitation of SWP conveyance, pumping, and generation facilities.

Fully utilize the manufacturing shops in La Verne to maintain Metropolitan's infrastructure reliability and support projects for DWR and the member agencies.

Implement vibration-based predictive maintenance program for all large electric motors, vertical turbine pumps, and emergency generators to

improve equipment reliability and reduce unnecessary maintenance.

Provide secure facilities through employee training, incident monitoring, and response for critical infrastructure sites and office locations.

Upgrade physical security features and access control equipment at headquarters and selected field facilities.

Conduct emergency response exercises involving internal operational groups and member agencies.

Control System Replacement Project

Complete conceptual design phase for replacement project to modernize the control system for the water treatment plants and distribution system.

Energy Management

Manage and limit price exposure for wholesale energy to support CRA pumping. Implement new energy and transmission agreements for the CRA 230K transmission system.

Negotiate and execute new agreements for energy generation at Metropolitan's Foothill, Lake Mathews, San Dimas, and Yorba Linda hydroelectric plants when the energy sale agreement with DWR for these plants expires in 2019.

Workforce Development & Succession Planning

Conduct annual Management Academy to improve internal recruitment pool for entry-level supervisors.

Recruit and begin training a new apprentice class each year for the mechanical and electrical trades.

Provide continuing education classes for licensed water treatment and distribution operators that are tailored to Metropolitan's procedures and facilities.

Water Quality, Environmental Protection, and Safety

Meet or surpass all drinking water standards and ensure delivery of aesthetically pleasing water.

Engage in the regulatory process to ensure full consideration of technical and economic feasibility for drinking water and environmental regulations.

Engage watershed stakeholders and regulators to ensure effective control of source water contaminants such as uranium, perchlorate, chromium, pharmaceuticals, nutrients, and algal toxins.

Provide safety and regulatory services to ensure safe work practices and adhere to environmental and workplace health and safety regulations.

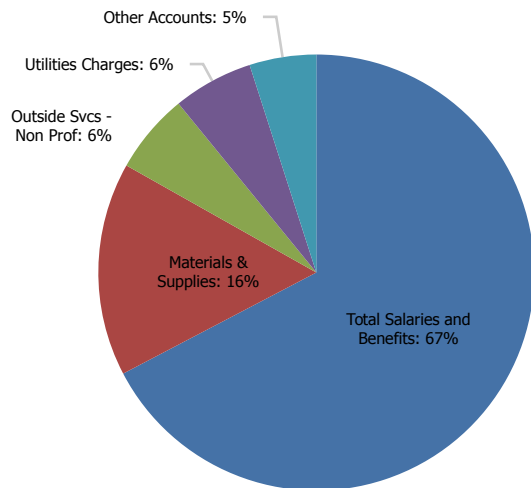
Increase monitoring of quagga mussels in the west and east branches of the SWP and prepare quagga mussel action plans.

O&M FINANCIAL SUMMARY

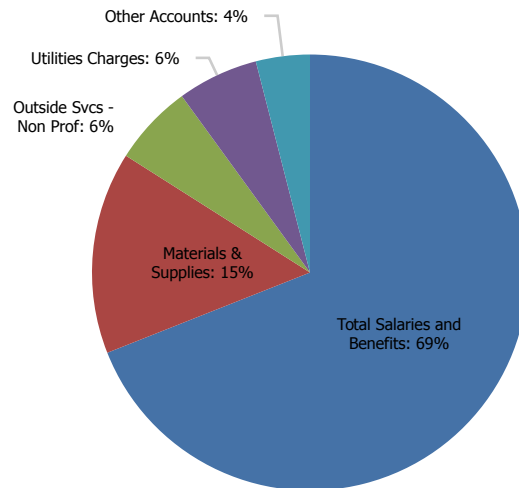
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	161,349,900	164,188,300	174,056,500	9,868,200	184,595,100	10,538,600
<i>Direct Charges to Capital</i>	<i>(7,870,600)</i>	<i>(7,161,700)</i>	<i>(7,326,400)</i>	<i>(164,700)</i>	<i>(7,718,200)</i>	<i>(391,800)</i>
Total Salaries and Benefits	153,479,300	157,026,600	166,730,100	9,703,500	176,876,900	10,146,800
% Change		2.3%		6.2%		6.1%
Professional Services	1,057,700	1,044,500	1,494,000	449,500	1,541,200	47,200
Materials & Supplies	35,798,800	37,336,500	38,475,300	1,138,800	38,330,400	(144,900)
Outside Services - Non Professional / Mainte	14,099,600	14,894,200	15,134,200	240,000	15,442,300	308,100
Utilities Charges	12,643,700	12,502,000	14,316,500	1,814,500	14,868,200	551,700
Other Accounts	9,272,300	8,170,700	9,644,400	1,473,700	9,261,600	(382,800)
Total O&M	226,351,400	230,974,500	245,794,500	14,820,000	256,320,600	10,526,100
% Change		2.0%		6.4%		4.3%
Operating Equipment	4,564,857	5,039,400	5,655,200	615,800	6,000,000	344,800
Total O&M and Operating Equipment	226,351,400	236,013,900	251,449,700	15,435,800	262,320,600	10,870,900
% Change		4.3%		6.5%		4.3%

Note – Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

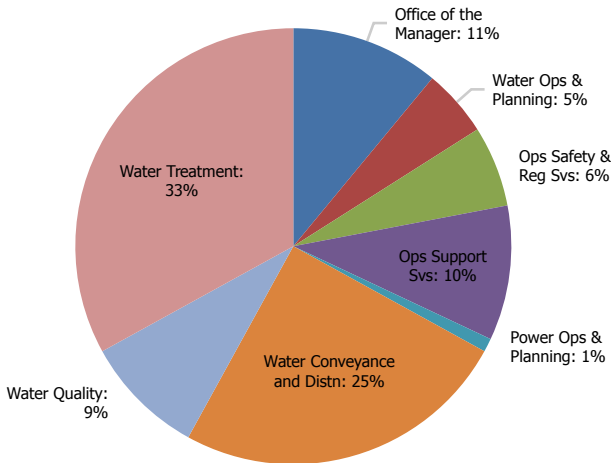


FY 2019/20 BUDGET BY EXPENDITURE

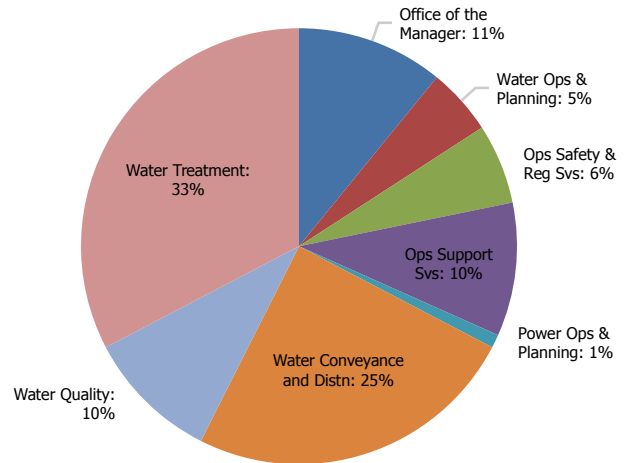


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Office of the Manager	23,152,500	26,177,000	3,024,500	27,107,500	930,500	61	60	60
Water Operations and Planning	10,990,100	11,528,000	537,900	12,056,900	528,900	43	42	42
Operational Safety and Regulatory Services	14,228,500	15,238,300	1,009,800	15,884,300	646,000	55	55	55
Operations Support Services	22,630,000	23,717,500	1,087,500	24,899,800	1,182,300	120	120	120
Power Operations and Planning	2,852,900	3,343,500	490,600	3,518,800	175,300	11	12	12
Water Conveyance and Distn	60,745,100	62,272,400	1,527,300	64,486,200	2,213,800	270	264	264
Water Quality	20,118,100	22,944,400	2,826,300	24,570,000	1,625,600	93	95	96
Water Treatment	76,257,400	80,573,200	4,315,800	83,797,200	3,223,900	273	277	277
Total O&M	230,974,600	245,794,400	14,819,800	256,320,600	10,526,200	926	925	926

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	866	951	948	(3)	948	—
	O&M	828	907	906	(1)	906	—
	Capital	38	44	43	(2)	43	—
Temporary	Total	34	19	20	1	21	1
	O&M	32	19	20	1	21	1
	Capital	1	—	—	—	—	—
Total Personnel	Total	900	970	968	(2)	969	1
	O&M	860	926	925	0	926	1
	Capital	39	44	43	(2)	43	—

BUDGET HIGHLIGHTS

WSO's O&M and Operating Equipment Biennial Budget is \$251.4 million in FY 2018/19 and \$262.3 million in FY 2019/20 or a increase of 6.5% and an increase of 4.3%, respectively from the prior year budgets. The increase is due primarily to the following factors:

- Following the severe drought, a combination of increased treated water flows, increased chemical commodity prices and higher chemical dosages needed to treat the more abundant SWP supplies raised the expected chemical costs for water treatment.
- An increase in hazardous waste disposal costs expensed to O&M as a result of capital improvement projects.
- An increase in temporary labor and an increase in materials and supplies to support the RRWP.
- The increases are offset in part by a reduction in non-professional services by improved brush control through precise chemical application.

The following are the significant changes by budget year.

FY 2018/19

Personnel-related issues

For O&M work, the overall number of positions decreased by three which reflects a transfer of four employees to Real Property for employee housing support in the desert and an increase of one employee to fulfill new electrical transmission tasks for the CRA electrical system.

Salaries and Benefits reflect negotiated labor increases.

Non Professional Services

A reduction in brush clearing services by improved brush control through precise chemical application.

Materials and Supplies

The budget reflects increased chemical costs for water treatment due to higher treated water flows, some increase in commodity prices and higher chemical dosages needed to treat the more abundant SWP supplies.

Utilities Charges

The budget reflects an increase in waste disposal costs from facility R&R projects and an increase in expected electrical rates.

FY 2019/20

Personnel-related issues

Overall personnel count for both O&M and capital work remains flat from the FY 2018/19 budget.

Salaries and Benefits reflect negotiated labor increases.

Materials and Supplies

The budget reflects inflationary pressure anticipated on chemicals and other materials and supplies.

Utilities Charges

The budget reflects an anticipated four percent increase in electricity rates from FY 2018/19.

Other

Outside Services–Non Professional/Maintenance budget reflects increased cost anticipated for annual security guard contract.

Operating Equipment – FY 2018/19 and FY 2019/20

The operating equipment budget is maintained to replace aging fleet and heavy equipment. In FY 2018/19, the budget was increased to procure analytical instrumentation in support of the RRWP. In FY 2019/20, the operating equipment was also increased to plan for the replacement of one aircraft for security patrols and employee transportation to remote facilities.

WATER RESOURCE MANAGEMENT

Water Resource Management (WRM) plans, secures, and manages water resources that Metropolitan supplies to its member agencies in a reliable, cost-effective, and environmentally responsible manner.

PROGRAMS

Water Resource Management protects and optimally manages imported water quantity and quality; advances water-use efficiency; provides supply and demand forecasts that are the foundation for resource planning; and develops and implements timely resource planning, programs, and projects.

In addition, Water Resource Management assists member agencies in optimizing their use of local resources to benefit the entire Metropolitan service area, and ensures Metropolitan receives a fair return on contractual investments in local and imported resources.

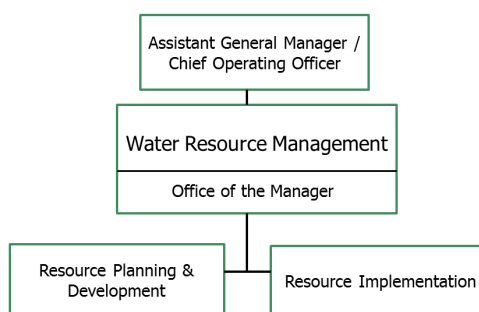
Water Resource Management accomplishes its mission through the following programs or sections:

Office of Manager directs the group's efforts in planning, securing, and managing Metropolitan's water resources; monitors and tracks the group's business plan, financial and budgetary initiatives; and provides administrative and business process support.

Resource Planning & Development is responsible for providing an integrated water supply and demand forecast that will meet the needs of member agencies and reflect their long-range planning efforts for local supplies, which sets the foundation for Metropolitan's resource mix and local supplies needed to meet demands. This section also supports the development of resource programs, projects, and infrastructure to meet projected resource targets; administers the planning process; defines strategies for meeting service area water needs, including the Integrated Resource Plan (IRP) and Water Surplus and Drought Management (WSDM) plan; and develops

resource options, such as groundwater conjunctive use, regional recycling and seawater desalination; as well as alternatives for short-range planning and implementation through joint action with Water System Operations.

Resource Implementation develops and administers water resource programs and contracts, and pursues application of new technologies and innovation for the Colorado River, SWP, water recycling, groundwater recovery, and conservation. This section also monitors and responds to regulatory, legislative, and operational activities that may influence Metropolitan's rights and benefits related to the quality, reliability and cost of water.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, WRM will focus on the following key issues:

Colorado River

Evaluate continuing challenges to the QSA and develop strategies to respond to changed conditions.

Protect Colorado River resources, Metropolitan's Colorado River rights, and optimize the use of available Colorado River water.

Continue participation in the Colorado River Salinity Control Forum and facilitate salinity management projects and other actions that protect and improve source water quality.

Partner with other Colorado River water delivery contractors to develop new Metropolitan supplies, including cross-border water supply programs.

Administer Imperial Irrigation District (IID) and Palo Verde Irrigation District (PVID) agricultural conservation programs.

Work with representatives of the International Boundary and Water Commission and United States Bureau of Reclamation (USBR) to continue implementation of Minute 319 and coordinate emergency deliveries for Tijuana.

Continue administration of pilot system water projects that help keep Lake Mead levels above shortage triggers.

Develop strategy and tools for managing new agricultural land purchases in the Palo Verde Valley.

Groundwater Storage Program

Continue management of nine approved conjunctive use programs to store water for dry-year yield.

Continue facilitation of dialogue among agencies in groundwater management, recycled water production, and stormwater and flood management to enhance groundwater basin recharge.

Legislative Review

Continue to review and provide comments and inform member agencies on proposed state and federal legislation on water resources issues related to Metropolitan's mission and WRM functions.

Regional Resources and Water Conservation

Implement Long-Term Water Conservation Plan and new LRP initiatives to meet 20x2020 urban water use reduction target.

Pursue grant funding supplement implementation of regional water conservation program initiatives.

Participate in activities leading to expanded use of recycled water and increased water-use efficiency.

Administer agreements that provide incentives for conservation, recycled water, recovered groundwater production, and support development of local resource development projects.

Conduct research to advance local resource and conservation program effectiveness.

Seawater Desalination

Continue to support member agencies development efforts and actively participate in CalDesal regulatory and legislative initiatives.

State Water Project

Execute the SWP contract extension, extending the contract term by 50 years from 2035 to 2085. As a result the terms of the supply agreement and the repayment period for DWR bonds will be extended as well.

Ensure accurate billings and influence sound financial decisions by DWR, including effective DWR energy management practices with regard to renewable energy, emissions reductions, transmission strategies, and energy acquisitions.

Continue to discuss and resolve disputed charges for the SWP.

Protect SWP water, power, and financial positions under the Oroville Federal Energy Regulatory

Commission (FERC) relicensing process as well as associated litigation and upcoming FERC relicensing and several DWR facilities in Southern California.

Support Metropolitan's interests in any SWP-related litigation.

Coordinate major rehabilitations and new SWP capital improvements to ensure cost-effective and reliable water supply, energy generation, and use.

Promote water quality monitoring and forecasting activities through the Municipal Water Quality Investigations program and raise awareness of potential water quality impacts from operational decisions.

Develop and implement strategies to access SWP conveyance facilities to optimize use of Metropolitan water transfer and banking programs in light of scheduled and forced infrastructure outages.

Continue participation in State Water Contractors, Inc., SWP Contractors Authority, and State and Federal Water Contractors Authority to coordinate activities at a statewide level.

Future Supply Actions

Consider future supply action programs to promote innovation and remove barriers to local resource development.

Continue participation in the Southern California Water Committee Stormwater Task Force to identify opportunities and remove obstacles to increases in stormwater capture and infiltration for measurable groundwater yield.

Water Supply and System Planning

Complete annual progress reports on IRP implementation and Metropolitan's water supplies and achievements in conservation, recycling, and groundwater recharge (SB 60 report).

Complete the annual forecast of Metropolitan demands to support revenue requirements and budget process.

Continue to pursue development of the full scale RRWP to increase water reuse and enhance

opportunities for groundwater recharge within Metropolitan's service area. Upgrade and enhance planning tools, such as computer models for demand forecasting, resource program evaluation, and distribution system.

Participate in state agency water energy nexus processes and data access initiatives.

Continue to collaborate with various agencies and stakeholders in statewide and regional water resource planning efforts, such as the California Water Plan Updates and the Integrated Regional Water Management Plans.

Continue work with the Water Utility Climate Alliance to perform case studies on climate data applications to water resources planning.

Water Transfers, Exchanges, and Storage Programs

Continue to manage existing water transfer, exchange, and storage programs along the California Aqueduct and Colorado River Aqueduct and implement approved water transfers.

Continue to evaluate the need for additional reliability by either developing new programs or modifying existing programs. Pursue additional water transfers, exchanges, and storage programs as needed.

Work with other State Water Contractors on a long-term water transfer permitting process.

Workforce Development & Succession Planning

Continue to develop staff expertise in critical areas to prepare for employee retirements or departures.

O&M FINANCIAL SUMMARY

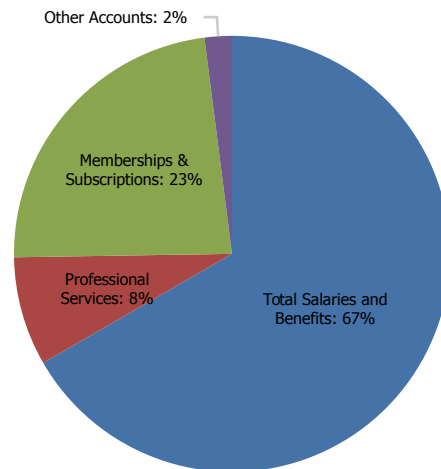
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	13,343,700	14,376,200	15,676,000	1,299,800	16,651,600	975,600
Direct Charges to Capital	(1,500)	—	—	—	—	—
Total Salaries and Benefits	13,342,200	14,376,200	15,676,000	1,299,800	16,651,600	975,600
% Change		7.7%		9.0%		6.2%
Professional Services	1,712,300	1,740,000	1,940,000	200,000	1,986,500	46,500
Memberships & Subscriptions	4,014,800	5,365,000	5,767,500	402,500	5,844,900	77,400
Other Accounts	276,300	559,400	562,700	3,300	583,000	20,300
Total O&M	19,345,600	22,040,600	23,946,200	1,905,600	25,066,000	1,119,800
% Change		13.9%		8.6%		4.7%

Note – Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

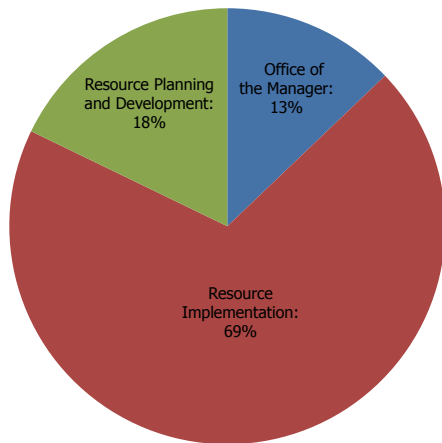


FY 2019/20 BUDGET BY EXPENDITURE

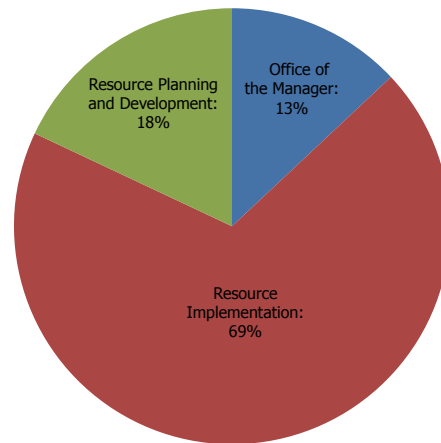


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Office of the Manager	2,871,000	3,026,700	155,700	3,209,300	182,600	14	13	13
Resource Implementation	15,233,800	16,675,000	1,441,200	17,299,800	624,800	37	40	40
Resource Planning and Development	3,935,900	4,244,600	308,700	4,556,900	312,300	16	16	16
Total O&M	22,040,600	23,946,200	1,905,600	25,066,000	1,119,800	67	69	69

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	60	67	68	1	68	—
	O&M	60	67	68	1	68	—
	Capital	—	—	—	—	—	—
Temporary	Total	1	—	1	1	1	—
	O&M	1	—	1	1	1	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	61	67	69	2	69	—
	O&M	61	67	69	2	69	—
	Capital	—	—	—	—	—	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

WRM's Biennial Budget is \$23.9 million in FY 2018/19 and \$25.1 million in FY 2019/20, or an increase of 8.6% and 4.7%, respectively from the prior budget years. The increase is primarily due to the following factors:

- Increase in staffing by one regular position and one district temporary position for SWP and CRA program support.
- The increase in Memberships and Subscriptions budget enhances Metropolitan's ability to collaborate with other boards or agencies on statewide and federal issues.
- Net increase in professional services includes resource analysis studies for on-going resource and demand management assessment; SWP audit fee increase and consulting assistance for SWP contract extension issues; and technical studies for infrastructure related to water supply impacts.

The following are the significant changes by budget year.

FY 2018/19

Personnel-related issues

Personnel count increased by one regular position and one District Temporary position from FY 2017/18 budget for water reliability support related to SWP and CRA programs.

Salaries and Benefits reflect negotiated labor increases offset by vacancies filled at lower level job classifications.

Professional Services

Budget reflects increase in SWP audit fee and consulting services for assessing SWP contract extension issues; technical studies for infrastructure related to water supply impacts; research studies associated with new conservation planning model and water saving estimates update.

Memberships and Subscriptions

Budget includes increase in State Water Contractors dues and legal services related to CA WaterFix; membership dues for Western Urban Water Coalition, California Urban Water Agencies, and new membership for California Data Collaboration.

Other

Budget reflects net increase in materials and supplies for resource planning model software; travel associated with SWP, CRA, conservation, and LRP; a reduction in graphic and reprographic for utilizing in-house services.

FY 2019/20

Personnel-related issues

Total personnel count remains flat with the FY 2018/19 budget.

Salaries and Benefits reflect negotiated labor increases.

Professional Services

Budget reflects increase in the SWP audit fee and additional research studies in desalination and salinity management.

Memberships and Subscriptions

Budget reflects SWC membership dues increase.

Other

Budget reflects increase in materials and supplies for acquiring water forecast demographic data.

ENGINEERING SERVICES

Engineering Services provides innovative, high-quality, and cost-effective solutions to meet our customers' needs and to ensure the long-term reliability and successful operation of Metropolitan's infrastructure.

PROGRAMS

Engineering Services manages projects, performs design, construction management, infrastructure condition assessments, and facility planning, and manages Metropolitan's CIP.

Engineering Services accomplishes its mission through the following programs and services:

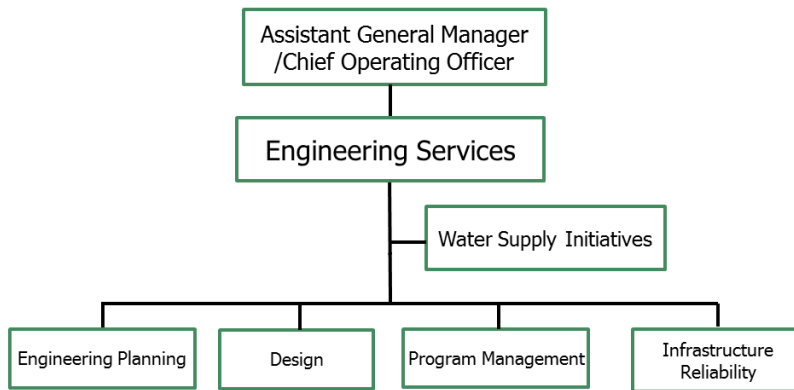
Office of the Group Manager oversees the Engineering Services group and provides strategic leadership on engineering initiatives and core business efforts, to ensure the continued reliability and quality of water deliveries. The office also provides technical support for special initiatives including the CA WaterFix and the RRWP.

Engineering Planning is responsible for the functions of facility planning, hydraulic analysis and modeling, protection of Metropolitan's substructures, construction contract administration, technical control and oversight of engineering standards, support to capital projects, business process management and budgeting, and management of the CIP.

Design is responsible for the preparation of technical assessments, conceptual and preliminary designs for new facilities and for rehabilitation of existing facilities, final design drawings and specifications for construction, and technical support during the construction and operation of facilities.

Program Management is responsible for overall project delivery of capital and O&M projects for treatment plants, distribution, conveyance and storage systems; and serves as Metropolitan's "Owner's Engineer."

Infrastructure Reliability is responsible for the management of construction contracts, field inspection, and factory fabrication inspection, management of Metropolitan's dams, surveying and mapping, and corrosion and materials engineering.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, Engineering Services will focus on the following key issues:

California WaterFix

Provide engineering and program management leadership in support of the CA WaterFix and EcoRestore programs as team members on both of those initiatives. Additionally, represent the State Water Contractors as an Owner's representative providing oversight of the CA WaterFix project office in Sacramento by providing technical reviews of work product developed by the project team.

New Water Supply Initiatives

Complete construction of the Advanced Water Treatment Demonstration Plant and provide technical support for start-up and testing, in support of the RRWP.

Continue to support opportunities to collaborate with other agencies to enhance local water supplies.

Infrastructure Reliability

Manage and complete Board-authorized projects within the CIP to ensure the reliable delivery of water to Metropolitan's member agencies.

Provide engineering and technical services to support the operation and maintenance of Metropolitan's water conveyance, delivery, treatment, and support facilities.

Protect public safety, minimize future costs of infrastructure maintenance and repairs, and avoid unplanned outages by monitoring Metropolitan's facilities and right-of-way, and performing essential technical assessments.

CIP Management

Prioritize and execute capital projects to address Metropolitan's short-term needs and long-term objectives in a cost-effective manner.

Evaluate project performance to identify and take advantage of improvements in project delivery.

Employee Development

Lead workforce development and succession planning activities to optimally maintain technical expertise and skills needed in the future to ensure infrastructure reliability, meet regulations, respond to emergencies, and support Metropolitan initiatives.

Customer Service

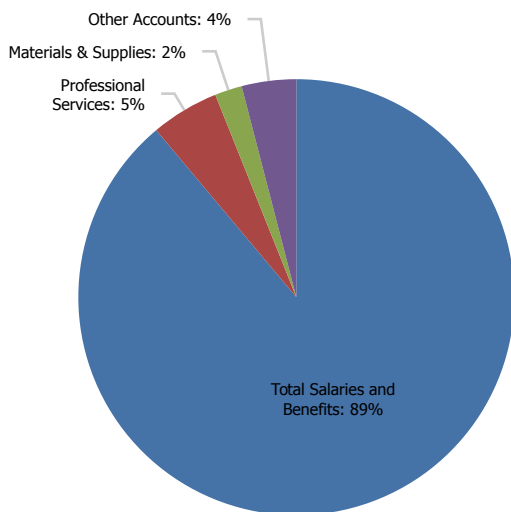
Provide technical leadership and services to internal and external customers to meet Metropolitan's business needs.

O&M FINANCIAL SUMMARY

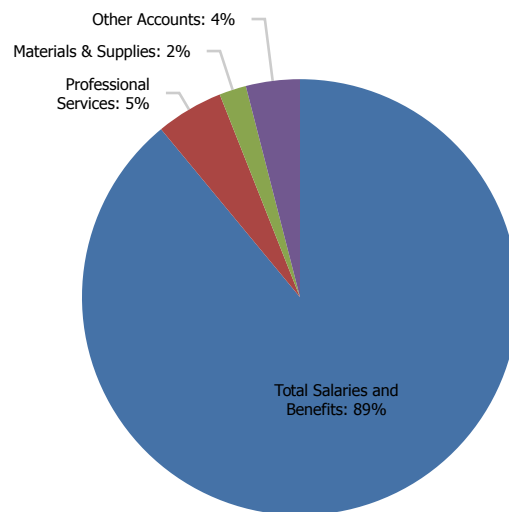
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	65,783,000	70,313,500	77,056,200	6,742,700	81,444,400	4,388,200
<i>Direct Charges to Capital</i>	<i>(39,757,000)</i>	<i>(47,170,300)</i>	<i>(47,991,100)</i>	<i>(820,800)</i>	<i>(51,301,500)</i>	<i>(3,310,400)</i>
Total Salaries and Benefits	26,026,000	23,143,200	29,065,100	5,921,900	30,142,900	1,077,800
% Change		(11.1%)		25.6%		3.7%
Professional Services	3,367,600	301,000	1,775,800	1,474,800	1,552,800	(223,000)
Materials & Supplies	673,600	600,000	704,600	104,600	734,200	29,600
Memberships & Subscriptions	177,100	183,000	223,600	40,600	237,000	13,400
Taxes & Permits	321,400	320,000	440,000	120,000	484,000	44,000
Travel Expenses	136,100	95,300	170,600	75,300	172,100	1,500
Other Accounts	1,189,600	669,900	558,000	(111,900)	542,000	(16,000)
Total O&M	31,891,400	25,312,400	32,937,700	7,625,300	33,865,000	927,300
% Change		(20.6%)		30.1%		2.8%
Operating Equipment	539,903	258,800	989,600	730,800	174,800	(814,800)
Total O&M and Operating Equipment	31,891,400	25,571,200	33,927,300	8,356,100	34,039,800	112,500
% Change		(19.8%)		32.7%		0.3%

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

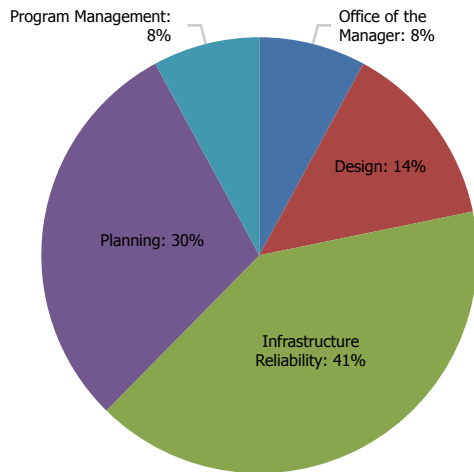


FY 2019/20 BUDGET BY EXPENDITURE

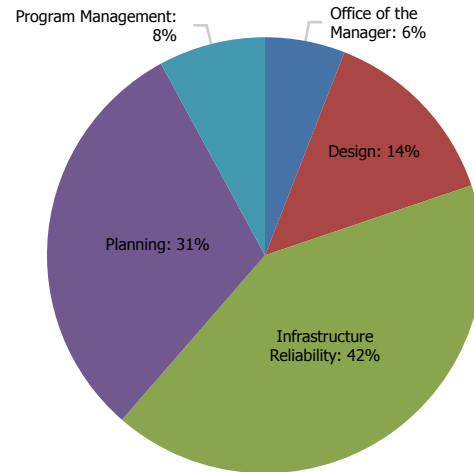


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Office of the Manager	703,500	2,528,400	1,825,000	1,865,200	(663,200)	1	4	2
Design	3,381,100	4,537,700	1,156,600	4,817,400	279,700	32	16	16
Infrastructure Reliability	11,397,700	13,415,700	2,018,000	14,213,100	797,400	56	58	58
Planning	7,948,000	9,771,600	1,823,600	10,346,100	574,500	0	41	41
Program Management	1,882,200	2,684,200	802,100	2,623,100	(61,100)	29	11	10
Total O&M	25,312,400	32,937,700	7,625,300	33,865,000	927,300	118	129	127

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	331	355	355	—	355	—
	O&M	124	118	129	12	127	(3)
	Capital	206	238	226	(12)	228	3
Temporary	Total	2	—	—	—	—	—
	O&M	1	—	—	—	—	—
	Capital	1	—	—	—	—	—
Total Personnel	Total	332	355	355	—	355	—
	O&M	125	118	129	12	127	(3)
	Capital	207	238	226	(12)	228	3

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

Engineering Services' O&M budget is \$32.9 million in FY 2018/19 and \$33.9 million in FY 2019/20. As detailed below, Engineering Services' budget is influenced significantly by Metropolitan's strategic initiatives, which include the CA WaterFix, RRWP, and Dam Safety Initiatives as well as staff relocation efforts for the improvements at Metropolitan's Headquarters Building at Union Station.

Total planned O&M expenditures for FY 2019/20 are approximately \$7.6 million or 30.1% more than in FY 2017/18, due to salaries and benefits reflecting negotiated labor increases and the addition of Major O&M support for the CA WaterFix, RRWP, and Dam Safety Initiatives.

For FY 2019/20, planned O&M expenditures are approximately \$0.9 million or 2.8% more than in FY 2018/19, due mainly to salaries and benefits reflecting negotiated labor increases and staff relocation efforts for the Headquarters Building improvements.

O&M	FY 2017/18	FY 2018/19	FY 2019/20
Labor	\$23,143,200	\$26,622,400	\$28,202,300
Non-labor	\$2,169,200	\$2,153,600	\$2,202,100
Total O&M	\$25,312,400	\$28,776,000	\$30,404,400
Regional Recycled Water Program (labor & non-labor)	\$0	\$2,206,000	\$801,200
Dam Safety Initiatives (labor & non-labor)	\$0	\$1,140,700	\$1,215,500
CA WaterFix (labor & non-labor)	\$0	\$815,000	\$841,300
Headquarters Building staff relocation	\$0	\$0	\$602,600
Total O&M & Special Initiatives	\$25,312,400	\$32,937,700	\$33,865,000
% Change		30.1%	2.8%

Note: Excludes Operating Equipment

The following are the significant changes by budget year.

FY 2018/19

Personnel-Related Issues

Total personnel levels remain consistent with the previous fiscal year. However, the O&M and capital staffing complement differs from the FY 2017/18 budget. This is primarily due to Major O&M support required for special initiatives including the CA WaterFix, RRWP, and Dam Safety Initiatives, thereby resulting in a shift of staff from capital work to O&M in FY 2018/19.

Planned capital expenditures for FY 2018/19 will remain steady with a district-wide capital budget estimated to be approximately \$250 million (see

details in CIP Appendix). Planned expenditures reflect project budgets and schedules to meet Metropolitan's overall biennial budgetary goals. High priority projects that will continue during the fiscal year include the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program; the Colorado River Aqueduct (CRA) Reliability Program; the Distribution System Reliability Program; and the Right of Way and Infrastructure Protection Program.

Salaries & Benefits

Salaries and benefits reflect negotiated labor increases and dedicated support for the CA WaterFix, RRWP, and Dam Safety Initiatives.

Professional Services

The budget primarily reflects increases to support the CA WaterFix, RRWP, and Dam Safety Initiatives.

Materials and Supplies

The budget reflects an increase in design-related software maintenance costs.

Memberships & Subscriptions

The budget reflects anticipated increases in Underground Service Alert requests.

Taxes & Permits

The budget reflects an increase in annual dam safety fees paid to the state Division of Safety of Dams.

Travel Expenses

The budget primarily reflects increases to support the CA WaterFix.

Other

Other non-labor budget items include anticipated decreases in graphics and reprographics charges; lower lease costs for Xerox copiers; and lower utility costs at the La Verne site.

FY 2019/20

Personnel-related issues

Total personnel levels remain consistent with the previous fiscal year. However, the O&M and capital staffing complement differs from the FY 2018/19 budget. This is primarily due to the anticipated completion of construction of the Advanced Water Treatment Demonstration Plant for the RRWP, resulting in a shift of O&M staffing to capital work in FY 2019/20.

Planned capital expenditures for FY 2019/20 will remain steady with a district-wide capital budget

estimated to be approximately \$250 million (see details in CIP Appendix). Planned expenditures reflect project budgets and schedules to meet Metropolitan's overall biennial budgetary goals. High priority projects that will continue during the fiscal year include the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program; the Colorado River Aqueduct (CRA) Reliability Program; the Distribution System Reliability Program; and the Right of Way and Infrastructure Protection Program.

Salaries & Benefits

Salaries and benefits reflect negotiated labor increases and an increase for staff relocation efforts for Metropolitan's Headquarters Building improvements.

Professional Services

The budget primarily reflects slightly decreasing support required for the RRWP.

Materials and Supplies

The budget reflects anticipated increases in design-related software maintenance costs.

Memberships and Subscriptions

The budget reflects anticipated increases in Underground Service Alert requests.

Taxes & Permits

The budget reflects anticipated increases in annual dam safety fees paid to the state Division of Safety of Dams.

Travel Expenses

The budget reflects ongoing support to the CA WaterFix initiative and general travel expenses in support of core work.

Operating Equipment – FY 2018/19 and FY 2019/20

The operating equipment budget reflects an increase from FY 2017/18 to FY 2018/19 and then a decrease in FY 2019/20 primarily due to the majority of requested vehicle replacements occurring in FY 2018/19. Other equipment to be replaced in FY 2018/19 includes a weatherometer, CAD plotters, and other engineering test equipment.

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OFFICE OF CHIEF ADMINISTRATIVE OFFICER

The Office of the Chief Administrative Officer (CAO) provides outstanding value to its customers for a wide range of administrative and environmental planning services

PROGRAMS

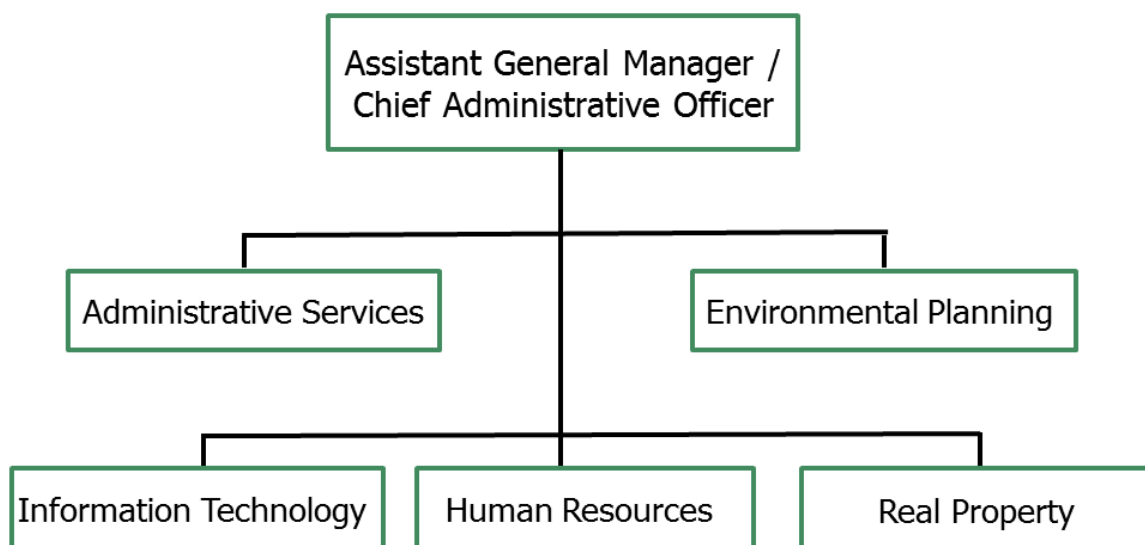
Office of the Chief Administrative Officer accomplishes its mission through the following programs or sections:

Administrative Services provides a range of services including contracting, inventory management, warehousing, reprographics, technical writing, grant management, records management, EForms management, Enterprise Content Management, Spring Green Expo and ECO Innovators Showcase, and administration of Metropolitan's Rideshare Program.

Environmental Planning (EPS) provides expertise for environmentally responsible decision-making and compliance with environmental laws

and regulations. EPS ensures Metropolitan activities comply with CEQA; obtains permits or approvals from federal and state environmental regulatory agencies for Metropolitan activities; conducts studies, monitoring and training; and participates in management of Metropolitan reserves and coordination with other non-Metropolitan reserve planning efforts. EPS also provides technical environmental planning support to Metropolitan customers, member agencies and outside agencies.

Please see the separate group budget sections for Information Technology, Human Resources and Real Property.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/2020, the Office of the Chief Administrative Officer will focus on the following key issues:

Support Proposed Delta Improvements

Provide environmental and technical services to support long-term Delta solutions to improve water supply reliability and water quality, and protect and enhance Delta ecosystem and associated species.

Provide technical and regulatory support for Metropolitan's Delta Island holdings.

Support Development of Water Supplies and Management of Water Reserves

Provide planning, California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA), and regulatory support for development of new water supplies, including continued planning support for the RRWP.

Prepare CEQA/NEPA and environmental permitting documentation for supplemental water supplies and water conservation measures, including support of LRPs with member agencies.

Provide strategic environmental compliance input and services to obtain supplemental supplies of water through transfers, banking and innovative crop and land management practices.

Sustainability and Climate Action Planning

Coordinate sustainability and climate action planning.

Assess and evaluate climate action planning, reporting, and measures currently underway in the organization. These include Greenhouse Gas (GHG) emissions tracking, climate change planning and adaptation to protect infrastructure and water supply, water conservation programs, and infrastructure improvements.

Collaborate with other departments to develop a suite of options for executive management consideration regarding the potential development

of a Sustainability and Climate Action Plan (CAP) to mitigate the significant effects of greenhouse gas emissions.

Continue the quarterly Our Legacy E-Newsletter series to raise employee awareness on sustainability issues and encourage positive "green" behavior.

Continue the annual Spring Green Expo and ECO Innovators Showcase highlighting innovative ideas and productive partnerships between students and businesses to solve environmental problems and demonstrate actions individuals can take to live and work sustainably.

Ensure Metropolitan's Rideshare Program remains effective for employees and compliant with regulatory requirements.

Cultural Resources Planning

Continue cultural resources planning and education to preserve the historic legacy of Metropolitan.

Complete the historic record documentation for the Colorado River Aqueduct (CRA) and develop a treatment plan for the CRA and its facilities. The treatment plan will provide guidance on how to identify, evaluate, treat, and manage cultural resources associated with the CRA.

Collaborate with External Affairs on cultural resources exhibitions and provide continued support for traditional and social media outreach. Work closely with Engineering Services and Water System Operations to ensure preservation or reproduction, whenever feasible, of Metropolitan's historic built environment, including buildings structures, objects and certain sites.

Regulatory Compliance

Provide timely and professional planning services and CEQA and regulatory support for all capital and O&M projects in an environmentally responsible manner.

Represent Metropolitan and the State Water Contractors on the Ecological Committee and Recreational Advisory Committee for Federal Energy Regulatory Commission license requirements.

Provide support on federal and state legislative review and identify bills and regulations that should be supported or opposed based on Metropolitan's legislative priorities and policy principles.

Reserve Management

Manage Metropolitan's four large-scale multi-species reserves and participate in several other regional conservation and multi-species reserve programs. Management of these reserves is required to satisfy regulatory requirements for continued delivery of imported water and construction and operation of major O&M and capital projects.

Serve as Metropolitan's representative on the Southwestern Riverside County Multi-Species Reserve Committee, administer a reserve management agreement with Riverside County Parks (Parks) and actively manage reserve lands to ensure compliance with state and federal permits and multi-agency cooperative management agreements, including the Memorandum of Intent (MOI) between Metropolitan, Parks, and other members of the Diamond Valley Lake Ad Hoc Committee.

Serve as Metropolitan's representative on the Reserve Management Committee for the Lake Mathews Multi-Species Reserve, administer a reserve management agreement with Riverside County Habitat Conservation Agency, and actively manage Lake Mathews reserve lands to ensure compliance with state and federal permits. This active participation includes updating the draft management plan.

Represent Metropolitan on the Lower Colorado River Multi-Species Conservation Program and the Orange County Central and Coastal Natural Communities Conservation Plan as voting members of the respective governance committees.

Facilitate collaboration among Metropolitan, Parks, and the Reserve Management Committee towards development of a Trails Plan, to include multi-use connecting trails between Diamond Valley Lake and Lake Skinner and between the Reserve and the County's Regional Trail System.

Work collaboratively with Real Property, Engineering Services, and Parks to facilitate field

coordination among stakeholders. Provide technical review of all studies and recommendations pertaining to natural and cultural resources, review and provide input for all recommendations of design and use of trails and trail heads, and provide all other environmental planning support to fulfill provisions of the MOI.

Coordinate capital and O&M projects, as necessary, with reserve management committees, steering committees and boards.

Innovative Solutions

Enhance procurement training methods by expanding online training modules in key areas such as requisition processing, agreement administration and warehouse ordering to further the customer's knowledge.

Collaborate with management to automate the Operating Policy process to increase collaboration, productivity, and operational efficiency. Centralize administrative functions to promote standardization, ensure consistency, and improve efficiency in key areas such as grant management, and document management.

Implement Information Governance / Enterprise Content Management (ECM) to improve existing storage, retrieval and control of physical and electronic records in line with fiscal, legal, and regulatory requirements. Enhance efficiency of core business processes by moving to a digital records environment while protecting Metropolitan by reducing risk of exposure in litigation.

Utilize Metropolitan's EForm Management program to improve business processes, increase productivity and enhance overall user experience by incorporating mobile technology and adopting innovative and efficient business practices.

Employee Development/Succession Planning

Lead and manage employee development, recruitment, knowledge capture, cross-training, and succession planning.

Continue to cross-train staff to promote organizational adaptability, institutional knowledge, experience, and expertise, particularly in the Desert area and Metropolitan's reserves.

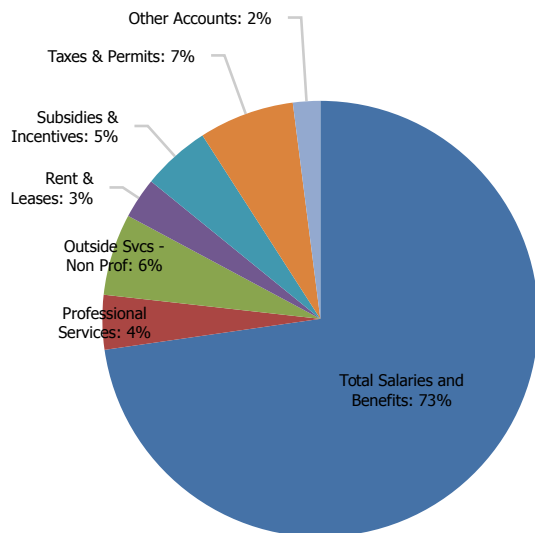
Formalize mentoring for entry-level staff and continue the successful utilization of Metropolitan's student internship program to provide collegiate students hands-on work experience while giving Metropolitan access to future candidates in recruitment.

O&M FINANCIAL SUMMARY

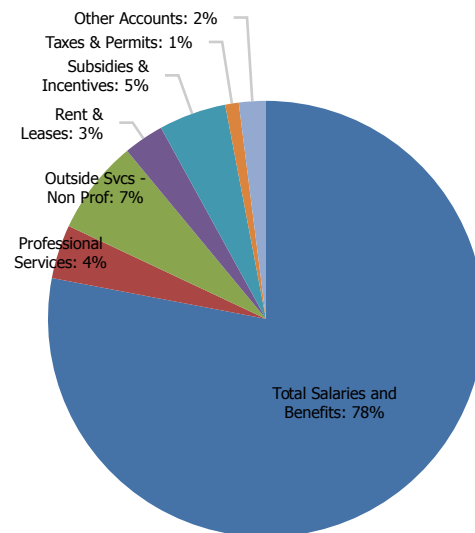
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	14,822,200	15,191,400	17,237,000	2,045,600	18,559,400	1,322,400
<i>Direct Charges to Capital</i>	<i>(559,000)</i>	<i>(743,600)</i>	<i>(1,589,000)</i>	<i>(845,400)</i>	<i>(1,795,200)</i>	<i>(206,200)</i>
Total Salaries and Benefits	14,263,200	14,447,800	15,648,000	1,200,200	16,764,200	1,116,200
% Change		1.3%		8.3%		7.1%
Professional Services	914,400	573,900	876,900	303,000	798,900	(78,000)
Materials & Supplies	140,400	140,500	211,800	71,300	202,500	(9,300)
Outside Services - Non Professional / Mainte	273,200	322,600	1,402,300	1,079,700	1,598,000	195,700
Rent & Leases	420,700	593,000	658,600	65,600	658,600	—
Subsidies & Incentives	485,000	516,300	1,012,400	496,100	1,012,400	—
Taxes & Permits	32,300	13,900	1,553,600	1,539,700	173,600	(1,380,000)
Other Accounts	44,200	(160,000)	284,400	444,400	220,400	(64,000)
Total O&M	16,573,400	16,448,000	21,648,000	5,200,000	21,428,600	(219,400)
% Change		(0.8%)		31.6%		(1.0%)
Operating Equipment	—	—	195,200	195,200	—	(195,200)
Total O&M and Operating Equipment	16,573,400	16,448,000	21,843,200	5,395,200	21,428,600	(414,600)
% Change		(0.8%)		32.8%		(1.9%)

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

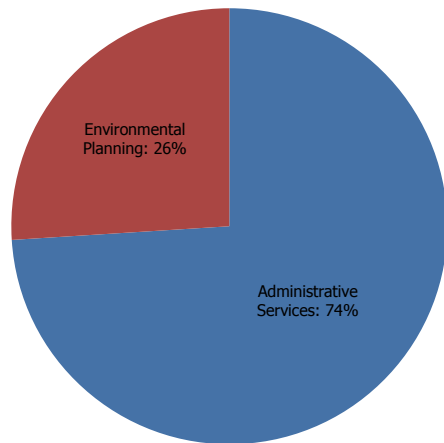


FY 2019/20 BUDGET BY EXPENDITURE

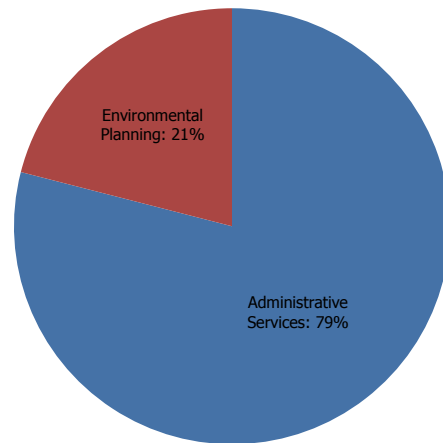


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Administrative Services	13,092,700	16,020,200	2,927,500	16,859,100	838,900	81	76	76
Environmental Planning	3,355,300	5,627,800	2,272,400	4,569,600	(1,058,200)	15	17	18
Total O&M	16,448,100	21,648,000	5,199,900	21,428,700	(219,300)	96	92	93

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17	2017/18	2018/19	Change from	2019/20	Change from
		Actual	Budget	Budget	2017/18	Budget	2018/19
Regular	Total	86	98	97	(1)	98	1
	O&M	83	96	92	(4)	93	1
	Capital	3	2	5	3	5	—
Temporary	Total	1	—	—	—	—	—
	O&M	1	—	—	—	—	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	87	98	97	(1)	98	1
	O&M	84	96	92	(4)	93	1
	Capital	3	2	5	3	5	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

The Office of the CAO's O&M and Operating Equipment Biennial Budget is \$21.8 million in FY 2018/19 and \$21.4 million in FY 2019/20 or an increase of 32.8% and a decrease of 1.9%, respectively from the prior budget years. The increase is due to the following factors:

- Salaries and Benefits reflect the addition of three positions in the Environmental Planning section over the biennium to support increased workload, succession planning and the need for in-house technical specialists.
- Taxes and Permits reflect the environmental mitigation costs associated with the Foothill Feeder Dewatering project.
- Professional services reflects an increased need for specialized technical expertise related to environmental planning and remediation efforts, and support for inventory management services.
- Non Professional services reflects an increase for Metropolitan's Enterprise Content Management back file conversion which cannot be capitalized.

The following are the significant changes by budget year.

FY 2018/19

Personnel-related issues

Total personnel count decreased by one FTE from the FY 2017/18 budget. The budget reflects the transfer of three positions (from Administrative Services section) to Real Property and the addition of two positions in Environmental Planning.

Salaries and Benefits reflect the funding of three positions (in Administrative Services section), negotiated labor increases and merit increases for qualified employees.

Professional Services

The budget reflects an increased need for specialized technical expertise related to environmental planning. It also includes remediation efforts and support for inventory management services.

Taxes & Permits

The budget reflects \$1.5 million for environmental mitigation for the Foothill Feeder Dewatering Project.

Non Professional Services

The budget increase is due to costs associated with scanning and digitizing documents District-wide as part of the Enterprise Content Management project.

Other Accounts

The budget for rideshare incentives was increased to reflect the increase in the maximum monthly MOU allowance.

FY 2019/20

Personnel-related issues

Total personnel count increased by one FTE from the FY 2018/19 budget with the addition of a position in the Environmental Planning section.

Salaries and Benefits reflect negotiated labor increases and merit increases for qualified employees.

The budget also includes an increase in capital labor for the potential RRWP, Cal WaterFix and the Enterprise Content Management system.

Professional Services

The budget decreases slightly due to the completion of the Foothill Feeder Dewatering project.

Taxes & Permits

The budget decreases due to the completion of the Foothill Feeder Dewatering Project.

Non-Professional Services

The budget increase is due to costs associated with scanning and digitizing documents District-wide as part of the Enterprise Content Management project.

Operating Equipment - FY 2018/19 and FY 2019/20

The operating equipment budget reflects the replacement of vehicles, forklifts, scanners and microfiche readers.

INFORMATION TECHNOLOGY

Information Technology provides innovation and outstanding value to its customers for a wide range of technical services and enterprise business solutions.

PROGRAMS

Information Technology accomplishes its mission by delivering comprehensive technology services and solutions in water systems and business applications (e.g. laboratory information management system, financial and human resource systems, maintenance management system, etc.), geographic information systems, telecommunications/networks, SCADA, programming, network communications, and computer hardware and software, and cyber security.

Office of Group Manager oversees the management of the Information Technology (IT) group by providing strategic leadership on initiatives and capital investments to improve operational efficiencies, enhance reliability & cyber security capabilities, and deliver innovative options and solutions.

IT Enterprise Architecture is responsible for leading the efforts to develop the application, data, and technology architectures for Metropolitan's Information Technology.

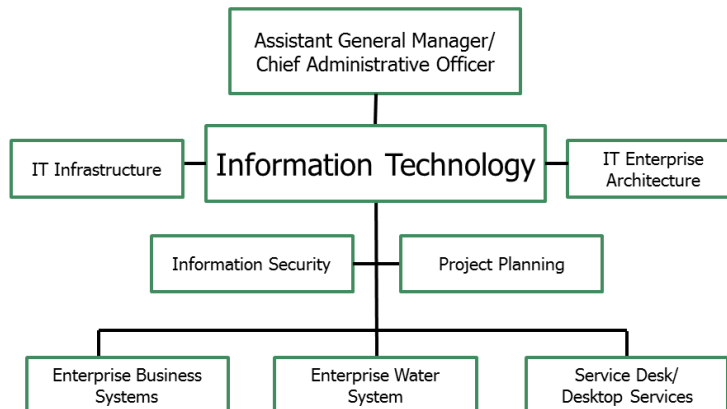
Service Desk / Desktop Services manages and supports IT business and service functions.

IT Infrastructure / Cyber Security is responsible for the management of telecommunications, network services, servers, storage, data center operations and cyber security operations.

Enterprise Business Systems provides services and solutions in the areas of enterprise and business applications.

Enterprise Water Systems is responsible for services and solutions in the areas of Engineering Services and Water System Operations applications.

Project Planning oversees project control and delivery of capital and O&M technology projects.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, Information Technology will focus on the following key areas:

Business Technology & Process Enhancement

Implement projects in support of Metropolitan's strategic initiatives including continued migration to mobile technology and implementation of cloud solutions to enhance productivity, streamline business processes, and cost mitigation.

During the past fiscal year, Information Technology underwent an organizational change from section to group that included the filling of the IT group manager position and the formation of a new IT Executive Governance Council. The council was established as an advisory committee to the General Manager to implement IT policies and strategies in alignment with Metropolitan's business goals and priorities. In addition, the establishment of an Operation Technology Governance Committee will provide executive leadership, oversight and collaboration for SCADA OT/IT operations, maintenance, and enhancements. Emerging technology in the business environment will continue to be evaluated and prioritized to determine their application for Metropolitan.

Key areas of focus within Metropolitan's cyber security capabilities include continuous enforcement of security standards to ensure protection against evolving threats and participation in local and national efforts aimed at enhancing security for water utilities.

Information Systems Upgrades and Projects

IT continues to improve partnerships with other business areas to enhance the capabilities of systems that achieve Metropolitan's operational goals and objectives. The following key projects include IT deliverables that add value to the group's business customers:

Engineering and Water System Operations

The Water Systems Control Master Plan aims to fully coordinate and further protect the operational and business investments of Metropolitan's SCADA systems. The master plan includes multi-phased projects already underway starting with

preliminary investigations to achieving final design and construction of a new control system.

Continue to upgrade the control and electrical protection systems at the Wadsworth Pumping Plant to ensure continued reliability of the facility.

AMR System RTUs and Radio Modem Upgrade - Project phases include the upgrade of the Automatic Meter Reader (AMR) system and replacement of the Remote Terminal Units (RTUs) and supporting radio equipment.

Maximo Mobile Computing Upgrade aims to replace existing mobile hardware devices that are past their service life and cannot be integrated with current versions of software used for WSO maintenance management.

Energy Management System (EMS) Upgrade - The project's objective is to replace the current system software which is no longer being supported and its functionality is compromised due to the system's age (10+ years).

Partner with the Engineering Services and Water System Operations groups to begin deployment of a Water Systems Asset Information Program that will support ongoing and future planning, engineering, operations, maintenance, and asset management. As part of the infrastructure reliability objective, the Asset Monitoring and Management System project seeks to develop a common framework to manage condition monitoring across Metropolitan's operations.

Engineering Information System Upgrades - This project involves the installation and configuration of the latest version of ProjectWise software featuring additional modules and the ability to integrate with other Metropolitan systems.

Fuel Management System Upgrade seeks to upgrade the system at 13 Metropolitan facilities as a continuation of the refurbishment initiative.

Hydraulic Model Water Quality Calibration Project and Analysis Toolkit Development Project - These projects aim to enable and optimize the use of software that will support hydraulic modeling analysis more efficiently.

Flow Scheduler (WSO) project includes the development of a software tool that will streamline member agency flow change requests and also save Metropolitan operators time when logging flow demand data.

Office of the CAO

Continue to partner with Administrative Services on phase I of the Enterprise Content Management (ECM) project for the design of an ECM application and for the optimization of digital assets on Metropolitan's network storage devices.

Initiate Phase II of the ECM system to provide a framework for collaboration and automation while protecting Metropolitan by reducing risk of exposure in litigation, enhancing efficiency of core business processes, and supporting the enterprise business continuity plan.

Upgrade Metropolitan's Disaster Recovery Data Center. This project upgrades key information technology disaster recovery infrastructure components for continued reliability of systems that support core business applications.

Board Room Technology Upgrade - Deploy the upgrade of audio, video and information technology-related equipment in the main board room and all committee rooms in Metropolitan's headquarters building.

Deploy upgrades to improve the reliability, performance, and capacity of Metropolitan's wireless network infrastructure comprising of microwave radio wide-area networks (WANs) and wireless access point local-area-networks (LANs).

Initiate replacement of the Learning Management System to provide enhanced functionality and access to information and reports in support of Human Resources.

CFO, External Affairs, Legal and Risk Management

The Budget System Replacement Project will support the capital & O&M budget process and Board deliverables. The current system has reached end of life and cannot be upgraded.

The MWDH2o.com Redesign will update Metropolitan's current external-facing website with an improved website that is optimized for integration with current technology and social media.

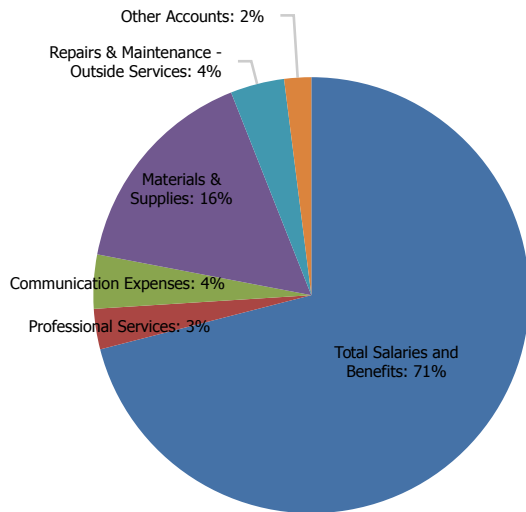
The Incident Reporting System Project will reevaluate the current incident tracking and reporting process to determine requirements for a new system. The current system has reached end of life.

O&M FINANCIAL SUMMARY

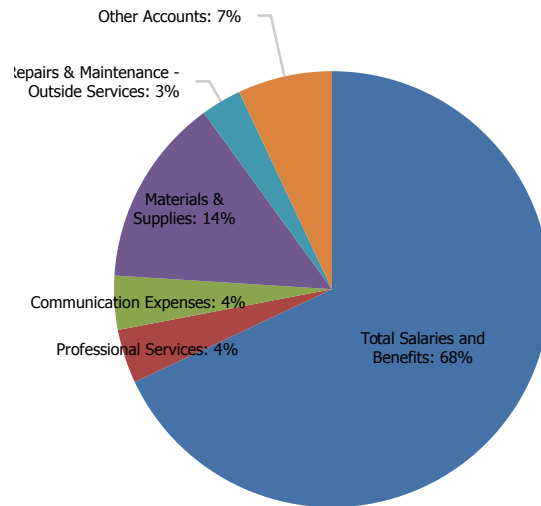
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	25,194,400	24,818,200	28,334,100	3,515,900	30,810,000	2,475,900
Direct Charges to Capital	(1,211,100)	(1,363,100)	(1,375,300)	(12,200)	(1,400,800)	(25,500)
Total Salaries and Benefits	23,983,300	23,455,100	26,958,800	3,503,700	29,409,200	2,450,400
% Change		(2.2%)		14.9%		9.1%
Professional Services	286,400	483,200	1,283,200	800,000	1,841,000	557,800
Communication Expenses	1,620,200	1,470,100	1,609,500	139,400	1,609,500	—
Equipment Expensed	16,000	57,400	116,000	58,600	2,306,600	2,190,600
Materials & Supplies	4,234,700	4,444,000	6,092,700	1,648,700	6,163,700	71,000
Repairs & Maintenance - Outside Services	514,000	888,500	1,332,500	444,000	1,310,500	(22,000)
Other Accounts	319,800	561,500	616,500	55,000	621,100	4,600
Total O&M	30,974,400	31,359,800	38,009,200	6,649,400	43,261,600	5,252,400
% Change		1.2%		21.2%		13.8%
Operating Equipment	698,749	627,800	1,631,200	1,003,400	748,400	(882,800)
Total O&M and Operating Equipment	30,974,400	31,987,600	39,640,400	7,652,800	44,010,000	4,369,600
% Change		3.3%		23.9%		11.0%

Note – Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE



FY 2019/20 BUDGET BY EXPENDITURE



PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	118	130	130	—	134	4
	O&M	114	123	123	0	127	4
	Capital	4	7	7	0	7	—
Temporary	Total	6	1	2	1	2	0
	O&M	5	—	—	—	—	—
	Capital	1	1	2	1	2	0
Total Personnel	Total	124	131	132	1	136	4
	O&M	119	123	123	0	127	4
	Capital	5	8	9	1	9	0

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

At the General Manager’s direction, Information Technology was reorganized from section to group. This biennial O&M budget reflects the following:

- Establishment of Office of IT Group Manager
- Alignment of the organization and functions
- Strategic IT initiatives and operational expenses (i.e., enterprise software) related to new capital investments

Information Technology’s biennial O&M and Operating Equipment budget is \$39.6 million in FY 2018/19 and \$44.0 million in FY 2019/20, or an increase of 23.9% and 11.0% respectively from the prior budget years. The increase is due to the following key factors:

- Salaries and Benefits reflect negotiated labor increases and the increase of four positions in FY 2019/20 with the formation of a new Business Analysis Team.
- The PC Replacement Project will take a phased approach at replacing aging PCs and related equipment. The estimated project cost of \$5.1 million will be spread over three fiscal years. The approximate cost over the two years of this biennial budget is \$3.6 million.
- As part of the Headquarters Seismic Retrofit project, IT will be responsible for coordinating the move of IT equipment (e.g., PCs) during the temporary relocation of staff. Costs are estimated at approximately \$0.4 million for the two fiscal years combined.
- Software maintenance cost increases for new corporate/business applications, escalating industry costs and operating expenses related to new capital projects.

The following are the significant changes by budget year

FY 2018/19

Personnel–related matters

Total Personnel count remains flat with FY 2017/18 budget.

Salaries and Benefits reflect negotiated labor increases.

Capital labor budget remains flat in scheduled demands for ongoing rehabilitation and upgrades of IT facilities and application systems. These include upgrades to the DVL Controls at the Wadsworth Pumping Plant, the Water Systems Control Master Plan, Cyber Security Enhancements and Communications Infrastructure Upgrade.

Professional Services

The budget reflects IT support for the PC Replacement project, seismic relocation, on-call

services for application enhancements, and other strategic IT priorities.

Materials and Supplies

The budget reflects increased levels of software licensing/support agreements as a result of projects associated with Enterprise Content Management, Emergency Radio Communications, Cyber Security, IT infrastructure, and cost escalations associated with agreements for enterprise software.

Outside Services – Non Professional and Repairs/Maintenance

The budget reflects an increase within this category due to maintenance associated with new and existing IT equipment.

FY 2019/20

Personnel-related issues

Total regular personnel for O&M increased from 130 to 134 FTE, reflecting the formation of a Business Analysis Team. The capital work remains flat from the FY 2018/19 budget.

Salaries and Benefits reflect negotiated labor increases for 134 FTEs and the refunding of one position from the FY 2018/19 budget.

Professional Services

The budget reflects IT support for the PC Replacement project and seismic relocation.

Equipment Expensed

The budget reflects IT equipment for the PC Replacement project.

Operating Equipment – FY 2018/19 and FY 2019/20

The operating equipment budget reflects the critical replacement of IT load balancers, servers, storage devices, service vehicles, unmanned aerial vehicles (Drone), 3D printer, and video conferencing monitors used for Metropolitan applications.

The operating equipment budget is decreasing between budget years FY 2018/19 and FY 2019/20 primarily as a result of fewer IT equipment replacements.

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HUMAN RESOURCES

Human Resources (HR) strategically, and cost effectively, recruits, retains, motivates, rewards, and develops Metropolitan's employees.

PROGRAMS

The focus of Human Resources is to work closely with management to foster effective management; prepare to meet future workforce challenges; partner with customers on solutions; and provide excellent HR services that ensure compliance to numerous HR laws, regulations, and responsibilities.

HR services include employee and labor relations, recruitment and selection, equal employment opportunity (EEO), HR Information Systems, benefits, retirement, leave administration, classification and compensation administration, medical screening, workers' compensation, training, organizational development, workforce and career development, and HR business support services.

HR accomplishes its mission through the following programs or sections:

Office of Human Resource Group Manager provides strategic leadership and direction for Metropolitan's Human Resources functions. Organizations reporting directly to it include Employee Relations and Human Resources Services.

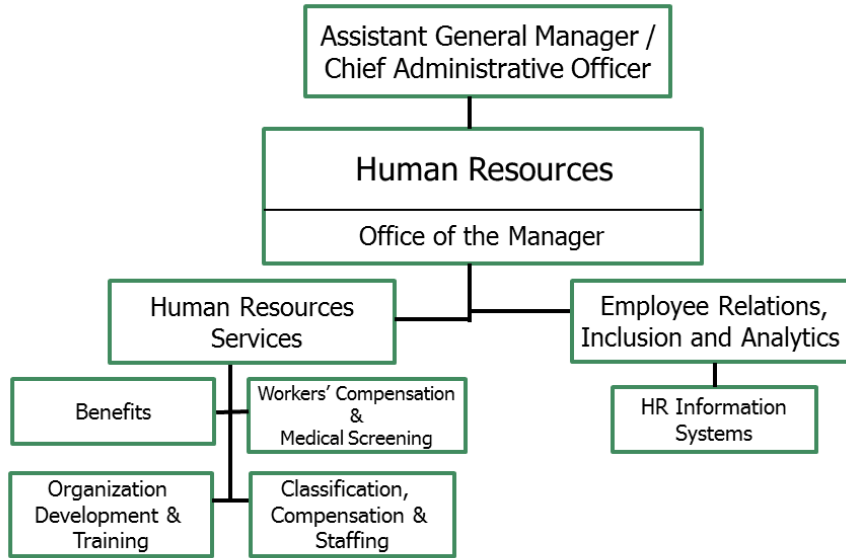
Employee Relations is responsible for fostering harmonious labor relations between Metropolitan and its four certified bargaining units, and plays a key role in contract negotiations, including working as a partner with senior management in developing Metropolitan's collective bargaining strategy. The staff also serves as a resource to managers and supervisors on such matters as grievances,

disciplinary actions, and workplace conflicts. The section also provides ongoing training to managers on all facets of employer-employee relations.

The section also has responsibility for diversity and inclusion and investigating internal complaints of unlawful discrimination. Diversity and inclusion includes partnering with Employee Resource groups and external affinity groups to outreach to future applicants. EEO investigations staff meet with complainants, interview witnesses, and issue findings as to whether allegations of unlawful discrimination can be substantiated. This work is critical in ensuring that Metropolitan maintains a workplace free of discrimination and harassment.

Finally, Human Resources Information Systems staff administer Metropolitan's MyHR system, and serve as a critical liaison between HR and the Information Technology Group.

Human Resources Services is responsible for the strategic design and implementation of Metropolitan's compensation, benefits, recruitment, training and workers compensation and medical screening functions. The section leads and participates in continuous process improvement and cost optimization studies for all plans. Responsibilities include job analysis, market assessments, recruitment, active employee and retiree benefit program administration, partnering with management on new initiatives, compliance, claim administration, medical screening and implementing new programs and agreements.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, HR will focus on the following key issues that support the GM's objective of Employee Development and additional HR priorities:

Ensure Effective People Management

Strong people management skills are essential to meeting Metropolitan's future challenges and successes. HR will ensure that the role of management is defined and that current managers have the tools and training needed to provide effective management.

A formal, multi-tiered Management and Leadership Development program will help managers better understand their roles and responsibilities as they progress through management.

Learning opportunities will be provided to employees to prepare for future management positions from the entry level manager all the way to the executive level.

Ongoing events, workshops and forums will provide opportunities to deliver consistent expectations and tools for management including motivating and valuing employee contributions.

Strengthen Partnerships with HR Customers

Effective people solutions require that HR partner with its customers which includes management, unions, employees, retirees and others. HR must understand the customer's business needs and then build working relationships that develop effective solutions to people-related challenges. This working partnership will minimize misdirected efforts, speed decision-making, reduce rework and, ultimately, produce a better workplace at a reduced cost.

Strengthened HR/customer partnerships and communications will identify areas for improvement in HR products, services, support and messaging.

Ensure Risk Management, Employee Relations, EEO and the Legal Department coordinate to effectively defend against litigation of liability claims, and to cost-effectively resolve claims.

Prepare to Meet Challenges of Future Workforce Changes

On average, about 100 employees per year are retiring and this trend is expected to continue through the next budget cycle. As experienced and knowledgeable employees retire, HR will continue to support and expand upon on-going succession planning efforts underway.

Efforts will include a focus on learning, development, knowledge capture, cross-training opportunities, and building pipelines for future vacancies.

HR will develop new strategies, support existing efforts and ensure Metropolitan remains competitive when compared to other organizations.

HR will support career development activity undertaken by employees to enhance knowledge, skills, and abilities for future work and promotional opportunities, including support of internship and mentoring initiatives.

Provide Excellent Human Resources Services

HR provides a wide range of services and support from pre-hire to retirement and impacts almost every aspect of the organization. To make maximum contribution, all HR functions must serve as trusted advisors that speak with one voice, listen well and provide consistent guidance on people-related matters.

HR will continue to simplify policies, processes, and procedures to reduce the costs of HR administration by utilizing technology, reducing redundancies or implementing new approaches to existing services.

HR will develop standard reports to enhance management access to employee data and assist with decision-making.

HR will administer a full range of benefit services for health, leave, deferred compensation and retirement programs.

HR will continue to review the recruitment process and procedures to improve quality of hire and time-to-fill.

Ensure Compliance with Laws and Regulations

HR manages compliance to four MOUs and the Administrative Code, and addresses many sensitive and confidential personnel issues.

HR will continue to monitor a wide array of changing legal and regulatory requirements while adapting HR processes and systems to conform to these changing requirements.

HR will ensure Metropolitan meets Equal Employment Opportunity requirements and numerous Federal, State, and Local laws and regulations and Public Sector codes and rulings.

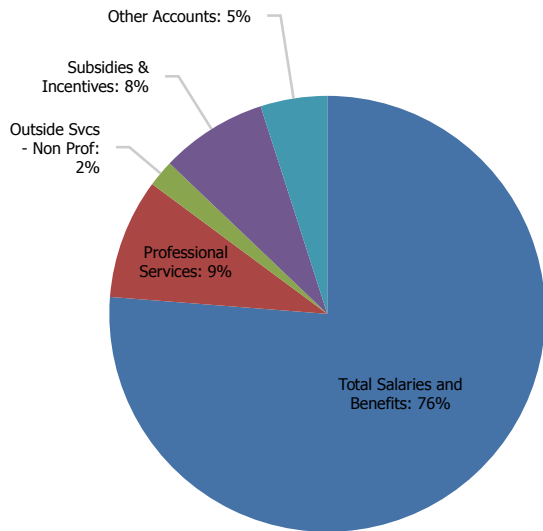
HR will maintain fiduciary responsibilities in the management of financial and retirement programs and comply with the Affordable Care Act and with all privacy and data security requirements.

O&M FINANCIAL SUMMARY

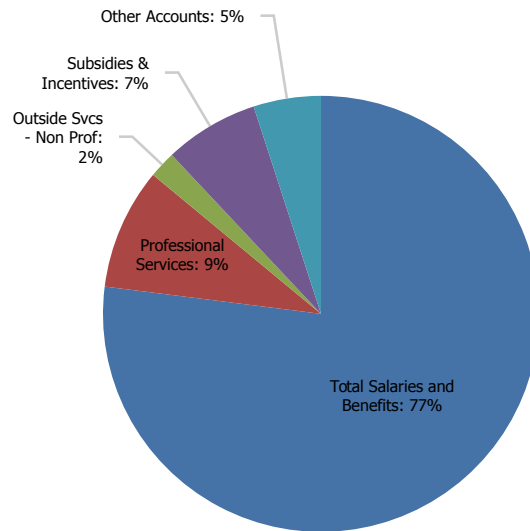
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	8,120,500	7,829,300	9,445,100	1,615,800	9,973,600	528,500
<i>Direct Charges to Capital</i>	—	—	—	—	—	—
Total Salaries and Benefits	8,120,500	7,829,300	9,445,100	1,615,800	9,973,600	528,500
% Change		(3.6%)		20.6%		5.6%
Professional Services	578,400	885,400	1,104,100	218,700	1,126,700	22,600
Advertising	117,800	150,000	140,000	(10,000)	140,000	—
Outside Services - Non Professional / Mainte	313,600	202,000	231,500	29,500	231,500	—
Subsidies & Incentives	772,300	687,300	960,300	273,000	961,500	1,200
Training & Seminars Costs	222,400	158,200	177,800	19,600	177,700	(100)
Other Accounts	297,200	309,100	283,500	(25,600)	270,500	(13,000)
Total O&M	10,422,200	10,221,300	12,342,300	2,121,000	12,881,500	539,200
% Change		(1.9%)		20.8%		4.4%

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

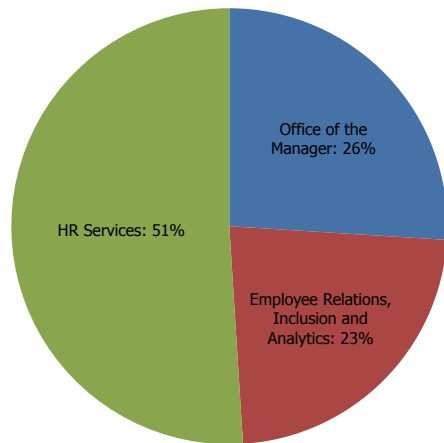


FY 2019/20 BUDGET BY EXPENDITURE

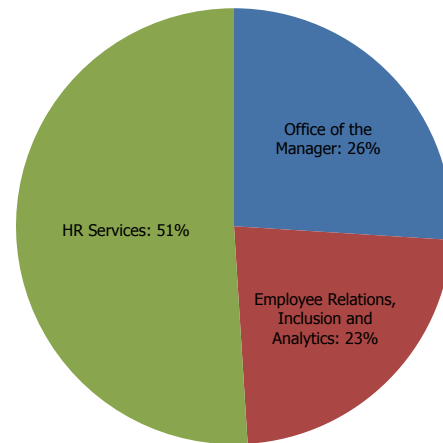


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Office of the Manager	2,039,600	3,225,000	1,185,300	3,312,500	87,500	18	7	7
Employee Relations, Inclusion and Analytics	1,717,200	2,795,700	1,078,500	2,951,100	155,400	7	11	11
HR Services	6,464,400	6,321,800	(142,700)	6,618,000	296,200	13	24	24
Total O&M	10,221,300	12,342,400	2,121,200	12,881,500	539,100	38	42	42

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
		Regular	Total	38	38	42	4
	O&M	38	38	42	4	42	—
	Capital	0	0	0	0	0	—
Temporary	Total	2	—	0	0	0	0
	O&M	2	—	—	—	—	—
	Capital	—	—	0	0	0	0
Total Personnel	Total	39	38	42	4	42	0
	O&M	39	38	42	4	42	—
	Capital	0	0	0	0	0	0

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

HR's Biennial Budget is \$12.3 million in FY 2018/19 and \$12.9 million in FY 2019/20 or an increase of 20.8% and an increase of 4.4% respectively from the prior budget years. The changes are due primarily to the following factors:

- Increase in staffing by four positions to accommodate increased recruitment and classification workload, succession planning for future vacancies and new initiatives such as the Wellness program.
- Professional services increase in both years due to General Manager Initiatives such as the Wellness and Recognition Programs and increased organizational and employee development training and programs. Additionally, there were increases in our Workers' Compensation third party Contract.
- Subsidies and Incentives increased in both years due to MOU contractual agreements as well as increasing the Tuition Reimbursement budget to accurately reflect the five year usage trends.

The following are the significant changes by budget year.

FY 2018/19

Personnel–related issues

Personnel count increased by four from the FY 2017/18 budget with the addition of a Business Support Team Manager and three HR Analysts in the Office of the Group Manager, Class Compensation and Recruitment and Human Resources Information Systems Team.

Salaries and Benefits reflect negotiated labor increases and merit increases for qualified employees.

Professional Services

The budget reflects increases as a result of bargaining unit negotiations as well as new Wellness and Employee Recognition Programs. The budget also reflects increases in Organizational and Employee Training Programs, as well as an increase in the Workers' Compensation agreement.

Subsidies & Incentives

The budget reflects increases as a result of MOU contractual agreements as well as increasing the Tuition Reimbursement budget to accurately reflect the five year usage trends.

FY 2019/20

Personnel–related issues

Personnel count remains flat from FY 18/19. Salaries and Benefits reflect negotiated labor increases.

Professional Services

The budget is anticipated to increase due to Workers' Compensation and Organization and Development Program contractual increases.

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REAL PROPERTY

Real Property applies strategic approaches to the acquisition, management and protection of Metropolitan's real property assets, and seeks to effectively optimize revenues and control land management costs.

PROGRAMS

The Real Property group accomplishes its mission through the following programs or organizations:

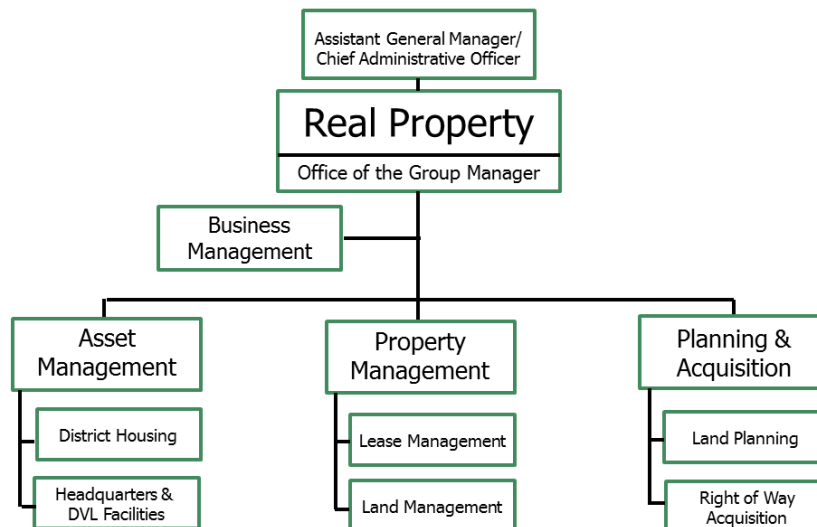
Office of the Group Manager includes Business Management, Planning & Acquisition, Property Management, and Asset Management. The Group Manager directs the group's efforts in planning acquiring, and managing Metropolitan's real property assets; is responsible for the development of real property policies and strategies to centralize Metropolitan's land activities to ensure properties are maintained, secured, and protected for present and future needs.

Business Management monitors and tracks the group's business plan, financial and budgetary initiatives; and provides administrative and business process support. In addition, the Team handles property tax payments, lease payments, provides contract support, and board letter and report coordination.

Planning & Acquisition Unit is responsible for the planning and acquisition of property and property rights for O&M and capital projects, which include the Right of Way and Infrastructure Protection Program, RRWP, and Bay Delta Initiatives.

Property Management is responsible for managing Metropolitan's real property assets, processing requests for secondary uses of real property and handling surplus property disposition. In addition, the Unit is responsible for the protection of Metropolitan's real property including site inspections, trespass and encroachment resolution.

Asset Management is responsible for management of Metropolitan's headquarters facility, the DVL Visitor Center and provides management and maintenance of employee housing.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, Real Property will focus on the following key issues:

Centralized Management of Metropolitan's Real Property Assets

Metropolitan's properties have traditionally been maintained by various Groups within the organization. A centralized management approach will ensure properties are regularly maintained, secured and protected for present and future needs.

Transition the managerial responsibility of employee housing to the Real Property Group.

Prepare a programmatic approach, a staffing plan, a maintenance/replacement schedule and cost estimates for the property management of approximately 100 desert housing units.

Budget, administer, and provide property and facility management services for the leased office space in Sacramento, Washington DC, and San Diego.

Provide facility management direction and logistical support throughout Metropolitan Headquarters Building Improvement Project.

Real Property Asset Protection & Stewardship

Monitor legislation regarding eminent domain, relocation assistance, and public agency real estate acquisition and appraisal practices.

Provide timely and suitable responses to property adjacent projects, land developments, and environmental proceedings.

Complete property management and right-of-way operating policies to reflect contemporary best practices.

Continue to improve processes to monitor financial compliance with terms and conditions of licensing and leasing agreements such as invoicing, insurance coverage, accounts receivable.

Develop an implementation plan to detect and address right-of-way encroachments upon Metropolitan properties with a collaborative cross-

functional approach to prioritize and remediate the highest risk conditions.

Develop a qualitative/quantitative approach to identify properties that are surplus to Metropolitan's needs.

Coordinate a monthly cross-functional Property Review Council to review land-use requests by public and private entities to ensure Metropolitan's rights-of-way, facilities, and water quality are protected for optimal operating conditions.

Complete annual site inspections of conveyed property to identify and correct any conditions in conflict with terms and conditions of the conveyance agreements.

File possessory tax reports and tax payments to appropriate counties on time.

Bay Delta Properties

Develop a specific comprehensive Land Management Plan to optimize use and best land owner management practices.

Maximize utilization of the 20,400 acres of agricultural lands/revenue-leases purchased in the Delta to offset costs of land ownership.

Provide support to the California Water Fix and Eco Restore efforts.

Ensure Water Reclamation District assessments, local property taxes and coalition fees are paid on time.

Palo Verde Valley Properties

Develop a specific comprehensive Land Management Plan to optimize use and best land owner management practices.

Manage Metropolitan's 29,000 acres of agricultural lands/revenue-leases to encourage a vibrant farming economy, water conservation, and to offset costs of land ownership.

Ensure Palo Verde Irrigation District water tolls,

local property taxes, and coalition fees are paid by the farmers/lease-holders on time.

Diamond Valley Lake Recreation and Management

Identify infrastructure improvements as part of the Diamond Valley Lake Recreation capital appropriation. These projects will enhance recreational opportunities and promote economic self-sustainability.

Explore marina opportunities to expand lease revenues, and collaborate with the stakeholders of the DVL Recreation Area Memorandum of Intent.

Identify additional DVL land for surplus.

Property & Right of Way Acquisition

Provide real property and right-of-way acquisition, negotiations, and relocation services for the Right of Way and Infrastructure Protection and the Conveyance and Distribution System Rehabilitation projects.

Conduct real property valuation, feasibility and cost studies for proposed and planned infrastructure and water reliability projects such as the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation and the RRWP.

Facility & Energy Management

Continue to optimize the cost of maintaining Metropolitan's headquarters building and DVL Visitors Center while supporting Metropolitan's sustainability initiatives established by the Building Owners and Managers Association and EPA's voluntary ENERGY STAR program.

Execute a multi-year strategic approach to manage critical rehabilitation projects at Metropolitan's Headquarters as the equipment, components, and furnishings reach the end of their useful life cycle.

Initiate a plan to paint, carpet, and replace cubicle/modular furniture on all floors of the Headquarters Facility.

Prepare the wing space and manage employee relocations during the construction phase of Metropolitan Headquarters Building Improvements Project. Also, develop an

alternative plan for food service options while the cafeteria is out of service during the retrofit.

Initiate a multi-year plan to replace asphalt and pavement at the Diamond Valley Lake Recreation areas and roads.

Workforce Development & Succession Planning

Expand knowledge, skills, and abilities of staff through training, succession planning, and educational workshops.

Engage with local universities and professional societies to promote Metropolitan employment opportunities.

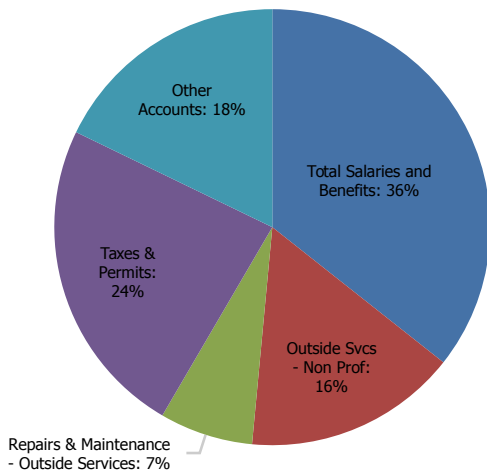
Collaborate with public agencies to identify areas where consistent real property best practices can be applied.

O&M FINANCIAL SUMMARY

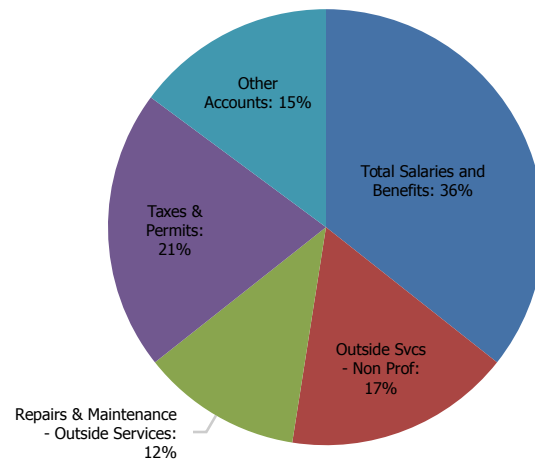
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	6,178,800	7,356,900	9,482,200	2,125,300	10,165,300	683,100
<i>Direct Charges to Capital</i>	<i>(300,800)</i>	<i>(596,300)</i>	<i>(108,700)</i>	<i>487,600</i>	<i>(117,900)</i>	<i>(9,200)</i>
Total Salaries and Benefits	5,878,000	6,760,600	9,373,500	2,612,900	10,047,400	673,900
% Change		15.0%		38.6%		7.2%
Professional Services	372,500	354,600	934,600	580,000	934,600	—
Outside Services - Non Professional / Mainte	3,120,900	2,608,500	4,120,500	1,512,000	4,782,100	661,600
Rent & Leases	709,700	749,200	916,700	167,500	950,900	34,200
Repairs & Maintenance - Outside Services	504,700	558,000	1,904,700	1,346,700	3,311,200	1,406,500
Taxes & Permits	4,107,100	5,288,300	6,214,000	925,700	5,796,000	(418,000)
Utilities Charges	1,178,300	1,356,100	1,411,100	55,000	1,464,800	53,700
Other Accounts	666,300	587,400	1,463,200	875,800	922,200	(541,000)
Total O&M	16,537,500	18,262,700	26,338,300	8,075,600	28,209,200	1,870,900
% Change		10.4%		44.2%		7.1%
Operating Equipment	—	—	20,200	20,200	—	(20,200)
Total O&M and Operating Equipment	16,537,500	18,262,700	26,358,500	8,095,800	28,209,200	1,850,700
% Change		10.4%		44.3%		7.0%

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE



FY 2019/20 BUDGET BY EXPENDITURE



PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	34	40	50	10	50	—
	O&M	32	37	49	12	49	—
	Capital	2	3	1	(2)	1	—
Temporary	Total	1	1	1	0	1	—
	O&M	1	1	1	0	1	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	35	41	51	10	51	—
	O&M	33	38	50	12	50	—
	Capital	2	3	1	(2)	1	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

Real Property's O&M and Operating Equipment Biennial Budget is \$26.4 million in FY 2018/19 and \$28.2 million in FY 2019/20 or an increase of 44.3% and an increase of 7.0% respectively from the prior budget years. The Biennial Budget includes property taxes and rents & leases previously budgeted in Other O&M. As a result of significant increases in security, trespassing, dumping, illegal land use and increased risk and liability exposure, the Biennial Budget reflects a strategic, centralized, and structured approach to managing Metropolitan's property assets. A centralized approach ensures properties are regularly maintained, secured, and protected for Metropolitan's present and future needs. As a result of this proactive approach, the most significant factors contributing to the overall increase in the budget are outlined below.

- Six new staff positions are required to manage property surveillance and security presence for all vacant properties, property clean-up efforts, landscaping maintenance, roadway development and maintenance, directional signage, marketing plans for surplus properties, encroachment identification/remediation and other miscellaneous items.
- In addition to new staffing requests, four vacant positions are being transferred from Water System Operations to transition the management and maintenance of employee desert housing.
- Additional outside vendors, services, and supplies will be required in the following areas:
 - Support transition of employee housing from Water System Operations;
 - Weed abatement, maintenance of emergency and environmental systems, general repairs and paving for DVL buildings and recreation areas;
 - Services for encroachment assessments and abatement/remediation, fencing, signage, and engaging local law enforcement where required;
 - Planned maintenance and repairs at the Metropolitan's Headquarters Facility;
 - Office relocation services during the Metropolitan Headquarters Building Improvements;
 - Services for maintenance of vacant farmland in Palo Verde;
 - General appraisal and marketing services for the surplus property program.
- Additional taxes and water reclamation district assessments will be incurred as a result of land purchases outside Metropolitan's service area.

The following are the significant changes by budget year.

FY 2018/19

Personnel-related issues

Total personnel count reflects an addition of ten regular positions from FY 2017/18. Six are newly planned for property management and land acquisition (with three of the six positions transfers from the Administrative Services section of the Office of the Chief Administrative Officer group). The additional four are transfers to start

transitioning the management of employee housing from WSO to Real Property.

Salaries and Benefits are increasing due to new position requests and negotiated labor increases.

Taxes & Permits

The budget reflects an increase associated with the land purchases outside Metropolitan's service area. There are new costs for additional property taxes, assessments from water reclamation

districts, and a special one-time assessment to pay down bridge loans of the districts.

Repairs and Maintenance - Outside Services

The budget reflects increases for DVL Recreation, Headquarters, and housing facilities. At DVL, repairs and maintenance are required for fire, life, environmental safety, solar power, and HVAC systems. Also at DVL, a three-year program for repaving at the marina, viewpoint, and roadways will be initiated. At Headquarters, repairs and maintenance is required for the data center, fire, life and environmental safety and building automation systems. Employee housing requests will require general repairs and maintenance services.

Professional and Non Professional Services

The budget reflects an increase in professional consulting services anticipated for architectural/space planning, appraisal services for surplus property, and law enforcement for trespassing and encroachment remediation.

Non-professional services will be required for scheduled weed abatement at the DVL recreation basin, encroachment remediation projects, and non-capital components of the Metropolitan Headquarters Building Improvement project.

Other

The budget for other accounts include logistical support contracts, equipment and supplies necessary for the relocation of employees in the wings of the headquarter facility during the Metropolitan Headquarters Building Improvements project.

FY 2019/20

Personnel-related issues

Personnel count remains flat from FY 2018/19 budget.

Salaries and Benefits reflect negotiated labor increases.

Professional Services

The budget reflects the reduced need for law enforcement due to lower lake elevations and the resulting decrease in visitors.

Non Professional Services

The budget reflects an increase for physically moving employee offices in and out of the wing section of the headquarters facility during the seismic retrofit.

Repairs and Maintenance - Outside Services

The budget reflects a planned effort for painting and replacing of carpet, and cubicle/modular furniture for one floor of the headquarters facility. Staff's strategy is to refurbish all the floors at headquarters over a ten-year period.

Taxes & Permits

The budget reflects a decrease due to the special one-time Bay Delta reclamation districts' assessment in FY 2018/19.

Other

The budget for other accounts reflects a decrease due to completion of repairs and maintenance projects at DVL and headquarters in FY 2018/19.

Operating Equipment – FY 2018/19 and FY 2019/20

FY 2018/19 reflects the replacement of Headquarters Building equipment at end of life.

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OFFICE OF CHIEF FINANCIAL OFFICER

The Office of the Chief Financial Officer (CFO) provides innovative, proactive, and strategic financial direction in support of the mission of Metropolitan, the Board of Directors, management, and employees.

PROGRAMS

The Office of the Chief Financial Officer is responsible for maintaining Metropolitan's strong financial position and high credit ratings and helping to achieve equitable water rates and charges that generate sufficient revenues.

In addition, the Office of the CFO assists in the efficient management of Metropolitan's financial resources, and ensures that adequate financial controls are in place to accurately record financial transactions, communicate financial results, and protect Metropolitan's assets.

The Office of the CFO accomplishes its mission through the following programs or sections:

Chief Financial Officer is responsible for the overall administration of finance and accounting functions for Metropolitan including debt and investment management; financial planning and analysis including rate setting and budgeting; accounting and control including financial reporting, payroll, accounts payable, accounts receivable; and risk management and business continuity.

The business continuity program ensures that Metropolitan takes the necessary steps to identify the impacts of potential losses and maintain viable recovery strategies, recovery plans, and continuity of operations.

Business Continuity Management Program ensures that Metropolitan takes the necessary steps to identify potential business impacts, mitigation strategies, and effectively recover critical operations following a major emergency or business disruption. This is accomplished through the development of recovery plans and strategies along with ongoing maintenance, testing, training

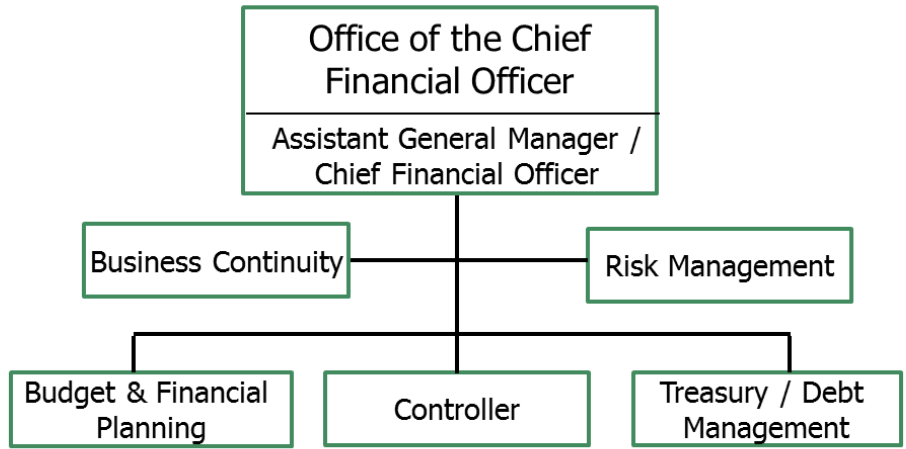
and awareness. In addition, emergency communications are also spearheaded using the MIR3 mass notification system.

Risk Management reports directly to the Chief Financial Officer section, is responsible for managing all aspects of Metropolitan's casualty insurance and risk management programs to minimize exposure to loss; access risk and recommend strategies to minimize or transfer contract risk on all Metropolitan and agreements, and procure excess and specialty insurance policies to supplement the self-insured property and liability claims program.

Budget and Financial Planning is responsible for Metropolitan's Biennial Budget, revenue requirements, and rates and charges recommendations; cost monitoring and analysis; short and long term financial analysis; planning and financial modeling; the water standby charge program; and the annual tax levy and annexation fee calculations.

Controller is responsible for maintaining internal controls that safeguard Metropolitan's assets, as well as recording and maintaining its official accounting records via the billing, accounts payable, payroll, and financial reporting functions.

Treasury/Debt Management is responsible for Metropolitan's investment and treasury obligations including receipt, safekeeping, and disbursement of Metropolitan's funds; preparation of security sales documents; and all commercial banking activities, including receipts and payment processing, such as wires, checks, and automatic deposits; and administration of debt obligations including all issuance of bonds, and investor and bond rating agency relations.



GOALS AND OBJECTIVES

In FY2018/19 and FY 2019/2020 the Office of the CFO will focus on the following key issues:

Cost of Service and Budget

Complete the biennial cost-of-service analysis for rates and charges. Complete and implement the Biennial Budget.

Financial Forecasts and Analysis

Provide an updated Ten-Year Financial Forecast in the Biennial Budget.

Continue to provide the Board with various analyses to manage financial performance for long-term rate stability, given the future potential implementation of the CA WaterFix and the RRWP.

Analyze the funding of financial initiatives as identified.

Annexation/Tax Levy

Complete the annual annexation calculation and tax levy assessment.

Rates and Charges

Manage and effectively administer rates and charges to recover costs consistent with Board policy and objectives.

Financial Reporting/Internal Controls

Continue to record and report the financial activities of Metropolitan in a timely and transparent manner to the Board and member agencies.

Continue to ensure that internal controls are in place to provide assurance that assets are safeguarded and financial information is fairly stated.

Continue to improve communications of financial information to the Board, member agencies, management, and the financial community.

Continue to improve communications of financial information to the Board, member agencies, management, and the financial community.

Capital Financing

Update capital financing plans and work with rating agencies and investors to communicate financial needs and capabilities, ensure cost-effective access to capital markets, and maintain long-term bond ratings of AA or better.

Work with Metropolitan's underwriting team, financial advisors, and swap advisors to identify financing opportunities to prudently manage the overall cost of financing Metropolitan's capital investment program.

Manage investor relations to ensure clear communications, accuracy of information, and integrity.

Continue to manage debt service to mitigate the volatility of debt service payments over time and reduce debt service costs through re-financings and the prudent use of interest rate swaps, in accordance with Metropolitan's interest rate swap policy.

Maintain relationships with the financial community and bond rating agencies to maintain Metropolitan's high credit ratings and access to various aspects of the financial markets to maximize financial flexibility.

Investment

Prudently invest Metropolitan's funds with the objective of safety of principal, liquidity, and yield.

Manage the short term portfolio to provide the necessary liquidity to fund in excess of \$3.0 billion over the biennium in expenditures for Operations and Maintenance, debt service, and construction projects.

Measure the performance of the short-term portfolio, and manage the portfolio to meet or exceed the short-term benchmark consistent within established investment codes and policy.

Manage outside portfolio managers to ensure compliance with Metropolitan's investment policy, and to monitor investment performance.

Risk Management

Continue to effectively manage Metropolitan's casualty insurance and risk management programs to minimize exposure to loss.

Business Continuity

Continue to refine the Business Continuity Plan template and FUsion system to capture better information and produce actionable and easy to follow recovery plans.

Collaborate with the business users to perform annual plan updates and approvals using Fusion software.

Conduct biannual application recovery exercises will be with the business users to ensure accessibility, data integrity, and functionality of critical applications and data as indicated in the Business Impact Analysis (BIA). Information Technology is enhancing the disaster recovery infrastructure at the Lake Mathews backup data center that will provide a robust and safe test environment for the business users.

Conduct tabletop exercises for Metropolitan's business continuity plan to validate recovery strategies and identify areas in need of updating.

Test emergency communications using MetAlert (the MIR3 mass notification system) on a regular frequency to all employees as well as the Board to ensure effective communications in the event normal methods are impacted.

Workforce Development & Succession Planning

Continue to examine and consider the challenges associated with succession planning and future staffing requirements in light of the composition and age of the workforce.

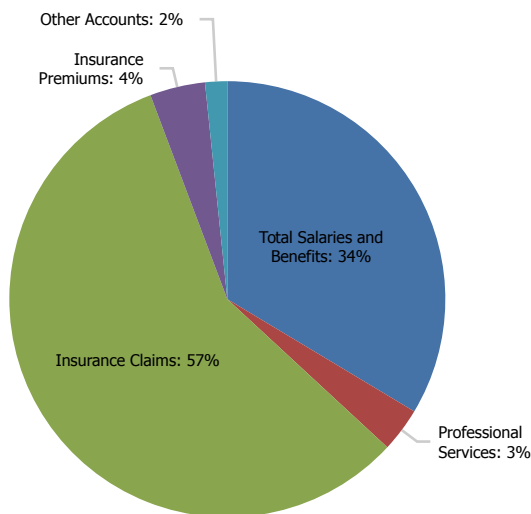
Work with each section within the Office of the CFO to establish staff back-up responsibilities for various work processes.

O&M FINANCIAL SUMMARY

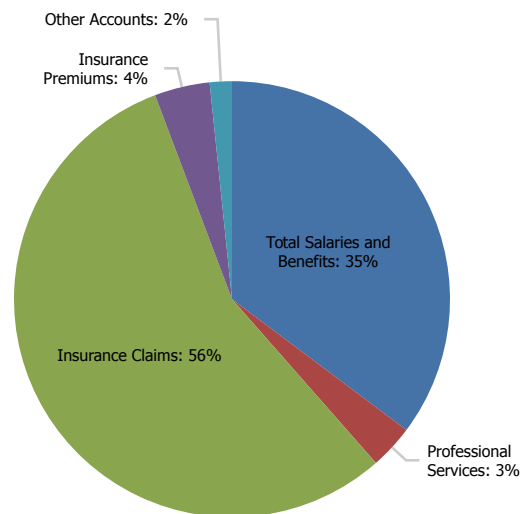
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	8,911,600	8,770,400	10,153,100	1,382,700	10,763,100	610,000
<i>Direct Charges to Capital</i>	—	—	—	—	—	—
Total Salaries and Benefits	8,911,600	8,770,400	10,153,100	1,382,700	10,763,100	610,000
% Change		(1.6%)		15.8%		6.0%
Professional Services	1,250,500	1,234,100	1,076,600	(157,500)	1,076,600	—
Insurance Claims	(3,180,400)	11,537,300	11,529,000	(8,300)	11,547,600	18,600
Insurance Premiums	1,116,100	1,300,000	1,300,000	—	1,300,000	—
Other Accounts	272,600	240,600	502,700	262,100	510,900	8,200
Total O&M	8,370,400	23,082,400	24,561,400	1,479,000	25,198,200	636,800
% Change		175.8%		6.4%		2.6%

Note – Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

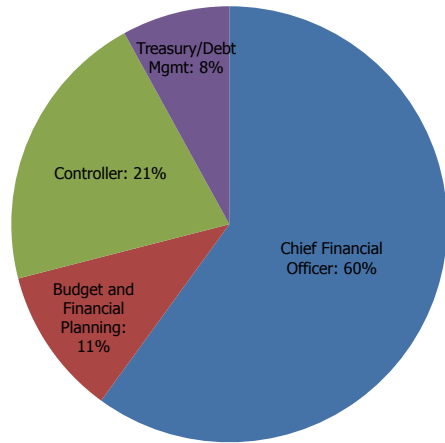


FY 2019/20 BUDGET BY EXPENDITURE

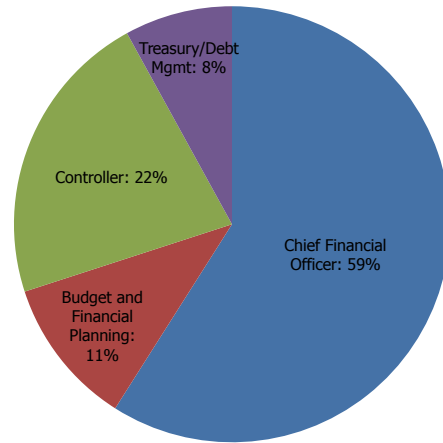


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Chief Financial Officer	14,403,300	14,734,300	331,000	14,847,600	113,400	6	6	6
Budget and Financial Planning	1,931,800	2,670,600	738,800	2,822,600	152,000	8	10	10
Controller	4,602,700	5,184,300	581,600	5,487,800	303,500	28	28	28
Treasury/Debt Mgmt	2,144,500	1,972,200	(172,200)	2,040,100	67,900	7	5	5
Total O&M	23,082,300	24,561,400	1,479,100	25,198,100	636,700	49	49	49

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	46	49	49	—	49	—
	O&M	46	49	49	—	49	—
	Capital	0	0	—	—	—	—
Temporary	Total	0	—	—	—	—	—
	O&M	0	—	—	—	—	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	46	49	49	—	49	—
	O&M	46	49	49	—	49	—
	Capital	0	0	—	—	—	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

The Office of the CFO's O&M and Operating Equipment Biennial Budget is \$24.6 million in FY 2018/19 and \$25.2 million in FY 2019/20 or an increase of 4.5% and an increase of 2.6% respectively from the prior budget years.

The change is primarily due to the following factors:

- The increase in Salaries and Benefits is a result of three positions being funded, negotiated labor increases, promotions and merit increases for qualified employees.
- Professional Services and other non-labor costs excluding insurance increased by 0.9% over the biennium.

The following are the significant changes by budget year.

FY 2018/19

Personnel-related issues

Total personnel count remains flat with the FY 2017/18 budget.

Salaries and Benefits reflect the funding of three positions, promotions, negotiated labor increases and merit increases for qualified employees.

Professional Services

The decrease in the budget is the result of the realignment of some of the budget from professional services to memberships and subscriptions. The result is a \$80K increase in the budget for professional services and memberships & subscriptions combined from the FY 2017/18 budget.

Insurance Claims

Third party liability claims budget is anticipated to remain relatively flat.

FY 2019/20

Personnel-related issues

Total personnel count remains flat from the FY 2018/19 budget.

Salaries and Benefits reflect negotiated labor increases.

Insurance Claims

Third party liability claims budget is anticipated to remain relatively flat.

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EXTERNAL AFFAIRS

External Affairs builds awareness and support for Metropolitan's mission and programs by directing media and stakeholder communications, public outreach and education projects, legislative activities, business outreach and innovation programs, and member agency support services.

PROGRAMS

External Affairs is responsible for advancing Metropolitan's policy objectives and communicating with large and diverse audiences on behalf of the district. A strong portfolio of communication tools, public outreach and sponsorship programs, education, legislative and innovation activities is used to build positive working relationships and increase awareness of Metropolitan's programs and initiatives with the public, news media, legislators, regulators, educators, community groups, businesses, labor organizations, Metropolitan's public member agencies and other stakeholders.

Staff at the Union Station headquarters office and regional representatives give voice to Metropolitan's policy priorities and projects throughout Southern California. External Affairs also manages strategic activities and regional outreach in Metropolitan's offices in Sacramento, Washington, D.C. and San Diego.

Office of Group Manager directs the activities of Business Outreach, Conservation and Community Services, Legislative Services, Media Services and the Member Services and Public Outreach sections, and the Business Management team. The Group Manager provides strategic leadership to communicate Metropolitan's policy objectives in coordination with the board, executive management and other groups within the organization.

Business Outreach Team actively encourages the participation of small, locally-owned, women-owned, minority-owned, disabled veteran-owned and economically disadvantaged business enterprises, business in the solicitation and procurement of construction contracts,

professional services agreements, equipment and other materials and supplies. Through participation and collaboration with emerging companies, entrepreneurs, innovation hubs and other agencies, the Business Outreach section enhances involvement in new technologies and positions Metropolitan as an international leader in water innovation.

Legislative Services promotes and protects the interests of Metropolitan and its member agencies before executive, legislative, and regulatory agencies of the state and federal governments. The section advances Metropolitan's policy objectives and board-adopted legislative priorities with legislators and other water policymakers, and supports an effective and growing outreach program with member agencies and stakeholders to mobilize and sustain support for Metropolitan's key initiatives.

Conservation and Community Services advances public awareness of Metropolitan and important water and conservation issues through advertising, education and community outreach. The section promotes and helps market conservation programs and activities, and manages Metropolitan's sponsorships for education and research programs, water forums, events and community partnerships.

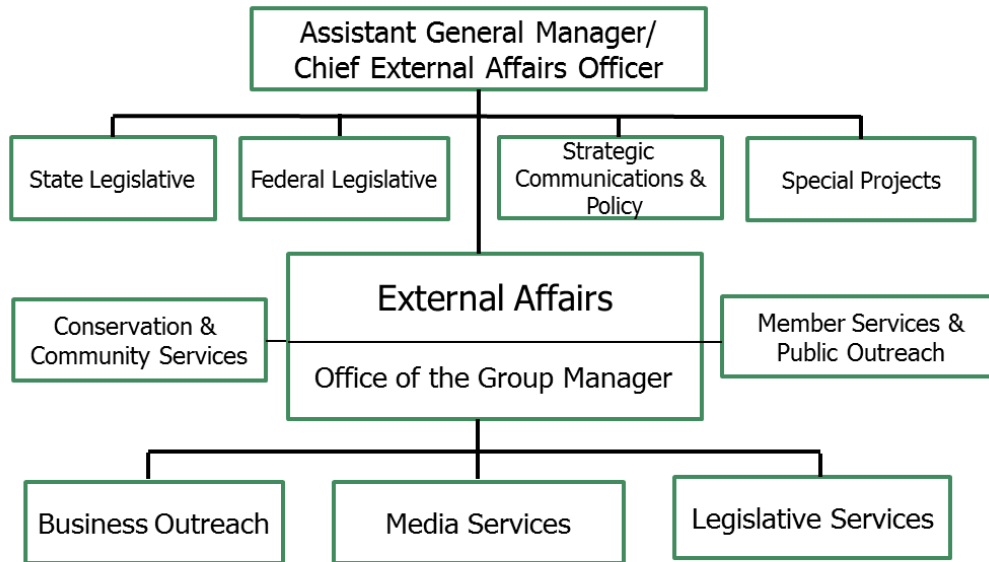
The Education Unit supports comprehensive, standards-based water education curriculum and works with educational associations, institutions and teachers to provide water education resources for elementary and secondary schools, colleges and universities.

Member Services and Public Outreach

provides support services to Metropolitan’s member agencies and manages outreach efforts for Metropolitan’s facility operations, construction activities and other water resource initiatives. The section works with and supports local government, business, agriculture and community organizations, and directs research efforts to support Metropolitan programs.

The Inspection Trip Team conducts board-sponsored field inspections of Metropolitan and related facilities to educate and inform business and community leaders with firsthand knowledge of Metropolitan’s operations.

Media Services develops, coordinates and communicates messages, information and achievements to support Metropolitan’s key objectives and programs. The section is responsible for media inquiries, press releases and conferences, informational resources including fact sheets, talking points, brochures and opinion pieces and videos, and managing Metropolitan’s websites, e-newsletters, blogs and a growing presence on social media platforms and digital platforms.



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, External Affairs will continue to focus on the following key issues and objectives:

Communications and Outreach Efforts

Expand and continue to improve the use of strategic, impactful and creative communication plans and programs to inform the public, businesses, environmental and other stakeholder groups about Metropolitan's initiatives and leadership to ensure safe, reliable and sustainable water supplies now and into the future.

Update content and informational resources on current websites, develop new microsites as needed, and manage the mwdh2o.com website redesign project to improve the functionality, content management, security and end-user experience.

Develop in-house management of social media activities, search engine optimization and marketing functions to meet business and outreach goals.

Strengthen the capacity of sponsorship and partnership programs, including the Community Partnering Program, legislative sponsorships and memberships, and business outreach sponsorships, to enhance information-sharing on water issues and stewardship and relationships with non-governmental organizations, business groups, local elected officials, community organizations and other stakeholder groups throughout Southern California.

Engage in research and related activities that provide accurate and timely information on public opinions, consumer attitudes and awareness to inform future outreach activities with member agencies, stakeholders and the public.

Water Supply Reliability, Conservation and Sustainability

Develop and implement an effective and well-managed multimedia, multilingual advertising and outreach campaign to increase public awareness of water supply conditions, Metropolitan and member agency rebate programs, and support for long-term conservation strategies.

Provide communication support for Metropolitan programs, planning activities and projects that ensure water supply reliability, including existing water operations, imported supplies from the Colorado River and SWP, local resource programs that diversify the region's water portfolio, conservation actions and innovative water supply technologies.

Increase awareness of Metropolitan's long-standing efforts to promote environmental stewardship through actions and investments for projects, programs, research and collaborative activities that protect, restore and enhance habitat and ecosystems, watersheds, and water quality.

Promote public awareness of climate change impacts on water supply conditions and reliability using a range of community and outreach tools to support Metropolitan's current and future initiatives with climate change adaptation and actions.

Bay-Delta and Local Supply Initiatives

Provide information and secure support of stakeholders, the public and legislators for Metropolitan's positions on policies that promote water supply reliability and an environmentally sustainable Bay-Delta. This includes programs and policies related to the CA WaterFix, California EcoRestore and Metropolitan-owned properties in the Delta.

Ensure strong coordination and consistent messaging with state and federal agencies, State Water Contractors, JPA participating agencies, and member agencies on activities related to CA WaterFix.

Provide communication and community outreach to increase public awareness of and support for new and proposed projects to advance local supply development, including the Regional Recycled Water Project demonstration facility.

Legislative Policy Objectives

Work with the board, member agencies and executive management to secure support for and/or sponsor federal and state legislation and regulatory policies that advance Metropolitan's

policy objectives, including strategic water quality and supply initiatives, conservation, Delta solutions, regional water resources projects, and sustainable water and energy management.

Conduct briefings, presentations and tours for elected officials and government leaders, and community-based environmental and business organizations to increase understanding of key water infrastructure systems and investments and key legislative and regulatory policies.

Member Agency Support

Facilitate ongoing communication and coordination between Metropolitan and its member agencies through regular meetings with general managers, legislative and education coordinators, and public information officers.

Effectively manage the inspection trip program to educate the public, business and community leaders, elected officials, news media, members of the public about Metropolitan and encourage a dialogue about the state's water supply and infrastructure, environmental issues and climate change impacts, agriculture and urban water interface and future challenges.

Provide primary support to the Communications and Legislation Committee and the Agriculture and Industry Relations Committee, and ensure that committee presentations, board letters and associated activities provide timely, accurate and relevant information on programs, trends and activities to help inform board actions and ensure transparency.

Business Outreach

Maintain an effective Business Outreach program for regional small businesses and veterans to ensure broad participation while achieving board-adopted goals of 25 percent or better for

contracting dollars to small business and 3 percent to disabled veteran-owned enterprises.

Partner with member agencies in hosting "Connect 2 Met" and other business opportunity forums to educate local businesses on how to conduct business with public agencies and their purchasing departments.

Provide leadership and collaborate with Metropolitan's member agencies, other public agencies and innovative programs to identify, develop and promote emerging water technologies.

Educational Programs

Update and expand distribution of Metropolitan's comprehensive K-12 water education curriculum in the areas of science, math, language arts and social studies.

In coordination with member agencies and the educational community, explore opportunities to expand educational services through the use of new technologies to reach more students, teachers and classrooms, including underserved and culturally diverse populations.

Support and manage Metropolitan's unique educational programs, including Solar Cup competition, World Water Forum and the Student Art Contest.

Emergency Management and Crisis Communication

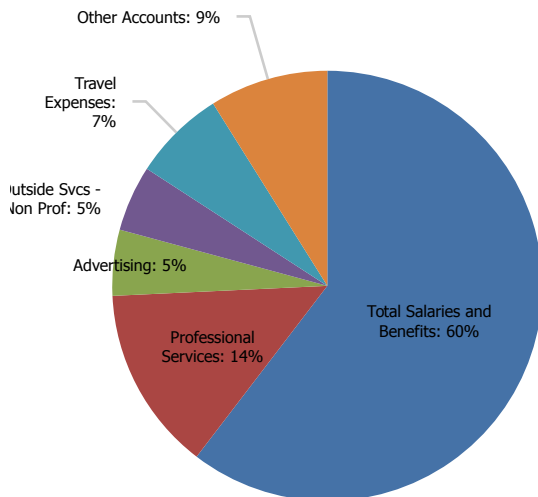
Support Metropolitan's emergency preparedness with a responsive crisis communications plan, well-trained staff, and the use of social media and other communications technologies to provide essential services during times of emergency and in response to disasters.

O&M FINANCIAL SUMMARY

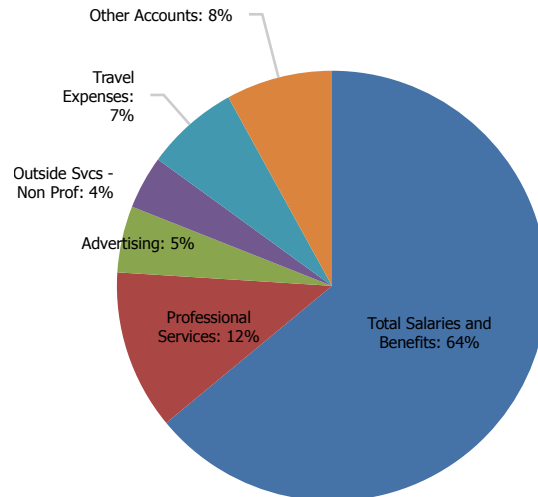
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	14,861,500	14,816,600	16,756,100	1,939,500	17,783,900	1,027,800
<i>Direct Charges to Capital</i>	—	—	—	—	—	—
Total Salaries and Benefits	14,861,500	14,816,600	16,756,100	1,939,500	17,783,900	1,027,800
% Change		(0.3%)		13.1%		6.1%
Professional Services	2,123,700	2,921,700	3,828,700	907,000	3,306,300	(522,400)
Advertising	3,175,800	2,200,000	1,312,200	(887,800)	1,320,800	8,600
Community Outreach Activities	289,200	220,000	400,000	180,000	400,000	—
Memberships & Subscriptions	347,600	440,600	459,100	18,500	474,100	15,000
Outside Services - Non Professional / Mainte	579,300	631,200	1,511,700	880,500	1,178,200	(333,500)
Sponsorships	386,800	411,300	559,300	148,000	559,300	—
Travel Expenses	1,448,000	1,726,900	1,840,400	113,500	1,831,400	(9,000)
Other Accounts	909,300	966,900	937,100	(29,800)	898,100	(39,000)
Total O&M	24,121,200	24,335,200	27,604,600	3,269,400	27,752,100	147,500
% Change		0.9%		13.4%		0.5%
Operating Equipment	37,210	—	30,800	30,800	32,300	1,500
Total O&M and Operating Equipment	24,121,200	24,335,200	27,635,400	3,300,200	27,784,400	149,000
% Change		0.9%		13.6%		0.5%

Note – Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE

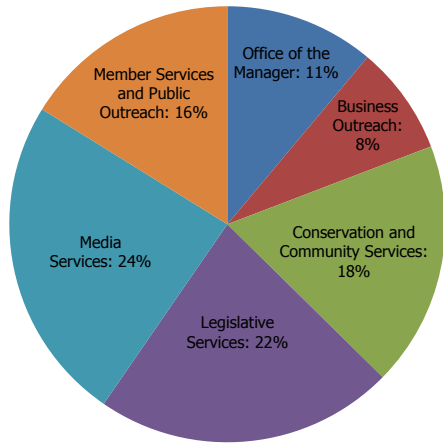


FY 2019/20 BUDGET BY EXPENDITURE

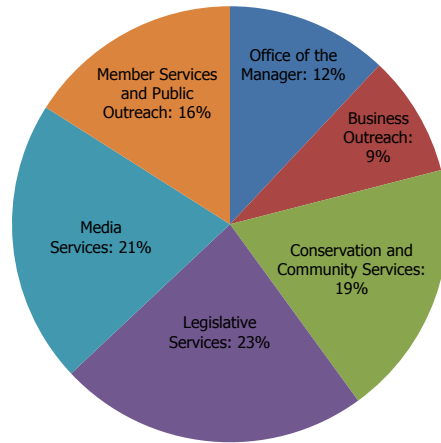


O&M BUDGET BY SECTION

FY 2018/19 BUDGET BY SECTION



FY 2019/20 BUDGET BY SECTION



	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19	Personnel Budget		
						17/18	18/19	19/20
Office of the Manager	2,979,700	3,089,100	109,400	3,213,800	124,700	10	9	9
Business Outreach	1,874,800	2,332,000	457,200	2,421,400	89,300	7	7	7
Conservation and Community Services	5,789,000	5,055,300	(733,700)	5,275,400	220,000	11	11	11
Legislative Services	5,828,200	6,118,600	290,400	6,351,900	233,300	14	14	14
Media Services	3,948,300	6,571,100	2,622,800	5,963,700	(607,400)	18	20	20
Member Services and Public Outreach	3,915,100	4,438,500	523,400	4,526,200	87,600	10	10	10
Total O&M	24,335,100	27,604,600	3,269,500	27,752,200	147,700	70	71	71

Note - Totals may not foot due to rounding.

PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	67	70	71	1	71	—
	O&M	67	70	71	1	71	—
	Capital	—	—	—	—	—	—
Temporary	Total	1	—	0	0	—	0
	O&M	1	—	0	0	—	0
	Capital	—	—	—	—	—	—
Total Personnel	Total	67	70	71	1	71	0
	O&M	67	70	71	1	71	0
	Capital	—	—	—	—	—	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

External Affairs' O&M and Operating Equipment Biennial Budget is \$27.6 million in FY 2018/19 and \$27.8 million in FY 2019/20 or an increase of 13.6% and an increase of 0.5%, respectively from the prior budget years. In an effort to achieve budget savings, advertising and outreach efforts have been reexamined and redistributed with the following impacts:

- Advertising: External Affairs will manage a new three-year multi-media multilingual advertisement campaign in continued efforts to promote conservation as a way of life for Southern California. In FY 2018/19, the board authorized \$5.5 million for the campaign. For FY 2019/20 the campaign will be funded in coordination with WRM from the water conservation budget and will include enhanced research, optimization and program benchmark measurement. Management has redirected previously budgeted advertising funds to in-house social media and search-engine optimization/marketing; innovation-directed studies, Colorado River exhibition, capital project outreach and legislative and business outreach efforts and retains adequate funding for future outreach and advertising on policy initiatives and key issues.
- Capital Projects Outreach: External Affairs will continue to provide communications and public outreach support for capital improvements and other major initiatives, including CA WaterFix, the RRWP demonstration and visitors center, construction, and refurbishment of existing infrastructure, such as Colorado River, Second Lower Feeder, and other pipe rehabilitation projects, with funding from the capital projects.
- The Board and Executive Management have identified website redesign as a priority to keep up with electronic media needs for Metropolitan's service area and all potential site visitors. To meet this priority, \$1.2 million has been budgeted in FY 2018/19 and \$500,000 in FY 2019/20 to redesign the mwdh2o.com website.
- Diamond Valley Lake: External Affairs has budgeted \$25,000 for various exhibit restoration and maintenance costs in FY 2018/19 and FY 2019/20 to bring the exhibits at the DVL Visitors Center to a level of quality consistent with Metropolitan's standards and to provide cutting-edge innovation and information that engages audiences to discover more about the history and future of water supply management in Southern California.

The following are the significant changes by budget year:

FY 2018/19

Personnel-related issues

The budget for Salary and Benefits reflects negotiated labor increases somewhat offset by anticipated vacancies from retirements and unfilled positions. One additional regular position has been added to provide support for capital projects outreach and communications and succession planning for the Member Services and Public Outreach Section.

Fiscal years 2016/17 and 2017/18 budget was restated to reflect movement of the Inspection Trip and Graphic Design teams and the Business Outreach Section to External Affairs as directed by the General Manager.

The Inspection Trip Team was assigned with Customer Service Unit under the newly formed Member Service and Public Outreach Section.

Other

The budget reflects reductions in funding for rents and leases, which will be managed by Real Property; and advertising, which reflects the Board-approved coordination with WRM. These changes have been carefully evaluated to ensure External Affairs will be able to successfully carry out its core mission and objectives in these areas effectively and efficiently.

The budget reflects increases consistent with Board and General Manager initiatives and priorities for website and electronic media

enhancements, community outreach efforts, and innovation and research-related professional and non-professional services. The budget redirects existing advertising funding for new research and related activities that provide accurate and timely information on public opinions, consumer and customer attitudes and awareness to help inform future outreach activities with member agencies, stakeholders and the public.

FY 2019/20

Personnel–related issues

Total Personnel count remains flat with the FY 2018/19 budget. Salaries and Benefits reflect negotiated labor increases.

Other

The budget reflects a decrease across materials and supplies, professional and non-professional services based on completion of the initial stages of the website and electronic media enhancement projects.

Operating Equipment – FY 2018/19 and FY 2019/20

The budget reflects replacement vehicles for Director- and GM-sponsored inspection trips and Metropolitan special events and activities.

GENERAL COUNSEL DEPARTMENT

The Legal Department provides a full range of legal services in a professional, timely, cost-effective, and creative manner.

PROGRAMS

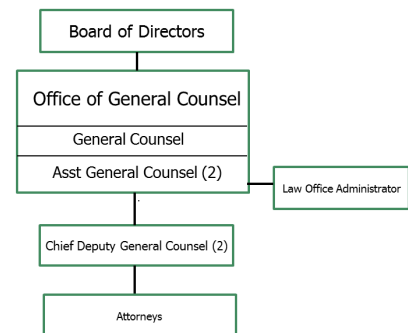
The General Counsel is the chief legal spokesperson for Metropolitan and the Board of Directors and oversees the Legal Department's administrative functions.

The General Counsel represents Metropolitan in litigation and other proceedings to which Metropolitan is a party; provides legal advice to the Board, its committees, and to Metropolitan's staff; drafts, reviews, and negotiates contracts, documents, and other agreements; consults with representatives of other public and private entities on matters of mutual concern; and monitors and analyzes pending and enacted legislations and, when appropriate, drafts legislative recommendations.

The Office of the General Counsel provides legal services to the Board, its committees, and to Metropolitan staff in the following areas:

- Represents Metropolitan interests relating to water supply matters, including Bay Delta resources, Colorado River supply, the SWC, groundwater and water transfer issues, California Environmental Quality Act and ESA issues, energy issues, and water delivery and treatment.
- Represents Metropolitan's interest with regard to claims and litigation by or against Metropolitan.
- Provides legal advice with respect to the acquisition, management, and disposal of Metropolitan property and the administration of annexations, and provides legal assistance in Metropolitan's procurement and construction contract programs.

- Provides legal advice with respect to Metropolitan's financial activities, including Metropolitan's rates and charges, taxation, bond issuance, legality of investments, and fiscal administration.
- Provides legal advice related to labor and personnel matters.
- Reviews, analyzes, and monitors pending state and federal legislation and drafts legislative recommendations.



GOALS AND OBJECTIVES

In FY 2017/18 and FY 2018/19, the Office of the General Counsel will focus on the following key issues:

Water Supply Reliability

Pursue a comprehensive legal strategy that proactively addresses legal issues associated with the comprehensive solutions in the proposed CA WaterFix while vigorously asserting and defending Metropolitan's interest in litigation and administrative proceedings.

Provide legal advice in support of the development and implementation of the CA WaterFix and the California EcoRestore, including the associated environmental documentation and implementing agreements in a manner supportive of Metropolitan's goals and objectives.

Provide legal advice regarding implementation, financing, and governance of the CA WaterFix including agreements with the Department of Water Resources and others.

Represent Metropolitan, as a separate party or working through the State Water Contractors, in litigation and regulatory proceedings relating to operation of the SWP, water diversions in and affecting the Delta or SWP supplies, construction of new conveyance facilities, and other matters relating to the Delta.

Provide legal advice and support relative to water supply, delivery and water quality issues resulting from the drought and the reduced allocation from the SWP.

Provide legal advice and support for initiatives to address the proclaimed emergency due to drought conditions. Provide legal advice and support for proposed water transfers and exchanges and development of local resources, desalination and conservation projects and programs. Provide legal advice and support with respect to implementation of Metropolitan's Water Supply Allocation Plan (WSAP), water delivery and other issues related to drought conditions. Provide legal support for capital projects required to provide additional flexibility in the operation of Metropolitan's distribution system.

Provide legal advice and support for update and implementation of Metropolitan's Integrated Water Resources Plan Update and Urban Water Management Plan, including development of the Long-Term Conservation Plan and resource programs to assist the region in meeting the goal of reducing retail water consumption by 20 percent by the year 2020.

Provide legal advice and support in connection with the proposed extension and amendment of the SWC and preparation of supporting environmental documents under CEQA and any separate amendment of the SWC relating to the development and operation of new or additional conveyance facilities.

Continue to defend and enforce the terms of the QSA and related agreements among the participating agencies and other agencies with Colorado River contracts.

Assist in developing, negotiating and documenting new water conservation and augmentation projects to address the long-term supply and demand issues identified in the Bureau of Reclamation's 2012 Colorado River Basin Water Supply and Demand Study.

Provide legal support for Metropolitan's efforts to protect and make optimal use of its Colorado River rights and related water transfer, storage, and exchange programs. Provide legal support for initiatives to identify and obtain new water supplies on the Colorado River, and to protect existing Colorado River water supplies against erosion by unlawful or unreasonable uses.

Finance

Provide legal advice regarding adoption of rates and charges. Continue to defend Metropolitan against challenges to its rate structure.

Provide legal advice and assist with amendments to existing bond resolutions and the development of a subordinate lien bond resolution.

Operations

Negotiate and prepare service connection agreements for new or modified member agency connections. Provide legal assistance on regulatory and real estate issues, including CEQA issues, arising from service connection requests.

District Governance

Continue to provide timely advice to the board and committees on governance and legal compliance matters.

Serve as the point of contact and coordinate Metropolitan responses to Public Records Act requests (PRAs).

Corporate Resources/District Infrastructure

Provide legal support for capital investment and repair and replacement plans, including professional services and procurement contracts.

Provide legal support for environmental analysis under CEQA of Metropolitan's projects and other discretionary actions, in addition to analyzing potential environmental impacts of other agencies' projects on Metropolitan properties and facilities.

Workforce /Human Resources

Provide proactive counsel and advice on workforce issues.

Continue to defend Metropolitan in PERB matters, as well as grievance and disciplinary matters.

Real Property

Assist Real Property group in the negotiation and documentation of real property acquisitions and the surplus of real property. Negotiate and provide legal support for the lease and licensing of Metropolitan property. Provide legal support for the grant and acceptance of easements and entry permits.

Support the expanded work efforts of .

Technology

Collaborate on Information Governance Policies with Business Technology Group, External Affairs, and Human Resources.

Energy Costs and Management

Assist with implementation of the Energy Management Plan, including providing advice on wholesale energy transactions, renewable energy projects and energy-related contracts and legislation.

Provide legal support to ensure that SWP energy needs are met in a cost-effective and sustainable manner.

Legal Department Administration

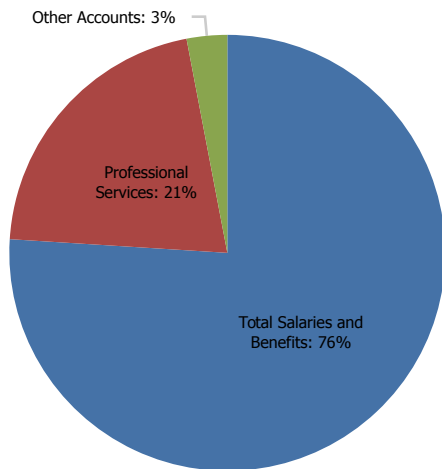
Continue to aggressively manage outside counsel costs, while obtaining effective representation to protect Metropolitan's interests. Provide on-going training opportunities and develop and implement succession planning.

O&M FINANCIAL SUMMARY

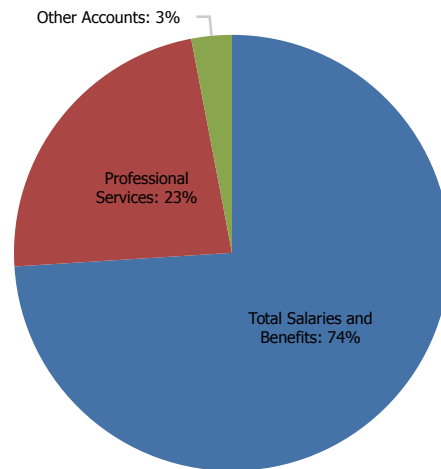
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	9,790,900	9,744,000	10,767,000	1,023,000	11,308,300	541,300
<i>Direct Charges to Capital</i>	—	—	—	—	—	—
Total Salaries and Benefits	9,790,900	9,744,000	10,767,000	1,023,000	11,308,300	541,300
% Change		(0.5%)		10.5%		5.0%
Professional Services	821,300	3,625,000	3,010,000	(615,000)	3,460,000	450,000
Materials & Supplies	56,300	50,000	55,000	5,000	55,000	—
Memberships & Subscriptions	103,100	100,000	110,000	10,000	110,000	—
Outside Services - Non Professional / Mainte	29,300	30,000	35,000	5,000	35,000	—
Subsidies & Incentives	48,800	55,000	55,000	—	55,000	—
Travel Expenses	97,000	120,000	120,000	—	120,000	—
Other Accounts	47,500	53,000	59,000	6,000	59,000	—
Total O&M	10,994,200	13,777,000	14,211,000	434,000	15,202,300	991,300
% Change		25.3%		3.2%		7.0%

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE



FY 2019/20 BUDGET BY EXPENDITURE



PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	34	36	36	—	36	—
	O&M	34	36	36	—	36	—
	Capital	—	—	—	—	—	—
Temporary	Total	2	2	2	—	2	—
	O&M	2	2	2	—	2	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	36	38	38	—	38	—
	O&M	36	38	38	—	38	—
	Capital	—	—	—	—	—	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

The Office of the General Counsel's Biennial Budget is \$14.2 million in FY 2018/19 and \$15.2 million in FY 2019/20 or an increase of 3.2% and 7.0% respectively from the prior budget years. The increase is primarily due to the following factors:

- Professional services costs increase reflects anticipated expenses for Bay Delta legal costs, water quality litigation, employment litigation and water rates litigation.
- Salaries and Benefits costs reflect negotiated labor increases and merit increases for qualified employees.

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GENERAL AUDITOR DEPARTMENT

The Audit Department provides independent, professional, and objective assurance and consulting services designed to add value to and improve Metropolitan's operations.

PROGRAMS

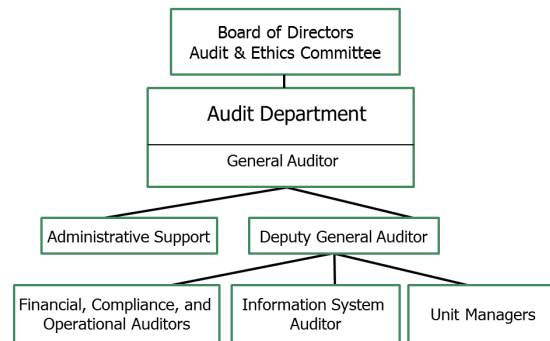
The Audit Department helps the organization accomplish its objectives by using a proactive, systematic approach to evaluate and improve the effectiveness of risk management, control, and governance processes.

The scope of work of the Audit Department is to determine whether Metropolitan's network of risk management, internal control, and governance processes, as designed and represented by management, is adequate and functioning in a manner to ensure:

- Risks are appropriately identified, managed, and monitored
- Significant financial, managerial, and operating information is accurate, reliable, and timely
- Employees' actions are in compliance with policies, standards, procedures, and applicable laws and regulations.
- Resources are acquired economically, used efficiently, and protected adequately
- Programs, plans, and objectives are achieved

- Quality and continuous improvement are fostered in the organization's control processes
- Significant legislative or regulatory issues impacting the organization are recognized and addressed appropriately

Opportunities for strengthening internal controls, improving efficiency, and protecting the organization's image may be identified during audits. They will be communicated to the appropriate level of management.



GOALS AND OBJECTIVES

In FY 2018/2019 and FY 2019/20, the Audit Department will focus on the following key issues:

Risk Analysis, Risk Mitigation and Internal Controls

Provide risk perspective and auditing advice and counsel to the Board and management in operational and financial activities.

Publish risk-focused audit reports designed to clearly communicate the General Auditor's opinion regarding the internal control structure, significant control issues, and recommendations to mitigate noted risk.

Improve the completion time for audits and evaluate the adequacy and timeliness of management's responses to, and corrective actions taken on, all significant control issues noted in audit reports.

Emphasize test work of significant projects.

Workforce Development

Encourage training opportunities for Audit Department staff to enhance competencies in risk assessment and broaden knowledge of Metropolitan operations. Utilize this knowledge in fine-tuning the Annual Audit Risk Assessment and Audit Plan.

Management and Leadership

Efficiently manage the department's budget for maximum effectiveness of state budgetary objectives.

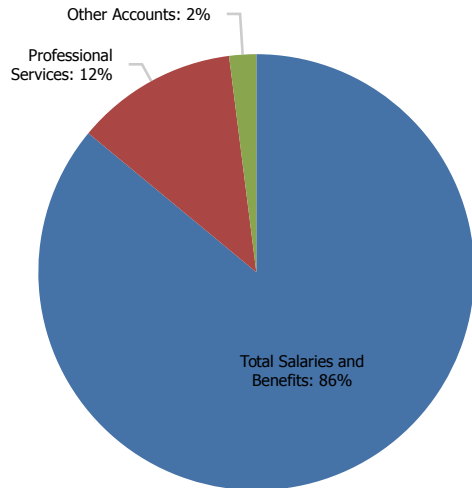
Uphold the mission, roles, and responsibilities of the Audit Department.

O&M FINANCIAL SUMMARY

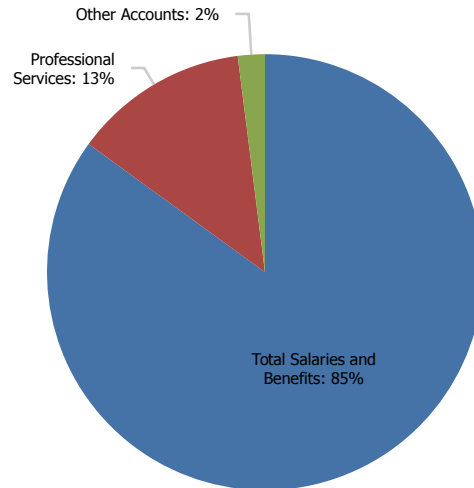
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	2,434,900	2,721,300	3,100,300	379,000	3,283,500	183,200
<i>Direct Charges to Capital</i>	—	—	—	—	—	—
Total Salaries and Benefits	2,434,900	2,721,300	3,100,300	379,000	3,283,500	183,200
% Change		11.8%		13.9%		5.9%
Professional Services	380,100	350,000	450,000	100,000	500,000	50,000
Materials & Supplies	13,400	15,000	16,000	1,000	16,000	—
Memberships & Subscriptions	4,600	5,500	5,500	—	5,500	—
Rent & Leases	3,700	5,500	4,500	(1,000)	4,500	—
Subsidies & Incentives	16,600	15,000	15,000	—	15,000	—
Training & Seminars Costs	3,500	15,000	16,000	1,000	17,000	1,000
Travel Expenses	3,000	5,000	5,000	—	5,000	—
Other Accounts	1,400	8,500	8,500	0	8,500	—
Total O&M	2,861,200	3,140,800	3,620,800	480,000	3,855,000	234,200
% Change		9.8%		15.3%		6.5%

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE



FY 2019/20 BUDGET BY EXPENDITURE



PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	10	12	12	—	12	—
	O&M	10	12	12	—	12	—
	Capital	—	—	—	—	—	—
Temporary	Total	—	—	—	—	—	—
	O&M	—	—	—	—	—	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	10	12	12	—	12	—
	O&M	10	12	12	—	12	—
	Capital	—	—	—	—	—	—

Note - Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

The Audit Department's Biennial Budget is \$3.6 million in FY 2018/19 and \$3.9 million in FY 2019/20 or an increase of 15.3% and 6.5% respectively from the prior budget years.

- Salaries and Benefits costs reflect negotiated labor increases and merit increases for qualified employees.
- Professional Services reflects a recently negotiated agreement with external auditors.

ETHICS OFFICE

The Ethics Office promotes an ethical culture at Metropolitan by administering and advising Metropolitan's ethics policies and reviewing potential ethics violations.

PROGRAMS

Metropolitan's Ethics Office was established by special legislation enacted in 2000. In doing so, it was with a conviction that a strong ethical culture is the foundation of good governance. Moreover, it was based on the belief that an ethical culture is created through a robust ethics program that sets clear expectations for conducting business within the organization and with external parties.

An ethical culture is based on the following: effective board oversight, strong tone-at-the-top, senior management involvement, organization-wide commitment, a customized code of conduct, ethics training, communications, and ongoing monitoring system.

It also involves the administration of financial disclosure reports, an anonymous incident reporting system, timely investigation of reported incidents, publication of summary investigation findings, and, where appropriate, referrals to Department managers for consistent disciplinary action.

These processes promote transparency and accountability, allowing the public insight into how the district conducts its business and holding district officials accountable for meeting internal and state ethics standards. The Ethics Office Accomplishes its mission through the following programs and services, each of which is critical to achieving the ultimate goal of internal ethics and compliance - maintaining an ethics-centered culture.

Ethics Compliance The Ethics Office services as the filing officer for state-mandated financial interest disclosure reports for directors and employees. These filings are required for individuals who make or participate in making

decisions in their official capacity that could affect their personal financial interests. To date, all Directors and over 600 employees have been identified as mandatory filers.

The Ethics Office also maintains and updates Metropolitan's conflict of interest code, designating employee reporting positions and disclosure categories. These requirements are tailored to the unique responsibilities of each designated position and are reviewed on a periodic basis for compliance with evolving standards.

Advice and Education The Ethics Office advises employees, directors, and contractors on Metropolitan's ethic policies and standards. These include the areas of conflicts of interest and proper use of authority. Advice and education are provided through consultations, training programs, and reference materials. The Ethics Office addresses requests for advice and training and recommends consultations where appropriate.

The Ethics Office also facilitates state-mandated AB1234 and sexual harassment training for directors and provides orientations for new directors and employees about Metropolitan's internal ethic provisions.

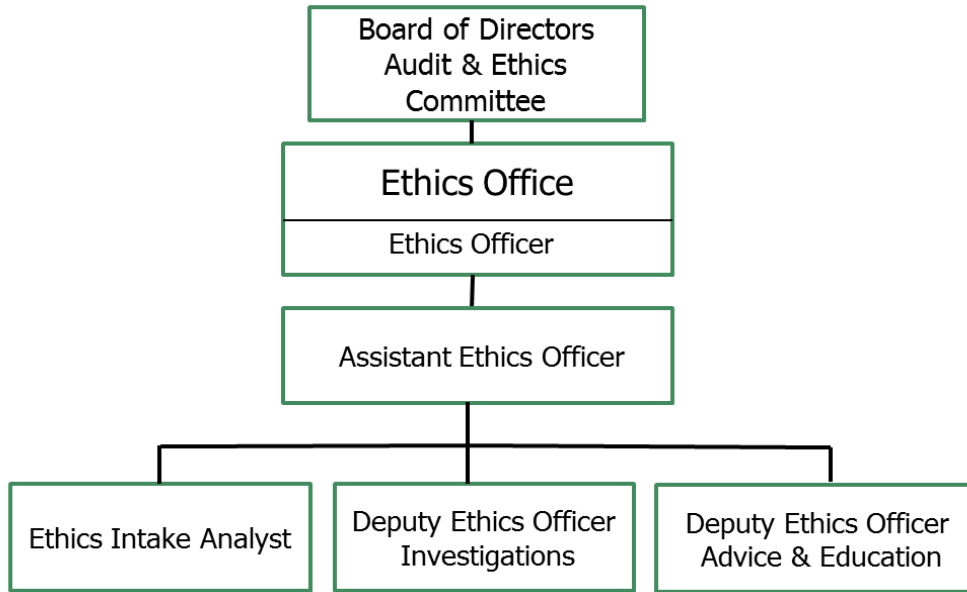
Policy Analysis and Program Development The Ethics Office proposes ethic rules and modifications to existing rules, performs risk assessment, and analyzes investigation procedure to maintain best practices in the field.

Investigation Investigations are undertaken both to promote accountability and to identify systematic changes needed in order to avoid further missteps. Performing comprehensive investigations, including investigation planning,

gathering of evidence, document review, witness interviews, comparative analysis of facts, drafting of reports, and organization and indexing of evidence.

occurred, and makes recommendations to executive management.

The Ethics Officer reviews the investigation findings, determines whether ethics violations



GOALS AND OBJECTIVES

In FY 2018/19 and FY 2019/20, the Ethics Office will focus on the following key issues and initiatives:

Ethics Consultation

Provide ethics risk perspective and advisory services to directors, officers, and employees needing input on ethics related issues. In specific requests for assistance, provide thorough analysis and prompt responses. Continue to review board agendas and prepare memorandum for directors to help identify potential sources of conflicts of interest in matters coming before them. Review conflict of interest disclosures from potential contractors for the professional services contracting unit and make recommendations for resolving potential conflicts. Perform outreach to Group Managers to proactively engage in the program and project process to help maintain ethics-centered decision-making.

Policy Development

Continue to assess the scope and content of Metropolitan's ethics policies and provisions. Develop new ideas for improvements and work to achieve consensus among stakeholders.

Follow developments in legislation and Fair Political Practices Commission proceedings to identify emerging issues that may affect the Metropolitan community.

Ethics Office performs objective and comprehensive investigations of ethics complaints, which entails investigation planning, gathering evidence, document review, witness interviews, comparative analysis of facts, drafting of reports, and organization and indexing of evidence.

The Ethics Officer reviews the investigation findings, determines whether ethics violations occurred, and makes recommendations to executive management.

Investigations

Evaluate opportunities to streamline the investigation process. These efforts include establishing reasonable guidelines to ensure that inquiries proceed in an efficient and responsible

manner. Improve the effectiveness and timeliness of communication to interested parties on the progress of investigations. Define accountability standards for investigations that address the need to discontinue or close inquiries when substantiating evidence cannot be obtained within a reasonable time period. Survey best practices in the field and recommend improvements to Investigation Guidelines.

Education and Outreach

Design accessible and understandable ethics education programs focused on needs of different work groups. Increase number of in-person presentations.

Update employee orientation materials, website content, and online training program and create new fact sheets and pamphlets on the most common ethics topics facing Metropolitan.

Workforce Development

Encourage training opportunities for Ethics Department staff to enhance competencies in governmental ethics and to broaden knowledge of Metropolitan operations. Utilize this knowledge in fine-tuning Ethics consultation, policy development and outreach efforts.

Management and Leadership

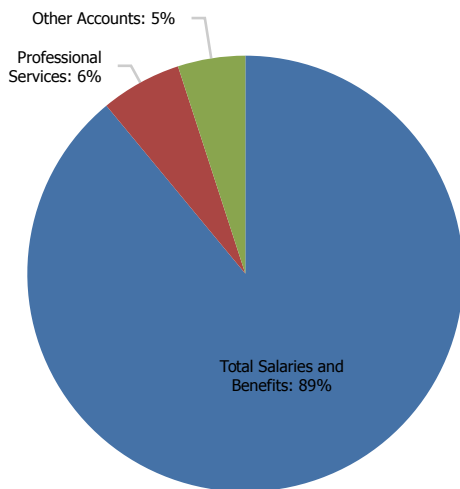
Efficiently manage the Ethics Office's budget for maximum effectiveness. Uphold the missions, roles, and responsibilities of the Ethics Office.

O&M FINANCIAL SUMMARY

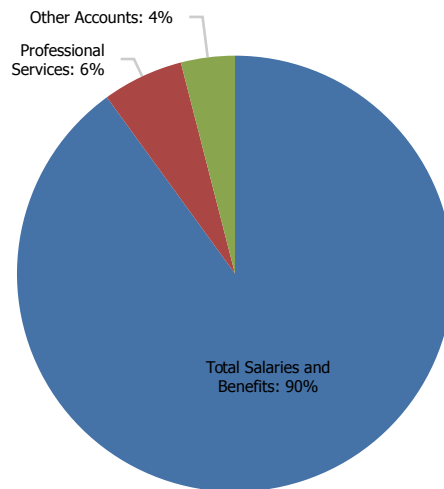
	2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Total Salaries and Benefits	1,167,700	1,227,900	1,247,300	19,400	1,299,700	52,400
<i>Direct Charges to Capital</i>	—	—	—	—	—	—
Total Salaries and Benefits	1,167,700	1,227,900	1,247,300	19,400	1,299,700	52,400
% Change		5.2%		1.6%		4.2%
Professional Services	47,400	85,000	85,000	—	85,000	—
Memberships & Subscriptions	13,400	15,000	15,000	—	15,000	—
Outside Services - Non Professional / Mainte	—	15,000	16,700	1,700	16,700	—
Rent & Leases	2,700	3,500	3,500	—	3,500	—
Subsidies & Incentives	10,000	13,000	13,000	—	13,000	—
Training & Seminars Costs	2,600	6,000	6,000	—	6,000	—
Travel Expenses	4,700	6,000	6,000	—	6,000	—
Other Accounts	16,900	4,600	3,500	(1,100)	3,500	—
Total O&M	1,265,400	1,376,000	1,396,000	20,000	1,448,400	52,400
% Change		8.7%		1.5%		3.8%

Note - Totals may not foot due to rounding.

FY 2018/19 BUDGET BY EXPENDITURE



FY 2019/20 BUDGET BY EXPENDITURE



PERSONNEL SUMMARY

		2016/17 Actual	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Regular	Total	4	5	5	0	5	—
	O&M	4	5	5	0	5	—
	Capital	—	—	—	—	—	—
Temporary	Total	1	—	—	—	—	—
	O&M	1	—	—	—	—	—
	Capital	—	—	—	—	—	—
Total Personnel	Total	5	5	5	0	5	—
	O&M	5	5	5	0	5	—
	Capital	—	—	—	—	—	—

Note – Totals may not foot due to rounding.

BUDGET HIGHLIGHTS

The Ethics Office’s Biennial Budget is \$1.4 million in FY 2018/19 and \$1.4 million in FY 2019/20 or an increase of 1.5% and 3.8% respectively from the prior budget years. The increase is due primarily to the following:

- Salaries and Benefits reflect negotiated labor increases and merit increases for qualified employees.
- Professional Services and non-labor budgets remain flat over the biennium.

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STAFFING SUMMARY

Group/Department	2016/17 Actual	2017/18 Budget	2018/19 Budget	2019/20 Budget
Regular Employees				
Office of the General Manager	33	35	37	37
Water System Operations	866	951	948	948
Water Resource Management	60	67	68	68
Engineering Services	330	355	355	355
Office of the Chief Administrative Officer	86	98	97	98
Information Technology	118	130	130	134
Human Resources	38	38	42	42
Real Property	34	40	50	50
Office of the Chief Financial Officer	46	49	49	49
External Affairs	67	70	71	71
Subtotal Department	1,678	1,833	1,847	1,852
Office of Ethics	4	5	5	5
Office of the General Auditor	10	12	12	12
Office of the General Counsel	34	36	36	36
Subtotal Regular Employees	1,726	1,886	1,900	1,905
Temporary Employees	0	0	0	0
District Temporary	43	20	22	23
Agency Temporary	7	4	4	4
Subtotal Temporary Employees	50	24	27	27
Total Authorized Positions	—	1,910	1,927	1,932
Unfunded / Vacancy	—	(69)	(64)	(64)
Total Employees	1,776	1,841	1,862	1,868

Note – Totals may not foot due to rounding.

OPERATING EQUIPMENT SUMMARY

Classification	2018/19 Quantity	2018/19 Amount	2019/20 Quantity	2019/20 Amount
Aircraft	0	0	1	2,700,000
Audio Visual	0	0	19	130,772
Automobiles	3	98,112	4	129,199
Boats	0	0	1	39,330
Communication Equipment	4	393,300	0	0
Construction/Shop/Maint Equip	27	509,914	7	803,761
CPU's, Laptops & Servers	26	790,680	23	542,973
Heavy Equipment	12	2,271,732	7	855,013
Lab Equipment	13	601,203	3	358,551
Monitoring Equipment	28	767,084	0	0
Office Equipment	3	33,167	0	0
Other Equipment	11	468,573	2	479,967
Printers	5	186,455	0	0
Trucks	53	2,401,857	19	915,850
Grand Total	185	8,522,076	86	6,955,417

Note – Totals may not foot due to rounding.

PERFORMANCE MEASURES

Performance Measure	Measurement Intent	FY 16/17 Performance	FY 17/18 Performance*	Target
Delta Milestones	Coordinate with stakeholders and other public water agencies to complete a Final EIR/EIS and present updates to the Board on the status of the CA WaterFix and EcoResore.	93%	95%	95%
	Develop and collaborate on near-term and drought related measures that improve water reliability, quality, and ecosystem health	95%	95%	95%
	Pursue the best scientific research to protect and restore fish, wildlife, and the Delta's ecosystem while ensuring water supply reliability.	96%	95%	95%
	Identification and development of measures toward achieving emergency response and other short-term Delta solutions.	90%	93%	95%
Credit Rating	Enable Metropolitan to access capital markets at the lowest borrowing cost.	Moody's Aa1 S&P - AAA Fitch - AA+	Moody's Aa1 S&P - AAA Fitch - AA+	AA, Aa2 or better
Maintain Reserve Balances	Ensure financial strength by managing reserves to within Board-established policy.	\$372 M	\$412 M	Between \$247 M & \$601 M for FY 16/17 Between \$257 M & \$627 M for FY 17/18
Fixed Charge Coverage	Demonstrate sufficiency of revenues to cover fixed charges.	1.4	1.3	≥1.2
Public and Media Awareness	Monitor awareness of critical water issues to gauge effectiveness of outreach efforts as a percent of organizations reached with Metropolitan's message.	Media – 98.3% Legislative – 228.3%	Media – 100% Legislative – NA	≥85%

Performance Measure	Measurement Intent	FY 16/17 Performance	FY 17/18 Performance*	Target
Implement Legislative Strategy	Measure passage of Metropolitan-supported legislation as a measure of the effectiveness of efforts in support of water policy issues.	89%	89%	≥85%
Member Agency Service Satisfaction	Monitor Member Agency Service Level Satisfaction Index as an indicator of value of Metropolitan services to our customers.	45%	45%	≥ 80% (rating of "5" or better)
Unexpected Outages	Monitor water system maintenance and operations reliability to ensure undisrupted water service.	3	2	0 service shutdowns
Meet All Scheduled Water Deliveries	Monitor reliability of water delivery as an indicator of effectiveness of maintenance activities and replacement and improvement projects.	100%	100%	100%
Prioritize Maintenance	Optimize maintenance processes to ensure timely completion of preventative maintenance (PM) work.	90%	93%	> 90%
CRA Power	Secure economical power for CRA pumping needs.	100%	100%	100%
Electrical Reliability	Meet electrical reliability standards to pass all annual audits and inspections.	100%	100%	100%
Complete Regulatory Maintenance	Ensure timely completion of regulatory preventive maintenance work orders.	97%	98%	>99%
Aqueduct Readiness	Maintain eight-pump flow readiness to ensure conveyance reliability	Testing deferred until flows permit additional pumps	Testing deferred until flows permit additional pumps	One stable test at eight-pump flow (1,750 cfs) annually.
Hydropower Generation	Optimize hydropower generation by minimizing power revenues lost to forced outages.	0%	0%	< 5% of power revenue lost

Performance Measure	Measurement Intent	FY 16/17 Performance	FY 17/18 Performance*	Target
Emergency Preparedness	Prepare for emergencies by conducting three emergency response exercises at all operational units annually.	75	33	≥39
O&M Training	Ensure O&M employees complete training in accordance with training plans	87%	87%	≥ 90%
Apprenticeship Program	Ensure sufficient apprentices graduate to meet O&M needs.	21	17	≥15 graduates annually
Compliance with Drinking Water Standards	Ensure that all state, federal, and local water quality standards are met or exceeded.	100%	100%	100%
Total Dissolved Solids (TDS) mg/l	Monitor water quality compliance with the Board of Directors' salinity goals.	621 mg/l	795mg/l	≤ 500 mg/l
Water Quality Satisfaction	Strive to minimize the number of customer complaints reported from member agencies as an indicator of overall water quality satisfaction.	3	2	< 10 complaints annually
Water Quality Regulatory Process	Actively engage in providing written comments on all applicable water quality regulations and public health determinations.	100%	100%	100%
Source Water Quality	Actively protect source water quality by engaging stakeholders on each recommendation from the 2012 Colorado River sanitary survey	71%	50%	100% completion by 2020
Environmental Compliance	Ensure compliance with all environmental permit requirements	99%	99%	100%
Manage SWP, supply programs and demand management program	Manage SWP, supply program, and demand management program expenditures within budget	83%	99%	100%

Performance Measure	Measurement Intent	FY 16/17 Performance	FY 17/18 Performance*	Target
Manage storage resources	Manage storage resources to capture or deliver all available contractual imported supplies	100%	100.0%	100%
Worker Safety	Ensure worker safety by enacting practices that minimize the injury/illness rate.	4.0	3.75	< 6.9 incidents/year/100 employees
Identify and manage supplies and programs	Identify and manage supplies and programs sufficient to meet demands	100%	100%	100%
Final Design Cost as a percentage of Construction Cost	Ensure costs are compatible with industry standards of similar agencies by measuring for cost efficiency and value-added feature	8.1% 13.6%	9.5% 11.5%	9% – 12% (Const. Costs > \$3 M) 9% – 15% (Const. Costs ≤ \$3 M)
Construction Inspection Cost as a percentage of Construction Cost	Ensure costs are comparable to industry standards of similar agencies	8.5% 10.3%	11.6% 11.0%	9% – 12% (Const. Costs > \$3 M) 9% – 15% (Const. Costs ≤ \$3 M)
Number of Leases Negotiated at or above FMV	Monitor number of existing leases and new leases negotiated at or above Fair Market Value.	100%	100%	100%
Revenue Generated from Real Property Activities	Track total revenue generated from all real property activities including but not limited to permits, licenses, leases, easements or other use fees.	\$5.6 M	\$3.0 M	\$6.8 M
Invoices paid on time	100% of valid invoices paid on time and in accordance with contract	82%	89%	100%
Departmental O&M Budget Performance	Demonstrate financial control and accountability	97.5%	115.0%	≤ 100%
Significant External Audit Findings	Assess the quality of accounting processes and controls	0	0	0

* Actual performance through March 2018

** Actual performance through December 2017

STATE WATER PROJECT

OVERVIEW

The SWP, which is managed and operated by the Department of Water Resources (DWR), is the largest state-built, multipurpose, user-financed water project in the country. It was designed and built primarily to deliver water, but also provides flood control, generates power for pumping, is used for recreation, and enhances habitat for fish and wildlife. The SWP provides irrigation water to 750,000 acres of farmland, mostly in the San Joaquin Valley, and provides municipal and industrial water to approximately 25 million of California's estimated 39.2 million residents.

The SWP consists of a complex system of dams, reservoirs, power plants, pumping plants, canals and aqueducts to deliver water. SWP water consists of water from rainfall and snowmelt runoff that is captured and stored in SWP conservation facilities and then delivered through SWP transportation facilities to water agencies and districts located throughout the Upper Feather River, Bay Area, Central Valley, Central Coast, and Southern California. Metropolitan receives water from the SWP through the California Aqueduct, which is 444 miles long, and at four delivery points near the northern and eastern boundaries of Metropolitan's service area. The budgeted costs for the SWP are as follows:

SWP Cost Summary, \$ millions¹

	2016/17 Actuals	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Delta Water Charge: Capital	\$36.9	\$39.4	\$38.1	(\$1.3)	\$38.7	\$0.6
Delta Water Charge: OMP&R	91.2	105.3	91.6	(13.7)	96.2	4.6
Transportation Capital	131.3	139.8	130.9	(8.9)	125.3	(5.6)
Transportation OMP&R	124.6	184.0	175.3	(8.7)	195.4	20.1
Power, Variable	165.8	162.8	163.7	0.9	172.4	8.7
Power, OAPF	2.9	5.8	3.6	(2.2)	2.4	(1.2)
Credits	(46.6)	(37.9)	(40.2)	(2.3)	(41.0)	(0.8)
CA WaterFix	—	—	\$3.6	\$3.6	\$13.0	\$9.5
SWP Total¹	\$506.2	\$599.2	\$566.7	(\$32.6)	\$602.5	\$35.9
SWC Dues	\$3.3	\$4.4	\$4.7	\$0.3	\$4.7	\$0.1
Acre-feet delivered	1,269,612	767,675	907,920	140,245	906,675	(1,245)

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

Annually, the DWR reviews and redetermines the water supply and financial aspects of the SWP as required by the SWC. This results in the annual Statement of Charges to the Contractors for each calendar year. The information that supports the Statement of Charges is published by the DWR as Appendix B to the appropriate Bulletin 132 (i.e., the Statement of Charges for Calendar Year 2018 is supported by Appendix B to Bulletin 132-17). DWR does not charge rates for water service. It does not develop a revenue requirement and then develop rates based on projected billing determinants for a calendar year. Rather, DWR apportions its costs to the Contractors based on their proportionate share of estimated supply costs (Delta Water Charge) and transportation costs (Transportation Charge).

Metropolitan's budgeted SWP costs are based on the 2018 Statement of Charges and supporting Appendix B. Power costs are estimated by Metropolitan assuming a 50 percent allocation and use of the Central Valley storage programs.

STATE WATER CONTRACT

All water supply-related capital expenditures and operations, maintenance, power and replacement (OMP&R) costs associated with the SWP conservation and transportation facilities are paid for by 29 agencies and districts, known collectively as the State Water Contractors (Contractors). Through Calendar Year 2016, Metropolitan has paid about 60 percent of the total payments to DWR by all Contractors. Metropolitan's financial records show that total accumulated amounts paid under the SWC are \$12.2 billion through fiscal year 2016/17. Metropolitan's SWC expires on December 31, 2035.

The Contractors have long-term contracts with DWR for the delivery of SWP water and use of the SWP transportation facilities. Metropolitan signed the first SWC on November 4, 1960, and received its first delivery of SWP water in 1972. Metropolitan has a contractual right to a proportionate share of the project water that DWR determines is available for allocation to the Contractors. This determination is made each year based on existing supplies in storage, forecasted hydrology, and other factors. Available project water is then allocated to the Contractors in proportion to the amounts set forth in Table A of their SWCs (Table A Allocation). Under its SWC, Metropolitan is entitled to roughly 46% of the annual Table A Allocation.

Since inception, the SWC provided Contractors the ability to use the SWP to convey non-SWP water under certain circumstances. Specifically, Article 18(c)(2) of the original SWC addresses situations where there is a shortage in the supply of water made available under the contract and states "[T]he District, at its option, shall have the right to use any of the project transportation facilities which by reason of such permanent shortage in the supply of project water to be made available to the District are not required for delivery of project water to the District, to transport water procured by it from any other source: [p]rovided, [t]hat such use shall be within the limits of the capacities provided in the project transportation facilities for service to the District under this contract". However, Article 18(c)(2) only applied in the event a permanent shortage was declared by DWR and it was unclear on how costs would be charged for using SWP facilities to transport nonproject water. In 1994, the Contractors and DWR negotiated the Monterey Amendment to the SWC, including Article 55, which made explicit that the Contractors' rights to use the portion of the SWP conveyance system necessary to deliver water to them (their "reaches") also includes the right to convey non-SWP water at no additional cost as long as capacity exists. Power for the conveyance of non-SWP water is charged at the SWP melded power rate. The Monterey Amendments also expanded the ability to carryover SWP water in SWP storage facilities, allowed Contractors to store water in groundwater storage facilities outside a Contractor's service area for later use, and permitted certain Contractors to borrow water from terminal reservoirs. These amendments, approved by Metropolitan's Board in 1995, offered the means for individual Contractors to increase supply reliability through water transfers and storage outside their service areas.

The SWC is predominantly a 'take-or-pay' agreement, with Contractors paying most water conservation and transportation costs regardless of the amount of water delivered. The charges to the Contractors include a SWP supply charge (Delta Water Charge) and a SWP transportation charge (Transportation Charge). The Delta Water Charge recovers both Capital and OMP&R costs for those facilities that conserve and create the actual

water supply of the SWP. The Delta Water Charge is based on Contractors' cumulative Table A Allocations, and is paid regardless of whether Contractors receive any Table A Allocations in a given year.

The Transportation Charge recovers the costs associated with the various aqueduct reaches that deliver project water to the Contractors. The Capital and fixed OMPR portions of the SWP Transportation Charge recover costs from the Contractors based on their proportionate use of facilities. Unlike the Delta Water Charge, which is uniform for a unit of Table A water, the allocation of these portions of the Transportation Charge will vary based on the aqueduct segments needed to deliver water to a specific Contractor. The further a Contractor is from the Delta and the greater its capacity in the transportation facilities, the greater its allocation of the Capital and fixed OMPR Transportation Charges. The capacity of the SWP to deliver water decreases with distance from the Banks Pumping Plant, located in the Sacramento–San Joaquin Delta, as water is delivered to Contractors through the South Bay Aqueduct and the Coastal Branch Aqueduct, and to turnouts in the San Joaquin Valley and Southern California. Payment of the Transportation Charge entitles Contractors to the right to use their capacity in the SWP facilities for transportation of SWP or non–SWP water, on a space available basis, under the SWC. A Contractor that participates in the repayment of a particular reach, or segment of the SWP, has already paid the costs of using that reach for the conveyance of water supplies through the Transportation Charge. On average, Metropolitan pays about 63 percent of SWP transportation costs.

In addition to the charges for water supply and transportation facilities discussed above, DWR also charges for the power needed to deliver project water throughout the system. Two charges recover these power costs: the variable OMPR portion of the Transportation Charge (Variable Charge) and the Off Aqueduct Power Facilities (OAPF) charge. Because the SWC are cost recovery contracts, DWR invoices Contractors on an estimated basis for any calendar year, and then provides credits in later years once cost true-ups are finished.

The Variable Charge includes the annually estimated cost of purchased power including capacity and energy, cost of SWP power generation facilities, program costs to offset annual fish losses at the Banks Pumping Plant, purchased transmission services, and credits for sales of ancillary services and excess SWP system power sales. The Variable Charge is calculated on the basis of the energy required to pump an acre-foot of water to its take-out point multiplied by the system energy rate, less energy from the recovery generation plants. The system energy rate is a system-wide average rate calculated as the net cost of energy--total costs less revenues--divided by the net energy required to pump all water. That rate is applied to each acre-foot of water delivered to SWP customer based on the power required to pump the water to designated delivery points on the system. DWR can adjust the system energy rate as the calendar year progresses in order to reflect actual costs

The OAPF charge recovers the debt service and environmental remediation costs of power generation facilities not on the aqueduct, namely Reid Gardner Unit 4 and debt service associated with the South Geysers and Bottle Rock geothermal plants. The OAPF rate is calculated as the total annual estimated costs divided by the total energy required to pump all water. Recovery energy is not considered in this calculation. Each contractor's charge is the OAPF rate times the energy required to pump the contractor's water order.

The SWP uses low-cost hydroelectric and recovery generation resources, but they only provide about 50 percent of the SWP energy needs in an average water year. The SWP relies on the wholesale market and contractual resources with exposure to market price volatility for as much as 30 to 35 percent of its needs, using other contractual resources to fill in the difference.

The SWP energy required to move water to Metropolitan is related to the transportation on the East Branch through Devil Canyon and on the West Branch through Castaic. Because Metropolitan moves the largest amount of water on the SWP and Metropolitan's delivery points on the East and West Branch are at or near the southern extreme of the SWP, Metropolitan pays approximately 70 percent of the SWP power costs.

Cost of SWP Power for Metropolitan Terminal Delivery Points, \$ per Acre-Foot

	CY 2013 DWR	CY 2014 DWR	CY 2015 DWR	CY 2016 DWR	CY 2017 Revised	CY 2018 Estimated	CY 2019 Estimated
East Branch	\$230.27	\$280.07	\$241.17	\$186.21	\$160.55	\$218.64	\$179.64
West Branch	\$215.61	\$270.03	\$226.58	\$175.85	\$170.57	\$219.53	\$191.50

The SWP energy costs are impacted by the energy policies of the state of California. The SWP is acquiring renewable resources, primarily solar to date, to meet its obligation to reduce greenhouse gas emissions. The SWP energy costs are also impacted by the increasing cost of using the California Independent System Operator’s (CAISO) grid to deliver power from its generating sources and the wholesale power market to its pumping loads. The SWP does not own high voltage transmission facilities and must use the CAISO grid to move power; the SWP is the largest payer of the CAISO transmission access rates. Finally, the SWP has an obligation to acquire and surrender emissions allowances for the generating facilities the SWP owns, primarily the Lodi Energy Center.

In total, through Calendar Year 2016, Metropolitan has paid about 60 percent of the total payments to DWR by all State Water Contractors.

BUDGET HIGHLIGHTS

The budget for the SWP is decreasing in FY 2018/19 compared to the FY 2017/18 budget due to efforts by DWR to better forecast expenditures for fish restoration and mitigation, and Delta Compliance program costs as well as capital improvements. Power costs are projected to be slightly higher due to higher water deliveries. FY 2019/20 projects an increase in O&M related costs, while Transportation Capital costs continue on a downward trend. The costs of the CA WaterFix are incorporated in the Biennial Budget, and contribute to the increase in SWP costs in FY 2019/20.

COLORADO RIVER AQUEDUCT

OVERVIEW

Metropolitan was established to obtain an allotment of Colorado River water, and its first mission was to construct and operate the Colorado River Aqueduct (CRA). The CRA consists of 5 pumping plants, 450 miles of high voltage power lines, 1 electric switching station, 4 regulating reservoirs, and 242 miles of aqueducts, siphons, canals, conduits and pipelines terminating at Lake Mathews in Riverside County. Metropolitan first delivered CRA water in 1941 to its member agencies.

Metropolitan owns, operates, and manages the Colorado River Aqueduct. Metropolitan is responsible for operating, maintaining, rehabilitating, and repairing the CRA, and is responsible for obtaining and scheduling energy resources adequate to power pumps at the CRA's five pumping stations.

Under its contracts with the federal government, Metropolitan has a fourth priority to 550,000 acre-feet per year of Colorado River water, less certain use by higher priority holders and Indian tribes. Metropolitan also holds a fifth priority for an additional 662,000 acre-feet per year that exceeds California's 4.4 million acre-foot per year basic apportionment, 38,000 acre-feet under the sixth priority during the term of the Colorado River Water Delivery Agreement, and another 180,000 acre-feet per year when surplus flows are available. Metropolitan can obtain water under the fourth, fifth, and sixth priorities from:

- Water unused by the California holders of priorities 1 through 3;
- Water saved by extraordinary conservation programs, crop rotation, and water supply program; or,
- When the U.S. Secretary of the Interior makes available:
 - o Surplus water, Intentionally Created Surplus water, and/or
 - o Water apportioned to, but unused by, Arizona and Nevada.

CRA Cost Summary¹, \$ millions

	2016/17 Actuals	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
CRA Power	\$26.2	\$54.4	\$45.8	(\$8.6)	\$52.9	\$7.1
CRA Dues ²	\$0.6	\$0.7	\$0.7	—	\$0.7	—
Acre-feet	831,482	1,040,976	837,900	(203,076)	915,550	77,650

¹Does not include Departmental costs reflected elsewhere in this Budget

²Six Agency and Colorado River Authority of California

Budgeted CRA Power costs represent expenditures for the Hoover and Parker contracts and market power purchases to support budgeted CRA water deliveries.

CRA COSTS FOR TRANSPORTATION AND SUPPLY

Metropolitan incurs capital and operations and maintenance expenditures to support the CRA activities. The direct costs of the CRA activities include labor, materials and supplies, outside services to provide repair and maintenance, and professional services. The CRA activities benefit from Water System Operations support services and management supervision, as well as Administrative and General activities of Metropolitan. Metropolitan finances past, current and future capital improvements on the CRA, and capitalizes those improvements as assets. The costs of Metropolitan’s capital financing activities are apportioned to service functions, such as the CRA.

The costs of the CRA supply portfolio developed by Metropolitan are paid by Metropolitan. The CRA supply portfolio is supported by Water Resource Management labor, materials and supplies. The CRA supply portfolio activities benefit from Water Resource Management support services and management supervision, as well as Administrative and General activities of Metropolitan. Metropolitan finances past, current and future capital improvements associated with the CRA supply portfolio capital assets and has capitalized these investments as Participation Rights.

Accordingly, the CRA costs for transportation and supply are reflected in the Departmental and General District Requirements budgets.

CRA COST FOR POWER

Metropolitan currently has three basic sources of power available to meet CRA energy requirements: Hoover Power, Parker Power, and wholesale purchases from entities in the Western United States. Each source is obtained at different unit prices.

Cost of CRA Power Sources, \$ per Megawatt-hour (MWh)

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Hoover ¹	\$18.60	\$29.74	\$15.84	\$15.36	\$17.86
Parker ¹	\$9.33	\$12.41	\$13.55	\$12.58	\$15.40
SP15, off-peak ²	\$33.15	\$40.24	\$33.15	\$24.97	\$26.48
SP15, on-peak ³	\$45.38	\$50.90	\$40.68	\$30.13	\$33.46

¹Information from Annual Reports for years 2013, 2014, 2015, 2016, and 2017

²SP15, off-peak price, described below, is used to determine Metropolitan’s off-peak energy costs.

³SP15, on-peak, described below, is used to determine the market value of Metropolitan’s sales of excess energy, if any. SP15 on-peak is also used to determine the pumping costs associated with pumping non-Metropolitan water through the CRA system, unless otherwise provided by contract.

Under a contract between the United States, Department of Energy, Western Area Power Administration, and Metropolitan, Metropolitan currently has a right to approximately 250 megawatts (MW) of capacity at the Hoover Power Plant, which is about 12 percent of the total generating capacity. Metropolitan has an annual firm energy entitlement of 1,227 megawatt-hours (MWh), which is about 27 percent of the total Boulder Canyon Project (Hoover) firm energy allocations. Hoover Power Plant generation is cost-based. Metropolitan acquired the benefits of the low-cost, federally funded hydroelectric plant in order to cost-effectively deliver Metropolitan’s Colorado River water to its member agencies.

Under a contract among the United States, Department of the Interior, Bureau of Reclamation (Reclamation) and Metropolitan, Metropolitan funded the total cost of construction of Parker Dam and incidental facilities, and 50 percent of the construction cost of the Parker Powerplant. By providing the funding contribution, Metropolitan is entitled in perpetuity to 50 percent of the capacity and energy of the four Parker generating units, which is approximately 60 MW of capacity. Parker power is also cost-based. Like Hoover power, Metropolitan acquired the benefits of the low-cost, federally funded hydroelectric plant in order to cost-effectively deliver Metropolitan's Colorado River water to its member agencies.

Metropolitan's current basic resource mix is very cost effective but is not sufficient to pump Metropolitan's Colorado River water supplies in all years. For that reason, Metropolitan is required to purchase supplemental power to transport Colorado River water supplies in some years. As a result, Metropolitan requires that any party seeking to transport non-Metropolitan water through its Colorado River Aqueduct to purchase, or arrange for Metropolitan to purchase, the power supplies required to pump that water. The amount of power required to pump an acre-foot of water through the CRA is 2,000 kilowatt-hours. Any Colorado River water that is pumped through Metropolitan's CRA is diverted above Parker Dam and cannot generate energy for Metropolitan's use at the Parker Powerplant. To compensate for this loss, an additional 32 kilowatt-hours per acre-foot are required to make Metropolitan whole for undertaking to pump non-Metropolitan water through the CRA that would otherwise have flowed through the Parker Powerplant. In total, 2,032 kilowatt-hours (or 2.032 megawatt-hours) of energy must be provided to Metropolitan to convey each acre-foot of non-Metropolitan water supplies through the CRA.

Supplemental power can be purchased and transmitted to Metropolitan to pump non-Metropolitan water through the CRA. The market rate for electric energy prices is regularly tracked and published for various regions in California. Metropolitan uses the California Independent System Operator (CAISO) Open Access Same-time Information System (OASIS) Day-Ahead Locational Marginal Price as reflective of the supplemental power costs for electric energy used for its pumping plants on the CRA. The regional index applicable to energy sold for use on the CRA is designated as "South-of-Path 15", or SP15, and is reflective of Southern California market energy prices.

Any party seeking to pump non-Metropolitan water through the CRA would have to purchase, or arrange for Metropolitan to purchase on its behalf, supplemental power. The market cost for purchases of power for the CRA is reflected in the CAISO OASIS Day-Ahead Locational Marginal Price. Because Metropolitan utilizes the pumping capacity on the CRA for its own water supplies during off-peak hours to minimize its costs, the pumping of non-Metropolitan water would occur during on-peak hours and the on-peak price index published on the CAISO OASIS Day-Ahead Locational Marginal Price is indicative of the price that would be paid to pump non-Metropolitan water.

Metropolitan from time to time sells excess energy into the wholesale market and realizes revenues, which offset the total cost of energy as reflected in the System Power Rate. If Metropolitan were to deliver additional water through the CRA, these sales become a lost opportunity. The on-peak price index published on the CAISO OASIS Day-Ahead Locational Marginal Price is indicative of the price that Metropolitan could realize by selling excess energy.

South-of-Path 15 On-Peak Energy Prices, \$/MWh

	CY 2013	CY 2014	CY 2015	CY 2016	CY 2017
January	\$46.15	\$49.53	\$35.70	\$30.14	\$36.22
February	\$46.45	\$71.85	\$31.88	\$24.47	\$28.52
March	\$51.39	\$52.06	\$30.73	\$19.61	\$23.97
April	\$56.34	\$51.19	\$29.03	\$18.92	\$26.71
May	\$51.49	\$51.85	\$28.11	\$23.06	\$32.08
June	\$47.77	\$50.90	\$37.01	\$33.41	\$38.14
July	\$51.74	\$53.18	\$39.27	\$39.03	\$41.49
August	\$45.44	\$50.47	\$39.02	\$38.57	\$54.96
September	\$48.91	\$51.49	\$38.00	\$35.55	\$43.18
October	\$42.82	\$49.06	\$35.55	\$35.45	\$47.86
November	\$44.13	\$49.28	\$30.22	\$30.67	\$44.82
December	\$52.14	\$41.80	\$29.83	\$36.40	\$44.21

MWh = megawatt-hour, or 1,000 kilowatt-hours

Metropolitan has an obligation to acquire and surrender emissions allowances for the fossil-fuel energy generated out-of-state and imported into California through its 230,000 volt transmission system. Alternatively, Metropolitan can purchase power in California, which already incorporates any necessary emissions allowances, but must pay to use the California Independent System Operator transmission network. Metropolitan has contracted with Arizona Electric Power Cooperative (AEP) to provide energy management and scheduling services on a per Megawatt-hour basis. AEP also provides operational services for Metropolitan's CRA transmission system, assuring compliance with federal reliability requirements. Finally, Metropolitan's CRA power system is within the Balancing Authority Area of the CAISO; Metropolitan incurs Grid Management Charges from the CAISO on a per Megawatt-hour basis, and may realize a Resource Adequacy obligation depending on its pumping load and available firm resources.

BUDGET HIGHLIGHTS

The budget for the CRA power is decreasing in FY 2018/19 and FY 2019/20 compared to FY 2017/18 due to lower diversions at Intake. In FY 2019/20, costs are slightly higher due to the increase in diversions over FY 2018/19 and higher projected wholesale costs.

SUPPLY PROGRAMS

OVERVIEW

Metropolitan’s principal sources of water supplies are the SWP and the Colorado River. Metropolitan receives water delivered from the SWP under SWC provisions, including contracted supplies, use of carryover storage in San Luis Reservoir, and surplus supplies. Metropolitan also holds rights to a basic apportionment of Colorado River water and has priority rights to an additional amount from the Colorado River depending on availability of surplus supplies. The Supply Programs supplement these SWP and Colorado River supplies. The budgeted costs for the Supply Programs are as follows:

Supply Programs Cost Summary, \$ millions

	2016/17 Actuals	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
PVID Program	\$16.1	\$18.0	\$12.6	(\$5.4)	\$6.2	(\$6.4)
IID/MWD Conservation	8.2	11.0	9.2	(1.8)	9.5	0.3
Other CRA	14.8	23.6	10.8	(12.8)	9.3	(1.5)
In Basin	1.1	1.6	1.6	0.0	1.6	0.0
SWP Programs	3.9	27.5	27.0	(0.5)	27.8	0.8
Total Supply Programs¹	\$44.1	\$81.7	\$61.2	(\$20.5)	\$54.4	(\$6.8)

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

Budgeted Supply Programs costs represent opportunities and actions associated with a 50 percent SWP allocation and diversions on the CRA of 838 to 916 thousand acre–feet (TAF). On the SWP, Supply Program expenditures support maximizing storage capabilities of the Central Valley storage programs, utilizing transfer and exchange programs recently executed, and bringing the balance into the region. On the CRA, the expenditures support the Palo Verde Irrigation District land fallowing program and the Imperial Irrigation District/Metropolitan Conservation Program, as well as other programs to conserve and develop supplies.

SUPPLY PROGRAMS HAVE BEEN DEVELOPED TO CONVEY ON THE SWP TRANSPORTATION SYSTEM

Since inception, the SWC provided Contractors the ability to use the SWP to convey non–SWP water under certain circumstances. Specifically, Article 18(c)(2) of the original SWC addresses situations where there is a shortage in the supply of water made available under the SWC and states, “[T]he District, at its option, shall have the right to use any of the project transportation facilities which by reason of such permanent shortage in the supply of project water to be made available to the District are not required for delivery of project water to the District, to transport water procured by it from any other source: [p]rovided, [t]hat such use shall be within the limits of the capacities provided in the project transportation facilities for service to the District under this contract” However, Article 18(c)(2) only applied in the event a permanent shortage was declared by DWR and it was unclear on how costs would be charged for using SWP facilities to transport nonproject water. In 1994, the Contractors and DWR negotiated the Monterey Amendment to the SWC, including Article 55, which made explicit that the Contractors’ rights to use the portion of the SWP conveyance system necessary to deliver water to them (their “Reaches”) also includes the right to convey non–SWP water at no additional cost as long as capacity exists. Power for the conveyance of non–SWP water is charged at the SWP melded power rate. The

Monterey Amendment also expanded the ability to carry over SWP water in SWP storage facilities, allowed participating Contractors to borrow water from terminal reservoirs, and allowed Contractors to store water in groundwater storage facilities outside a Contractor's service area for later use.

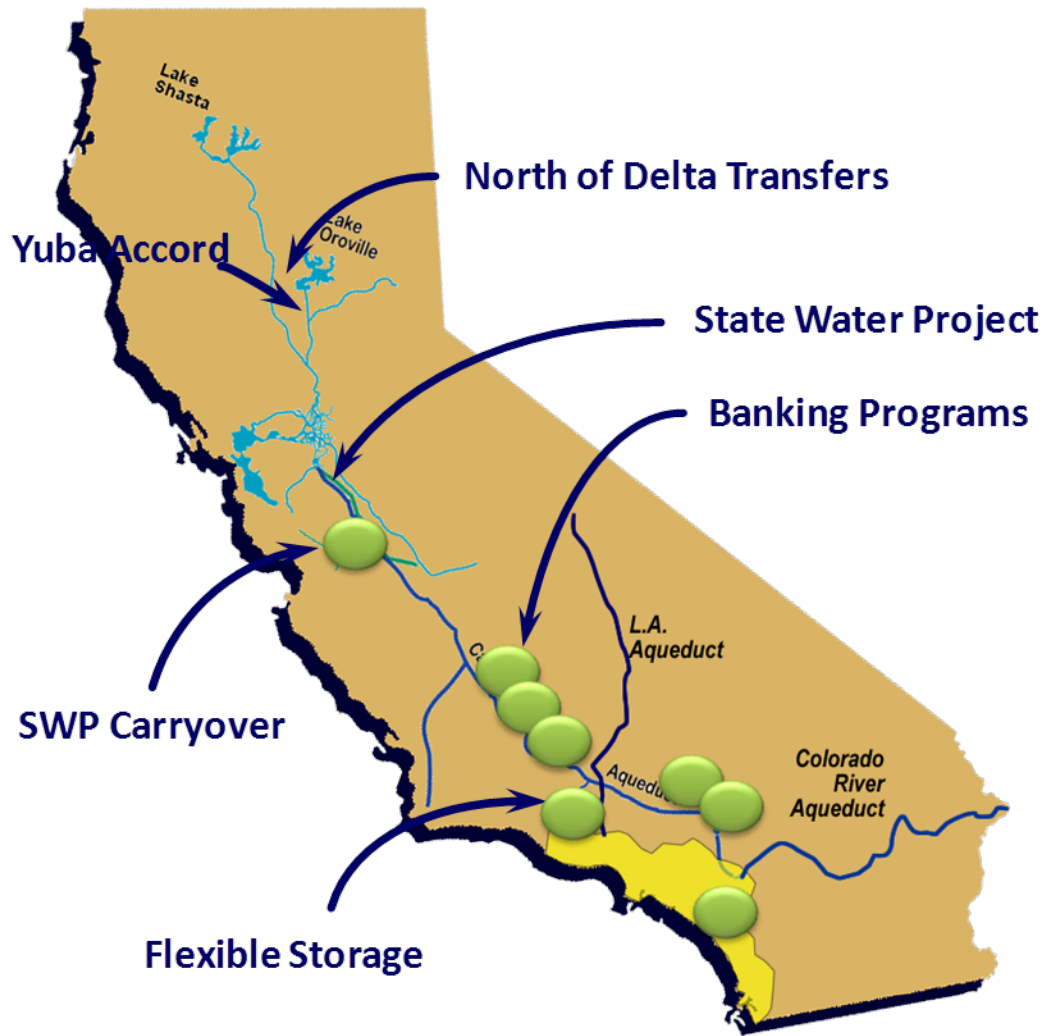
These amendments, approved by Metropolitan's Board in 1995, offered the means for individual Contractors to increase supply reliability through water transfers, and storage outside their service areas.

Since adoption of the 1996 Integrated Resources Plan (IRP) and subsequent updates, Metropolitan has developed and actively managed a portfolio of supplies to convey through the California Aqueduct. Metropolitan submits delivery schedules to DWR for these supplies, and alters these schedules throughout the year based on changes in the availability of SWP and Colorado River water. The figure below shows the geographic location of the portfolio of supplies that Metropolitan has developed to be conveyed through the SWP since adoption of the Monterey Amendment and the 1996 IRP. These resources extend from north of the Delta to Southern California.

Since the Monterey Amendment, Metropolitan has secured one-year water transfer supplies through Metropolitan-only purchases, buyer coalition-purchases, and Governor Drought Water Banks. The most recent years in which these one-year transactions occurred were 2008 through 2010, 2013 and 2015. No purchases were made in 2011, 2012, or 2016 due to favorable water supply conditions. Most of the sellers were Sacramento Valley water users who are not Contractors. Other Contractors obtained one-year water transfers during this timeframe as well.

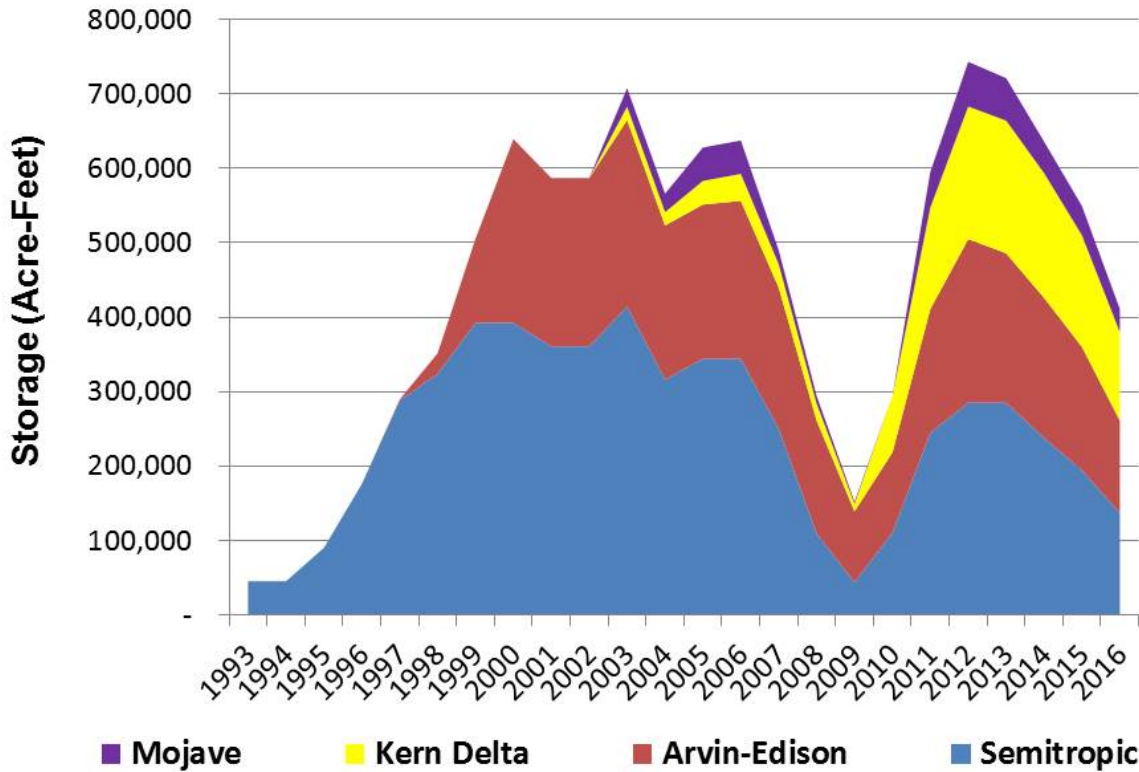
In addition to the one-year water transfers, Metropolitan purchases long-term water transfer supplies through the Yuba Accord. The Yuba Accord has provided water to enhance SWP and CVP water supply reliability by offsetting Delta export reductions and providing dry year water supplies for participating SWP and CVP contractors. This water is Yuba River water developed by Yuba County Water Agency (YCWA) making reservoir releases or by YCWA's member units substituting groundwater for their surface water supplies; it is not SWP water.

California Aqueduct Portfolio of Supplies



Metropolitan also has developed groundwater storage agreements that allow Metropolitan to store available supplies in the Central Valley for return later. Metropolitan enters into agreements with DWR to deliver water supplies from the SWP facilities to these storage programs. Metropolitan enters into agreements for introduction of local supplies to return these water supplies to the SWP system for delivery to Metropolitan. The year-end balances of Metropolitan’s SWP storage activities are shown in the graph below.

SWP Groundwater Storage Programs year-end balance, acre-feet



- **Mojave Storage Program:** under the agreement, Mojave Water Agency provides groundwater banking and exchange transfers to allow Metropolitan to store up to 390,000 acre-feet for later return. The agreement allows Metropolitan to annually withdraw Mojave Water Agency’s SWP contractual amounts, after accounting for local needs.
- **Kern Delta Storage Program:** under the agreement, Kern Delta Water District provides groundwater banking and exchange transfer to allow Metropolitan to store up to 250,000 acre-feet of SWP water in wet years and take up to 50,000 acre-feet annually during droughts. The water is returned by direct groundwater pump-in or by exchange of surface water supplies.
- **Arvin-Edison Storage Program:** under the agreement, Arvin-Edison Water Storage District stores water on behalf of Metropolitan. Up to 350,000 acre-feet can be stored; Arvin-Edison is obligated to return up to 75,000 acre-feet of stored water in any year to Metropolitan, upon request. The water is returned by direct groundwater pump-in and exchange of SWP supplies.
- **Semitropic Storage Program:** under the agreement, Metropolitan stores water in the groundwater basin underlying land within the Semitropic Water Storage District. The maximum storage capacity is 350,000 acre-feet. As of December 2014, the minimum annual yield to Metropolitan is 34,700 acre-feet, and the maximum annual yield is 236,200 acre-feet depending on the available unused capacity and the SWP allocation. The water is returned by direct groundwater pump-in and exchange of SWP supplies.

- Antelope Valley East Kern (AVEK) Storage and Exchange Program: under the agreement, AVEK provides at least 30,000 acre–feet over ten years of its unused SWP Table A amount to Metropolitan and Metropolitan, at its discretion, would return half of the exchange water to AVEK at the Banks pumping plant. Under the Storage Program, Metropolitan, at its discretion, could store at least 30,000 acre–feet of its SWP Table A amount or other supplies in the Antelope Valley Groundwater Basin in an account designated for Metropolitan.

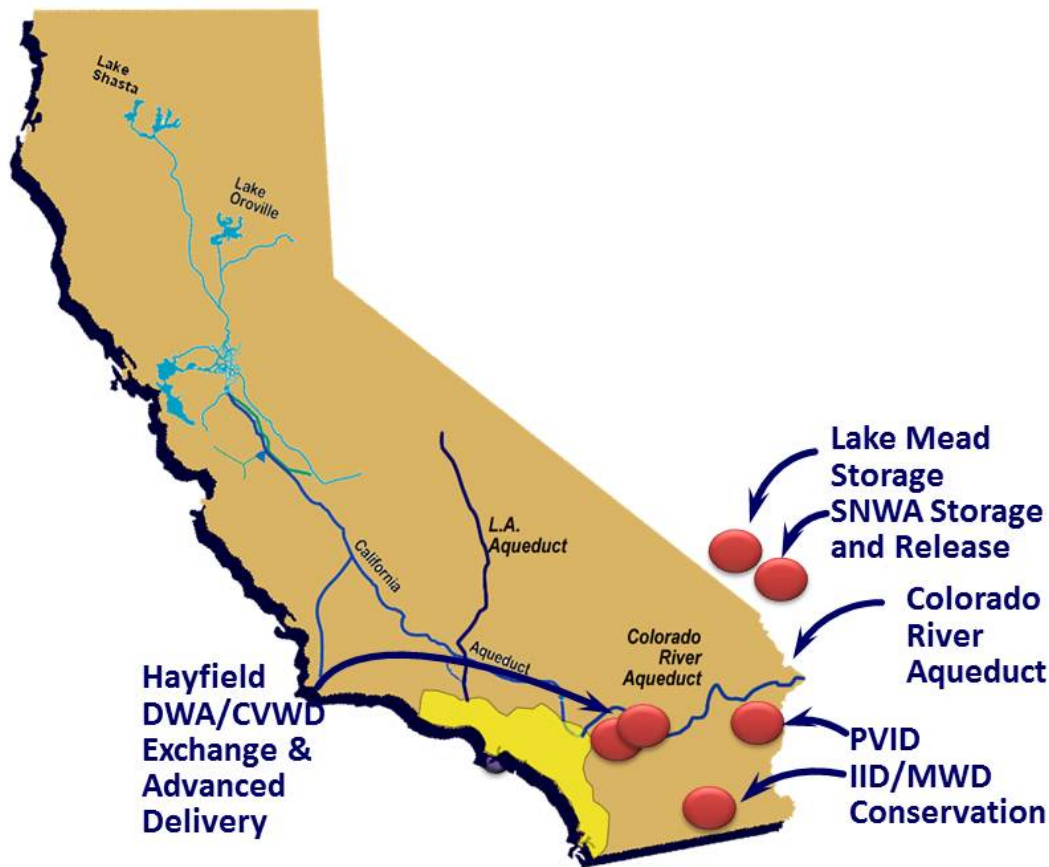
Metropolitan has developed exchanges and transfers with other Contractors to enhance supply flexibility. Some of these agencies have extensive groundwater supplies and are willing to exchange their SWP supplies.

- San Gabriel Valley Water District: under this agreement, Metropolitan delivers treated water to a San Gabriel Valley Water District subagency in exchange for twice as much untreated SWP supplies delivered into the groundwater basin that supplies this agency and Metropolitan subagencies. Metropolitan can purchase at least 5,000 acre–feet per year, in excess of the unbalanced exchange amount. There are no fees to put water into storage, or take water out of the storage account. This program has the potential to increase Metropolitan’s reliability by providing 115,000 acre–feet through 2035.
- Desert Water Agency/Coachella Valley Water District Advance Delivery Program: under this program, Metropolitan delivers Colorado River water to the Desert Water Agency (DWA) and Coachella Valley Water District (CVWD) in exchange for those agencies’ SWP Contract Table A allocations to be delivered to Metropolitan at a later date. In addition to their Table A supplies, DWA and CVWD can take delivery of SWP supplies available under Article 21 of the SWC and the Turn–back Pool Program, and non–SWP supplies separately acquired by each agency. These non–SWP supplies have included Yuba Accord water, drought water bank water, and San Joaquin Valley water. Thus the availability of other water sources allows DWA and CVWD to exchange their Table A supplies with Metropolitan. By delivering enough water in advance to cover Metropolitan’s exchange obligations, Metropolitan is able to receive DWA and CVWD’s available SWP supplies in years in which Metropolitan’s supplies are insufficient without having to deliver an equivalent amount of Colorado River water.

SUPPLY PROGRAMS HAVE BEEN DEVELOPED TO CONVEY ON THE CRA

Since adoption of the 1996 Integrated Resources Plan (IRP) and subsequent updates, Metropolitan has developed and actively manages a portfolio of supplies to convey through the CRA, and as owner and operator, determines the delivery schedule of those resources throughout the year based on changes in the availability of SWP and Colorado River water. The figure below shows the geographic location of the portfolio of supplies that Metropolitan has developed for diversion into the CRA since adoption of the 1996 IRP. These resources extend from Lake Mead to Southern California.

Colorado River Aqueduct Portfolio of Supplies



- Imperial Irrigation District/Metropolitan Conservation Program:** Under a 1988 Conservation Agreement, Metropolitan has funded water efficiency improvements within the Imperial Irrigation District's (IID) service area in return for the right to divert the water conserved by those investments. Metropolitan provided funding for IID to construct and operate a number of conservation projects that have conserved up to 109,460 acre-feet of water per year that has been provided to Metropolitan. In 2015, 107,820 acre-feet of conserved water is being made available by IID to Metropolitan. Execution of the QSA and other agreement amendments resulted in changes in the availability of water under the program. As a result of a 2014 IID-Metropolitan letter agreement, the amount to be made available by IID has been quantified at 105,000 acre-feet per year beginning in 2016. Metropolitan is guaranteed at least 85,000 acre-feet per year, with the remainder of the conserved water being made available to CVWD, if needed under the 1989 Approval Agreement as amended.
- Palo Verde Land Management, Crop Rotation, and Water Supply Program:** Under this program, participating landowners in the Palo Verde Irrigation District (PVID) are paid to reduce water use by not irrigating a portion of their land. A maximum of 29 percent of the participating lands within the Palo Verde Valley can be fallowed in any given year. This program saves up to 133,000 acre-feet of water in certain years, and a minimum of 33,000 acre-feet per year. The term of the program is 35 years. Fallowing began on January 1, 2005. In March 2009, Metropolitan and PVID entered into a supplemental emergency fallowing program within PVID that provided for the fallowing of additional acreage in 2009 and 2010. Since 2005, as much as 148,600 acre-feet of water was saved. The volume of water that becomes available to Metropolitan is governed by the QSA and the Colorado River Water Delivery Agreement. Under these agreements:

- o Metropolitan must reduce its consumptive use of Colorado River water by that volume of consumptive use by PVID and holders of Priority 2 that is greater than 420,000 acre-feet in a calendar year, or
- o Metropolitan may increase its consumptive use of Colorado River water by that volume of consumptive use by PVID and holders of Priority 2 that is less than 420,000 acre-feet in a calendar year.

In both cases, each acre-foot of reduced consumptive use by PVID is an additional acre-foot that becomes available to Metropolitan.

- All-American and Coachella Canal Lining Projects: Metropolitan has historically taken delivery of 16,000 acre-feet of water annually as a result of the All-American and Coachella Canal Lining Projects. Under the San Luis Rey Indian Water Rights Settlement Agreement, that water will be made available for the benefit of the La Jolla, Pala, Pauma, Rincon and San Pasqual Bands of Mission Indians, the San Luis Rey River Indian Water Authority, the City of Escondido and the Vista Irrigation District. Beginning in 2018, the settlement parties will receive 16,000 acre-feet of water under the agreement.
- Southern Nevada Water Authority and Metropolitan Storage and Interstate Release Agreement: Under this 2004 agreement and a related Operational Agreement, additional Colorado River water supplies are made available to Metropolitan when there is space available in the CRA to receive the water, subject to a request by Southern Nevada Water Authority (SNWA) for Metropolitan to reduce its Colorado River water order to return a portion of this water. In 2009, 2012, and 2015, Metropolitan, the Colorado River Commission of Nevada, and SNWA amended the related Operational Agreement. The agreements can be terminated upon 90 days' notice following the return of the water stored by Metropolitan.
- Lower Colorado Water Supply Project: Under a contract among Metropolitan, the City of Needles, and the United States Bureau of Reclamation, Metropolitan receives annually exchange water unused by the City of Needles and other entities who have no rights or insufficient rights to use Colorado River water in California. The beneficiaries of the project, including the City of Needles, receive water exchanged for groundwater pumped from wells into the All-American Canal. Metropolitan makes payments to a trust fund to develop a replacement project or to desalt the groundwater should the groundwater become too saline for discharge into the All-American Canal.
- Lake Mead Storage Program: In December 2007, Metropolitan entered into agreements to set forth the guidelines under which Intentionally Created Surplus (ICS) water is developed, and stored in and delivered from Lake Mead. The amount of water stored in Lake Mead, created through extraordinary conservation, system efficiency, or tributary conservation methods, is available for delivery in a subsequent year, with extraordinary conservation ICS subject to a one-time deduction and evaporation losses. Extraordinary conservation methods used by Metropolitan to date are water saved by fallowing in the Palo Verde Valley, projects implemented with IID in its service area, and groundwater desalination. The guidelines concerning the operation of the Colorado River system reservoirs provide the ability for agencies to create "System Efficiency ICS" through the development and funding of system efficiency projects that save water that would otherwise be lost from the Colorado River. Metropolitan has participated in two projects to create System Efficiency ICS:
 - o Drop 2 (Warren H. Brock) Reservoir: Metropolitan contributed funds toward the Bureau of Reclamation's construction of an 8,000 acre-foot off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County. This reservoir conserves about 70,000 acre-feet of water per year by capturing and storing otherwise non-storable flow. In return for its funding, Metropolitan received 100,000 acre-feet of water that was stored in Lake Mead, and has the ability to receive up to 25,000 acre-feet of water in any single year. Besides the additional water supply, the new reservoir adds to the flexibility of Colorado River operations.
 - o In November 2012, Metropolitan executed agreements in support of a program to augment Metropolitan's Colorado River supply between 2013 and 2017 through an international pilot project in

Mexico. Metropolitan’s total share of costs will be \$5 million for 47,500 acre–feet of project supplies. The costs will be paid between 2015 and 2017, and the conserved water will be credited to Metropolitan’s intentionally–created surplus water account no later than 2017. In December 2013, Metropolitan and IID executed an agreement under which IID will pay half of Metropolitan’s program costs, or \$2.5 million, in return for half of the project supplies, 23,750 acre–feet.

- **Hayfield Groundwater Storage Program:** This program will allow Metropolitan to store Colorado River water in the Hayfield Groundwater Basin in eastern Riverside County for future withdrawal and delivery to the CRA. Drought conditions in the Colorado River watershed have resulted in a lack of surplus supplies for storage. When water supplies become more plentiful, Metropolitan may pursue this program and develop storage capacity of about 400,000 acre–feet.
- **Desert Water Agency/Coachella Valley Water District/Metropolitan Water Exchange and Advance Delivery Programs:** under these programs, Metropolitan delivers Colorado River water to the DWA and CVWD, in advance of the exchange for their SWP supplies. By delivering enough water in advance to cover Metropolitan’s exchange obligations, Metropolitan is able to receive DWA and CVWD’s available SWP supplies in years in which Metropolitan’s supplies are insufficient without having to deliver an equivalent amount of Colorado River water.

The year–end balances of Metropolitan’s CRA storage programs are shown in the graph below.

CRA Storage Programs year-end balance, acre-feet



BUDGET HIGHLIGHTS

The budget for the Supply Programs decreases over the budget period compared to FY 2017/18, primarily due to lower expenditures for Supply Programs on the Colorado River. This reflects the assumption of a 50 percent allocation on the SWP and approximately 838 to 916 TAF of deliveries on the CRA.

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DEMAND MANAGEMENT

OVERVIEW

Demand Management costs are Metropolitan’s expenditures for funding local water resource development programs and water conservation programs. These demand management programs incentivize the development of local water supplies and the conservation of water to reduce the reliance on imported water. These programs are implemented after the service connection between Metropolitan and its member agencies and, as such, do not add any water to the quantity Metropolitan obtains from other sources or to Metropolitan’s own supply. Rather, the effect of these downstream programs is to produce a local supply of water for the local agencies.

Demand Management programs reduce the use of and burden on Metropolitan’s distribution and conveyance system, which, in turn, helps reduce and avoid capital, operating, maintenance and capital improvement costs associated with these facilities. For example, local water resource development and conservation has deferred the need to build additional infrastructure such as the Central Pool Augmentation Project and the San Diego Pipeline No. 6. Overall, the decrease in demand resulting from these projects is estimated to defer the need for projects between four and twenty-five years at a savings of approximately \$2.9 billion in 2017 dollars. The programs also free up capacity in Metropolitan’s system to convey both Metropolitan water and water from other non-Metropolitan sources.

The budgeted costs for Demand Management are as follows:

Demand Management Cost Summary¹, \$ millions

	2016/17 Actuals	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Conservation Credits Program	\$43.7	\$32.0	\$43.0	\$11.0	\$43.0	—
Local Resources Program	\$37.6	\$41.9	\$44.1	\$2.2	\$40.8	(\$3.3)
Future Supply Actions	\$0.9	\$2.0	\$2.0	—	\$2.0	—

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

Budgeted Demand Management costs reflect increasing the financial commitment for the CCP, conservation messaging, and maintaining the financial incentives for existing contracts under the Local Resources Program.

In addition to Metropolitan’s own objectives, Metropolitan also pursues local water resource development because it has uniquely been directed to do so by the state Legislature. In 1999, then Governor Davis signed Senate Bill (SB) 60 (Hayden) into law. SB 60 amended the Metropolitan Water District Act to direct Metropolitan to increase conservation and local resource development. No other water utility in California, public or private, has been specifically identified by the state Legislature and directed to pursue water conservation and local water resource development.

Metropolitan’s Demand Management programs also support the region’s compliance with the requirements of SB X7-7. In 2009, the state Legislature passed SB X7-7, which was enacted to reduce urban per capita water use by 20 percent by December 31, 2020. Urban retail water suppliers are not eligible for state water grants or loans unless they comply with the water conservation requirements of the legislation. Demand Management programs help the region achieve urban per capita water use reductions.

Demand Management costs also support the Strategic Plan Policy Principles approved by Metropolitan's Board on December 14, 1999. These principles embody the Board's vision that Metropolitan is a regional provider of wholesale water services. In this capacity, Metropolitan is the steward of regional infrastructure and the regional planner responsible for coordinated drought management and the collaborative development of additional supply reliability and necessary capacity expansion. Through these regional services, Metropolitan ensures a baseline level of reliability and quality for service in its service area.

DEMAND MANAGEMENT PROGRAMS REDUCE RELIANCE ON IMPORTED WATER

Metropolitan increased the emphasis on Demand Management programs after the devastating drought of the early 1990's. Metropolitan's 1996 Integrated Resources Plan identified the Preferred Resource Mix as the resource plan that achieved the region's reliability goal of providing the full capability to meet all retail-level demands during all foreseeable hydrologic events, represented the least-cost sustainable resources plan, met the region's water quality objectives, was balanced and diversified and minimized risks, and was flexible, allowing for adjustments should future conditions change.

The Preferred Resource Mix included locally developed water supplies and conservation, and recognized that regional participation was important to achieve their development. Additional imported supplies frequently have relatively lower development costs, but can create a large cost commitment for regional infrastructure to transport and store those imported supplies. On the other hand, local projects, like those designed to recycle water or increase groundwater production, may have higher development costs but require little or no additional infrastructure to distribute water supplies to customers. This trade-off between relatively lower-cost imported supplies requiring large regional infrastructure investments and relatively higher-cost local supply development requiring less additional local infrastructure was an important consideration in the development of the Preferred Resource Mix. A strategy of aggressively investing in imported water supply would lead to higher costs for the region because of the larger investments required in infrastructure. Since 1996, the Integrated Resources Plan has been updated in 2004, 2010, and 2015 reaffirming long-term sustainability of the region's water supply through implementation of conservation and local resource development.

DEMAND MANAGEMENT PROGRAMS REDUCE DEMANDS AND BURDENS ON METROPOLITAN'S SYSTEM

Demand Management programs decrease and avoid operating and maintenance and capital improvement costs, such as costs for repair of and construction of additional or expanded water conveyance, distribution, and storage facilities. The programs also free up capacity in Metropolitan's system to convey both Metropolitan water and water from other non-Metropolitan sources.

The purpose of Demand Management is to generate additional local resources or reduce consumption through conservation, which reduces the amount of water that must otherwise be transported through Metropolitan's system. Investments in Demand Management programs like conservation, water recycling and groundwater recovery help defer the need for additional conveyance, distribution, and storage facilities. Demand Management is an important part of Metropolitan's resource management efforts. Metropolitan's incentives in these areas contribute to savings for all users of the system in terms of lower capital costs that would otherwise have been required to expand and maintain the system.

SB 60 DIRECTED METROPOLITAN TO EXPAND DEMAND MANAGEMENT PROGRAMS

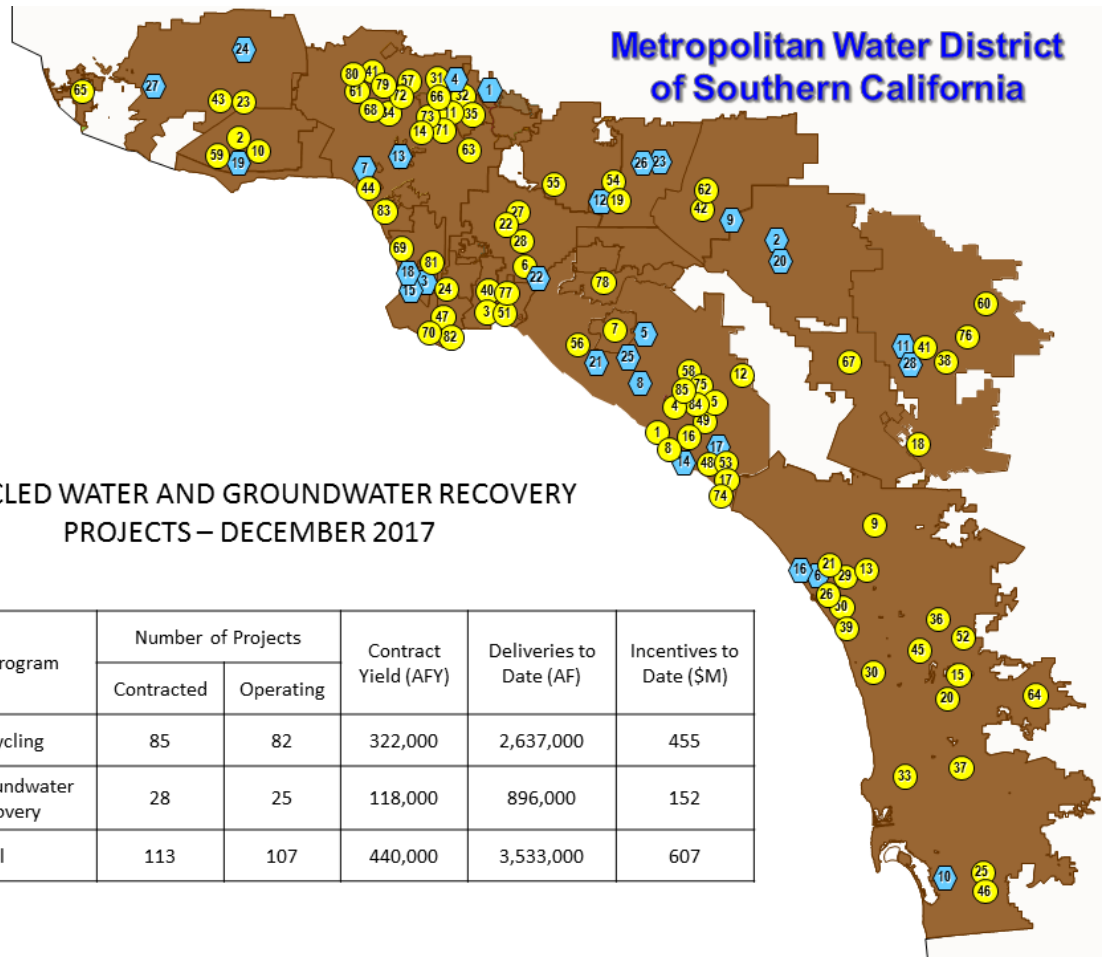
In September 1999, Governor Gray Davis signed SB 60 (Hayden) into law. SB 60 amended the Metropolitan Water District Act to direct Metropolitan to increase “sustainable, environmentally sound, and cost-effective water conservation, recycling, and groundwater storage and replenishment measures.” SB 60 also requires Metropolitan to hold an annual public hearing to review its urban water management plan for adequacy in achieving an increased emphasis on cost-effective conservation and local water resource development, and to invite knowledgeable persons from the water conservation and sustainability fields to these hearings. Finally, Metropolitan is required to annually prepare and submit to the Legislature a report on its progress in achieving the goals of SB 60. SB 60 specifically indicated that no reimbursement was required by legislation because Metropolitan, as a local agency, has the authority to levy service charges, fees or assessments sufficient to pay for the program or level of service mandated by SB 60. No other water utility in California, public or private, has been specifically identified by the state Legislature and directed to pursue water conservation and local water resource development.

In FY 2016/17 alone, Metropolitan’s service area achieved 1.6 million acre-feet of water savings from conservation, recycled water and groundwater recovery programs. The 1.6 million acre-feet of water savings from water management activities in fiscal year 2016/17 exceeded actual water transactions in the same period of 1.54 million acre-feet. These savings derived from programs for which Metropolitan paid incentives, as well as code-based conservation achieved through legislation, building and plumbing codes and ordinances, and reduced consumption resulting from changes in water pricing. Cumulatively, since 1982 Metropolitan has invested almost \$1.4 billion and Metropolitan's service area has achieved 6.1 million acre-feet of water savings.

Metropolitan’s CCP provides incentives to residents and businesses for use of water-efficient products and qualified water-saving activities. Rebates have been provided to residential customers for turf removal and purchasing of high-efficiency clothes washers and toilets. Rebates are also provided to businesses and institutions for water-saving devices. In fiscal year 2016/17, the CCP achieved 1.0 million acre-feet of saved water through new and existing conservation initiatives funded with incentives and maintained through plumbing codes. Cumulatively, through fiscal year 2016/17 the CCP has achieved over 2.6 million acre-feet of water savings.

Metropolitan provides financial incentives through its Local Resources Program for the development and use of recycled water and recovered groundwater. The Local Resources Program consists of 85 recycling projects and 28 groundwater recovery projects located throughout Metropolitan’s service area, of which 107 projects are in operation. From the Local Resources Program’s inception in 1982 through FY 2016/17, Metropolitan has paid out about \$488 million in incentives to produce about 2.6 million acre-feet of recycled water. Metropolitan also provided approximately \$151 million to produce 893,000 acre-feet of recovered degraded groundwater for municipal use.

Local Resources Program Projects



SB X7-7 REQUIRES INCREASED CONSERVATION

SBX7-7 mandated a new requirement to lower urban per capita water use 20 percent by December 31, 2020. Enacted by the state Legislature and signed into law by Governor Schwarzenegger as part of a historic package of water reforms in November 2009, the “20x2020” plan gave local communities flexibility in meeting this target while accounting for previous efforts in conservation and recycling. The Legislature found that reducing water use through conservation and regional water resources management would result in protecting and restoring fish and wildlife habitats, reducing dependence on water through the Delta, and providing significant energy and environmental benefits. Metropolitan coordinates closely with its member agencies to achieve these targets both at a retail agency level in compliance with legislative requirements, and as a region in achieving a true 20 percent reduction in per-capita water use.

BUDGET HIGHLIGHTS

The budget for the Demand Management costs is increasing when comparing the Biennial Budget to FY 2017/18, due primarily to increased expenditures for the CCP and conservation messaging.

CAPITAL FINANCING

OVERVIEW

Capital financing costs are Metropolitan's expenditures for revenue bond debt service, General Obligation bond debt service, debt administration costs, and the funding of capital expenditures from current operating revenues, or Pay-As-You-Go (PAYGo).

The budgeted costs for capital financing are as follows:

Capital Financing Cost Summary, \$ millions

	2016/17 Actuals	2017/18 Budget	2018/19 Budget	Change from 2017/18	2019/20 Budget	Change from 2018/19
Debt Service, net of BABs Reimbursement	\$296.6	\$318.1	\$311.1	(\$7.0)	\$309.6	(\$1.5)
GO Bond Debt Service	22.5	18.8	14.4	(4.4)	14.3	0.0
SRF Loan	1.3	1.3	—	(1.3)	—	—
Debt Administration	3.5	5.9	6.5	0.6	6.9	0.4
PAYGo	132.2	120.0	120.0	—	120.0	—
Total¹	\$456.1	\$464.1	\$452.0	(\$12.1)	\$450.9	(\$1.1)

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

Budgeted amounts for Capital Financing represent the expenditures for existing and future debt service, anticipated debt administration costs to support the debt portfolio, and PAYGo amounts to support the CIP. Metropolitan generally incurs long-term debt to finance projects or purchase assets which will have useful lives equal to or greater than the related debt. Revenue supported debt can be authorized by Metropolitan's Board of Directors.

CAPITAL INVESTMENT PLAN

The CIP expenditures for FY 2018/19 and FY 2019/20 are estimated to be \$200.0 million in each fiscal year. They are proposed to be funded by current operating revenues (PAYGo) and revenue bond proceeds. The FY 2018/19 CIP expenditures are unchanged from the FY 2017/18 Adopted budget, as are the FY 2019/20 CIP expenditures. The largest areas of expenditures in the Biennial Budget are infrastructure refurbishment and replacement and infrastructure upgrades.

The CIP planned spending as developed by Engineering Services and presented in the Capital Expenditures section of the budget is estimated to be \$514 million over the biennium. Over the last several years, actual expenditures have been about 20% below planned spending. In keeping with that trend, the current proposal for the two years is about 80% of planned engineering spending or \$200 million in each fiscal year.

PAYGo Percentage of Funding, \$ millions

	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%

In FY 2018/19 and FY 2019/20, the percentage of capital that is funded by debt will be set at 40 percent, consistent with the FY 2016/17 and FY 2017/18 ten-year forecast for this time period. The projected average percentage of capital funded from debt will be 40 percent over the ten years of the long-range forecast.

OUTSTANDING DEBT

Metropolitan has total debt outstanding of \$4.3 billion as of December 31, 2017. Metropolitan's debt issues are summarized below and discussed in detail thereafter.

Outstanding Debt, \$'s, as of December 31, 2017

Issue	Debt Outstanding
1993 Series A, Water Revenue Refunding Bonds	21,840,000
1993 Series A, Water Revenue Refunding Bonds	27,300,000
2000 Series B-3, Authorization Water Revenue Bonds (1)	88,800,000
2008 Series A, Authorization Water Revenue Bonds	174,530,000
2008 Series B, Authorization Water Revenue Bonds	7,905,000
2008 Series B, Water Revenue Refunding Bonds	112,345,000
2008 Series C, Authorization Water Revenue Bonds (2)	78,385,000
2008 Series C, Water Revenue Refunding Bonds	19,470,000
2008 Series D, Authorization Water Revenue Bonds (2)	250,000,000
2009 Series B, Water Revenue Refunding Bonds	106,690,000
2009 Series C, Water Revenue Refunding Bonds	91,165,000
2009 Series D, Water Revenue Refunding Bonds	40,740,000
2009 Series E, Water Revenue Refunding Bonds	9,730,000
2010 Series A, Authorization Water Revenue Bonds (2)	250,000,000
2010 Series B, Water Revenue Refunding Bonds	69,155,000
2011 Series B, Water Revenue Refunding Bonds	3,885,000
2011 Series C, Water Revenue Refunding Bonds	138,280,000
2012 Series A, Water Revenue Refunding Bonds	181,180,000
2012 Series C, Water Revenue Refunding Bonds	104,930,000
2012 Series F, Water Revenue Refunding Bonds	59,335,000
2012 Series G, Water Revenue Refunding Bonds	111,890,000
2013 Series D, Special Variable Rate Water Revenue Refunding Bonds (1)	87,445,000
2014 Series A, Water Revenue Refunding Bonds	95,935,000
2014 Series B, Water Revenue Refunding Bonds	10,575,000
2014 Series C-1, Water Revenue Refunding Bonds	13,505,000
2014 Series C-2, Water Revenue Refunding Bonds	14,020,000
2014 Series C-3, Water Revenue Refunding Bonds	2,810,000
2014 Series D, Special Variable Rate Water Revenue Refunding Bonds (1)	38,465,000
2014 Series E, Water Revenue Refunding Bonds	86,060,000
2014 Series G-3, Water Revenue Refunding Bonds	11,165,000
2014 Series G-4, Water Revenue Refunding Bonds	11,605,000
2014 Series G-5, Water Revenue Refunding Bonds	6,205,000
2015 Series A, Authorization Water Revenue Bonds	208,255,000
2015 Series A-1, Special Variable Rate Water Revenue Refunding Bonds (1)	94,450,000
2015 Series A-2, Special Variable Rate Water Revenue Refunding Bonds (1)	94,450,000
2016 Series A, Water Revenue Refunding Bonds	239,455,000
2016 Series A, Authorization Subordinate Water Revenue Bonds (Taxable) (1)	175,000,000
2016 Series B-1, Special Variable Rate Water Revenue Refunding Bonds (1)	51,835,000
2016 Series B-2, Special Variable Rate Water Revenue Refunding Bonds (1)	51,835,000
2017 Series A, Authorization Water Revenue Bonds (1)	80,000,000
2017 Series A, Subordinate Water Revenue Refunding Bonds	238,015,000
2017 Series B, Subordinate Water Revenue Refunding Bonds	178,220,000
2017 Series C, Subordinate Water Revenue Bonds (1)	80,000,000
2017 Series D, Subordinate Water Revenue Refunding Bonds (1)	95,630,000
2017 Series E, Subordinate Water Revenue Refunding Bonds (1)	95,625,000
Total Revenue Bonds	4,008,115,000
2009 Series A, WaterWorks General Obligation Refunding Bonds	27,000,000
2010 Series A, WaterWorks General Obligation Refunding Bonds	18,735,000
2014 Series A, WaterWorks General Obligation Refunding Bonds	29,170,000
Total General Obligation Bonds	74,905,000
2016 Series B-2, Tax-Exempt Flexible Rate Revolving Notes (1)	198,265,000
Total Revolving Note Program	198,265,000
Total Debt:	\$4,281,285,000

(1) Outstanding variable rate obligation.

(2) Designated as "Build America Bonds" pursuant to the American Recovery and Reinvestment Act of 2009.

DEBT SERVICE

Debt Service payments in FY 2018/19 are budgeted at \$332.0 million and includes \$14.4 million in General Obligation bond debt service, \$311.1 million in revenue bond debt service, and \$6.5 million for debt administration costs.

Debt Service payments in FY 2019/20 are budgeted at \$330.9 million and include \$14.3 million in General Obligation bond debt service, \$309.6 million in revenue bond debt service, and \$6.9 million for debt administration costs. Total debt service costs in FY 2019/20 are expected to be \$1.0 million less than the FY 2018/19 payments as principal on existing debt is paid down and less new obligations are issued. Interest payments on synthetic fixed rate debt were calculated at their associated swap rates plus any spread (if known). Interest rates on variable rate debt were calculated at 1.70 percent for FY 2018/19 and FY 2019/20.

Outstanding variable rate debt on December 31, 2017 was approximately \$1,231.8 million, including bonds bearing interest in the Index Mode, special variable rate bonds initially designated as self-liquidity bonds, variable rate demand obligations supported by standby bond purchase agreements between Metropolitan and various liquidity providers, and direct purchase obligations. Of the \$1,231.8 million, \$493.6 million are treated by Metropolitan as fixed rate debt by virtue of interest rate swap agreements. The remaining \$738.2 million of variable rate obligations represent approximately 17.5 percent of total outstanding water revenue bonds and revolving notes.

Going forward, Metropolitan will finance its construction program through a combination of fixed-rate debt and variable rate debt. Metropolitan intends to issue approximately \$80 million of new debt in FY 2018/19 and FY 2019/20.

DEBT RATINGS

Credit risk is the risk that a financial loss will be incurred if a counterparty to a transaction does not fulfill its financial obligations in a timely manner. This is measured by the assignment of a rating by a nationally recognized statistical credit rating organization. Strong credit ratings provide tangible benefits to ratepayers in the form of reduced debt service cost. A strong credit rating provides better access to capital markets, lower interest rates and better terms on debt, and access to a greater variety of debt products. Prudent financial management policies have resulted in Metropolitan's senior lien bond ratings of AAA from Standard & Poor's, Aa1 from Moody's, and AA+ from Fitch.

DEBT POLICY AND COVERAGE

Metropolitan is subject to limitations on additional revenue bonds. Resolution 8329 (the "Master Revenue Bond Resolution"), adopted by Metropolitan's Board in 1991 and subsequently supplemented and amended, provides for the issuance of Metropolitan's revenue bonds. The Master Revenue Bond Resolution limits the issuance of additional obligations payable from Net Operating Revenues, among other things, through the requirement that Metropolitan must meet an Additional Bonds Test, as defined in the Master Revenue Bond Resolution. Metropolitan's Master Subordinate Bond Resolution, Resolution 9199, adopted by the Board in March 2016, and subsequently supplemented and amended, also incorporates limitations on additional revenue bonds.

The Metropolitan Act also provides two additional limitations on indebtedness. The Act provides for a limit on general obligation bonds, water revenue bonds and other indebtedness at 15 percent of the assessed value of all taxable property within Metropolitan's service area. As of December 31, 2017, outstanding general obligation bonds, water revenue bonds and other evidences of indebtedness in the amount of \$4.3 billion represented approximately 0.16 percent of the FY 2017/18 taxable assessed valuation of \$2,741 billion. The second limitation under the Act specifies that no revenue bonds may be issued, except for the purpose of refunding, unless the amount of net assets of Metropolitan as shown on its balance sheet as of the end of the last fiscal year prior to the issuance of the bonds equals at least 100 percent of the aggregate amount of revenue bonds

outstanding following the issuance of the bonds. The net position of Metropolitan at June 30, 2017 was \$6.8 billion. The aggregate amount of revenue bonds outstanding as of December 31, 2017 was \$4.0 billion.

Metropolitan has also established its own policy regarding debt management. The purpose is to maintain a balance between current funding sources and debt financing to retain Metropolitan's financing flexibility. Flexibility allows Metropolitan to use a variety of revenue or debt-financing alternatives, including issuing low-cost variable rate and other revenue supported obligations.

Metropolitan's debt management policy is to:

- Maintain an annual senior/subordinate lien revenue bond debt coverage ratio of at least 2.0 times coverage;
- Maintain an annual fixed charge coverage ratio of at least 1.2 times coverage;
- Limit debt-funded capital to no more than 40 percent of the total capital program over the ten-year planning period; and
- Limit variable rate debt such that the net interest cost increase due to interest rate changes is no more than \$5 million, and limit the maximum amount of variable rate bonds to 40 percent of outstanding revenue bond debt (excluding variable rate bonds associated with interest rate swap agreements).

In order to comply with the debt management policy, Metropolitan has taken the following measures:

Revenue Bond Debt Coverage Ratio

This policy ensures that Metropolitan has sufficient annual operating revenues to pay its operating expenses and meet its debt service obligations on its revenue bonds and other senior debt. The revenue bond debt coverage ratio is defined as Metropolitan's net operating revenue (current year's operating revenue less the current year's operating expenses) divided by the current year's senior/subordinated lien debt service on all revenue bonds and other senior debt. The target is 2.0 times. In FY 2018/19 and FY 2019/20, the projected debt coverage ratio is 1.6 and 1.9 times, respectively.

Fixed Charge Coverage Ratio

In addition to revenue bond debt service coverage, Metropolitan also measures total coverage of all fixed obligations after payment of operating expenditures. This additional measure is used to account for Metropolitan's recurring capital costs for the SWC, which are funded after debt service on revenue bonds and other parity obligations. Rating agencies expect that a financially sound utility consistently demonstrate an ability to fund all recurring costs, whether they are operating expenditures, debt service payments or other contractual payments. Metropolitan's fixed charge coverage ratio target is 1.2 times. In FY 2018/19 and FY 2019/20, the projected debt coverage ratio is 1.5 and 1.7, respectively. These levels help maintain strong credit ratings and access to the capital markets at low cost.

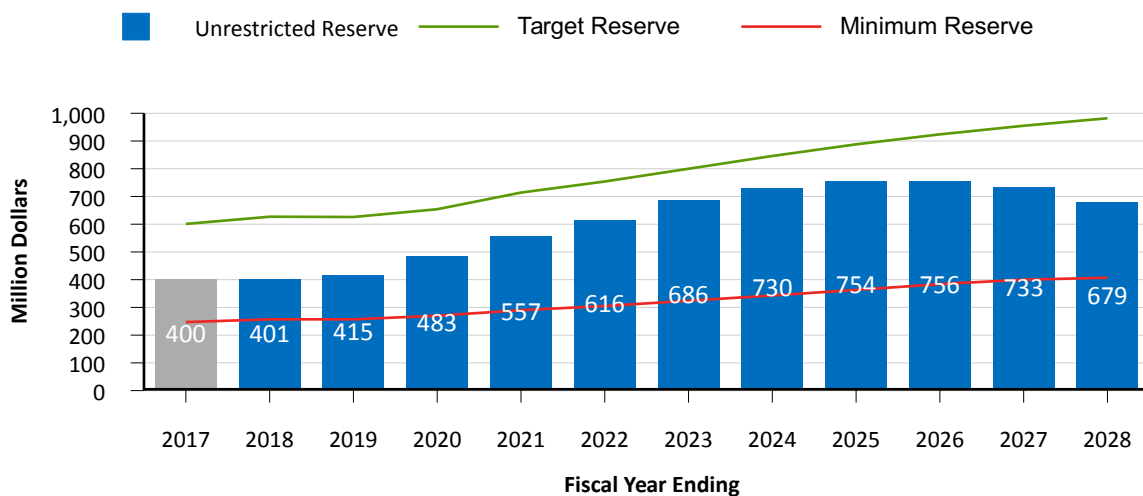
BUDGET HIGHLIGHTS

The FY 2018/19 and FY 2019/20 Capital Financing budget is decreasing from the FY 2017/18 budget due to lower debt service expenditures overall. Lower overall Capital Financing costs provide increased financial flexibility and resiliency.

TEN-YEAR FINANCIAL FORECAST

The ability to ensure a reliable supply of high quality water for Metropolitan’s 26 member agencies depends on Metropolitan’s ongoing ability to fund operations and maintenance, maintain and augment local and imported water supplies, fund replacements and refurbishment of existing infrastructure, and invest in system improvements. This ten-year forecast builds on the biennial budget to support long range resource, capital investment and operational planning. As such, it includes a forecast of future costs and the revenues necessary to support operations and investments in infrastructure and resources that are derived from Metropolitan’s planning processes while conforming to Metropolitan’s financial policies. These financial policies, which address reserve levels, financial indicators, and capital funding strategies, ensure sound financial management and fiscal stability for Metropolitan.

Projected Financial Indicators



Overall Rate Increase	4.0%	4.0%	3.0%	3.0%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Water Transactions * (MAF)	1.54	1.55	1.65	1.75	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Rev. Bond Cvg	1.6	1.5	1.6	1.9	2.1	2.1	2.2	2.3	2.5	2.5	2.6	2.7
Fixed Chg Cvg	1.4	1.4	1.5	1.7	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
PAYGO, \$M	132	108	120	120	150	150	150	154	158	162	167	171

* includes water sales, exchanges and wheeling

The figure above summarizes the financial metrics of the Ten-Year Financial Forecast. Metropolitan projects that the fixed charge coverage ratio will meet the board-established targets throughout the ten-year period. Revenue bond coverage will meet target beginning in FY 2020/21. Reserve levels will be above minimums as established by board policy; PAYGo expenditures are set at a level that is consistent with the board policy

adopted in 2014 that 60 percent of the CIP expenditures would be funded from revenues; and projected rate increases are adequate to cover costs with moderate changes from one year to another.

The estimated overall rate increases result from increasing investments for the SWP and the CA WaterFix, investments to maintain the conveyance and distribution system, and increasing operating and maintenance costs. Annual expenditures are expected to increase from \$1.7 billion in FY 2018/19 to \$2.6 billion by FY 2027/28, or an annual average increase of about 4 percent. Metropolitan's share of the costs for the CA WaterFix is expected to increase to about \$438 million by FY 2027/28. During this same period, capital investments are expected to be about \$2.5 billion. To finance these capital investments, the ten-year forecast anticipates funding \$1.5 billion of the CIP from water revenues or PAYGo. The balance of the CIP, or \$1.0 billion, would be financed by issuing revenue bond debt, either fixed or variable.

Planning is necessary for Metropolitan to successfully fund the many investments necessary to meet the challenges facing the region over the next ten years with manageable rate increases. Among the more significant challenges are:

- Investing in the elements of the 2015 IRP Update to ensure reliable water supplies for Metropolitan's service area and preparing for uncertainty.
- Continuing to provide supply reliability through a diversified portfolio of actions to stabilize and maintain imported supplies.
- Meeting future growth through increased water conservation and the development of new local supplies, while protecting existing supplies, to achieve higher retail water use efficiency, in compliance with state policy.
- Pursuing a comprehensive transfer and exchange strategy.
- Building storage in wet and normal years to manage risks and drought.
- Funding an estimated \$2.5 billion capital program that provides projects meeting water quality, reliability, stewardship and information technology directives.
- Funding Metropolitan's share of the CA WaterFix.

ASSUMPTIONS FOR THE TEN-YEAR FORECAST

The following table summarizes key assumptions that underlie the ten-year forecast.

Fiscal Year Ending	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water Transactions, MAF *	1.65	1.75	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
CRA diversions, TAF	838	916	917	898	891	894	894	884	880	876
SWP allocation, %	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
CIP, \$M	200	200	250	250	250	257	264	271	278	286
PAYGO, \$M	120	120	150	150	150	154	158	162	167	171
Conservation, \$M	43	43	43	43	43	43	43	43	43	43
CA WaterFix, \$M	4	13	51	82	128	186	245	303	368	438
Inflation, %	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Interest on investments, %	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Interest rate, fixed bonds, %	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Interest rate, variable bonds, %	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%

* includes water sales, exchanges and wheeling

Metropolitan's principal sources of water supplies are the SWP and the Colorado River. Metropolitan receives water delivered from the SWP under SWC provisions, including contracted supplies, use of carryover storage in San Luis Reservoir, and surplus supplies. Metropolitan holds rights to a basic apportionment of Colorado River water and has priority rights to an additional amount depending on availability of surplus supplies. The Supply Programs supplement these SWP and Colorado River supplies. The SWP and Colorado River sources derive from two different hydrologic regions, which have helped buffer shortages. The ten-year forecast assumes an average hydrology on both regions. Together with Metropolitan's Supply Programs, dry periods in either region can be managed.

The CIP has been reviewed to maintain affordability throughout the ten-year period, reduce debt service, and provide headroom to absorb the additional costs of the CA WaterFix. CIP projects have been carefully reviewed, scored and ranked to continue the ability to deliver water reliably and safely while meeting all regulatory requirements .

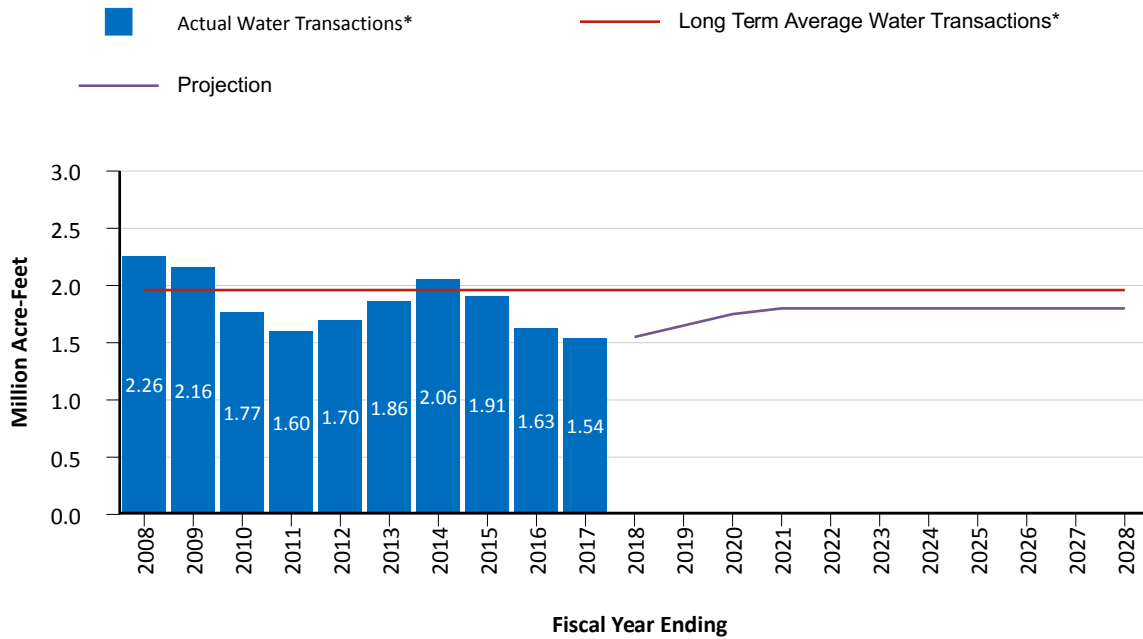
The inflation factor is based on forecasts by economists and is applied to Metropolitan's O&M expenses, such as chemicals, but excluding labor and additives, which are based on the MOUs. The interest rate applicable to Metropolitan's investment portfolio is based on an analysis of the current forward curve for investments over a ten-year period. This interest rate forecast informs the interest rate applicable to variable rate bonds. The interest rate for fixed rate bonds is also based on forecasts.

FORECAST OF WATER TRANSACTIONS

Revenues from water transactions provide approximately 80 percent of the revenues necessary to support Metropolitan's capital and operating costs. The 2015 IRP Update and recent recalibrations by Water Resource Management provide the basis for the water transactions forecast over the ten years. It is expected that demand for Metropolitan supplies will increase over the ten-year period, from 1.65 million acre-feet in FY 2018/19 to 1.80 million acre-feet by FY 2027/28. This forecast includes the SDCWA exchange agreement (exchange agreement) water deliveries. The 2015 IRP Update contemplates continued investment in local resources and retail and regional conservation measures to meet state policy regarding water use efficiency. Under the 2015 IRP Update, conservation and water efficiency initiatives will result in reductions of regional water use to the targets, which reflect efforts to meet state policy to reduce per capita retail water use by 20 percent by 2020. Local resource augmentation will result in additional local supply, including production already anticipated from existing programs. These local supplies and increased conservation and water use efficiency reduce the need for Metropolitan to import additional water.

The figure below shows historic and forecast water transactions, including the exchange agreement water and wheeling. Long-term, Metropolitan's water transactions have averaged just under 2.0 million acre-feet. As noted above, expected water transactions are forecast to be below this average at 1.80 million acre-feet by FY 2027/28.

Water Transactions, MAF



* includes water sales, exchanges and wheeling

SOURCES OF FUNDS

Revenues

Through FY 2027/28, revenues from rates and charges, which include the RTS, Capacity Charge and water revenues, collected from the member agencies will account for approximately 92 percent of total revenues. Total revenues are projected to increase from about \$1.7 billion in FY 2018/19 to \$2.6 billion in FY 2027/28. This increase is almost entirely attributed to increases in water rates and charges.

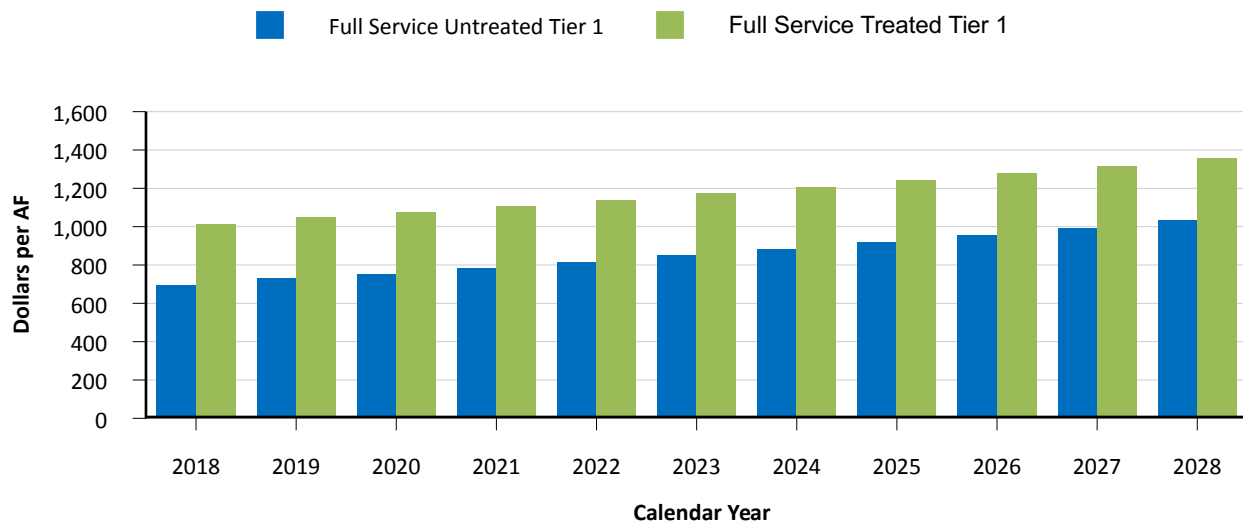
Water Rates and Charges

The table below shows the estimated unbundled water rates and charges under the current rate structure. Components of the rate structure may increase at different rates depending on the costs recovered. The full-service treated Tier 1 water rate is estimated to be approximately \$1,356 per acre-foot by January 1, 2028, compared to \$1,015 per acre-foot on January 1, 2018, an average increase of 2.9 percent per year over the ten-year period.

Rates & Charges Effective January 1st	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Tier 1 Supply Rate (\$/AF)	\$209	\$209	\$208	\$218	\$228	\$234	\$239	\$244	\$252	\$259	\$267
Tier 2 Supply Rate (\$/AF)	\$295	\$295	\$295	\$295	\$295	\$295	\$295	\$295	\$295	\$295	\$295
System Access Rate (\$/AF)	\$299	\$326	\$346	\$356	\$378	\$402	\$428	\$455	\$479	\$507	\$537
Water Stewardship Rate (\$/AF)	\$55	\$69	\$65	\$65	\$65	\$65	\$65	\$65	\$65	\$65	\$65
System Power Rate (\$/AF)	\$132	\$127	\$136	\$145	\$147	\$152	\$153	\$156	\$160	\$163	\$164
Full Service Untreated Volumetric Cost (\$/AF)											
Tier 1	\$695	\$731	\$755	\$784	\$818	\$853	\$885	\$920	\$956	\$994	\$1,033
Tier 2	\$781	\$817	\$842	\$861	\$885	\$914	\$941	\$971	\$999	\$1,030	\$1,061
Treatment Surcharge (\$/AF)	\$320	\$319	\$323	\$323	\$323	\$323	\$323	\$323	\$323	\$323	\$323
Full Service Treated Volumetric Cost (\$/AF)											
Tier 1	\$1,015	\$1,050	\$1,078	\$1,107	\$1,141	\$1,176	\$1,208	\$1,243	\$1,279	\$1,317	\$1,356
Tier 2	\$1,101	\$1,136	\$1,165	\$1,184	\$1,208	\$1,237	\$1,264	\$1,294	\$1,322	\$1,353	\$1,384
Readiness-to-Serve Charge (\$M)	\$140	\$133	\$136	\$156	\$172	\$186	\$210	\$232	\$256	\$282	\$310
Capacity Charge (\$/cfs)	\$8,700	\$8,600	\$8,800	\$9,400	\$9,800	\$10,700	\$11,300	\$11,400	\$11,800	\$11,900	\$11,900

The following figure shows the volumetric cost per acre-foot for Tier 1 Full Service untreated water and Tier 1 Full Service treated water.

Volumetric Cost, \$ AF



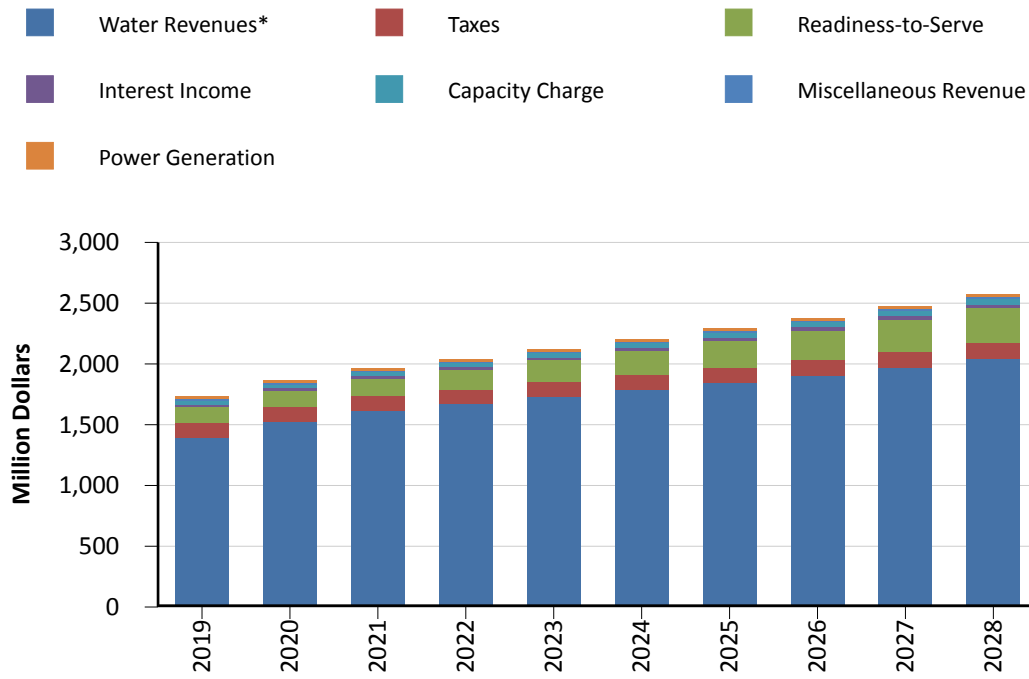
Property tax revenue is expected to increase from \$116.6 million in FY 2018/19 to \$131.2 million in FY 2027/28. This projection assumes the Board maintains the ad valorem tax rate at .0035 percent of assessed valuations, by suspending the limit under MWD Act Section 124.5, and assessed value increases by 2.5 percent per year. By FY 2027/28 almost all of the revenues are used to pay SWC costs.

Power sales from Metropolitan’s hydroelectric power recovery plants and the CRA are projected to average about \$20.1 million per year over this ten-year period. Metropolitan has 16 small hydroelectric plants on its distribution system. These revenues are dependent on the amount of water that flows through Metropolitan’s distribution system and the price paid. Power from some of the plants is sold under existing contracts that are priced higher compared to the prices currently being offered for renewable power. CRA Revenues derive from the management of loads and resources on the CRA; energy not needed to meet hourly CRA loads is sold into the CAISO.

Interest income is projected to increase from \$16.9 million in FY 2018/19 to \$26.1 million in FY 2027/28 as a result of increased balances and higher average returns of 1.5 percent from FY 2018/19 to FY 2027/28. Metropolitan earns interest on invested fund balances and uses this income to reduce the costs that must be recovered through rates and charges. These invested funds also act as a partial hedge against changes in interest rates on Metropolitan’s variable rate debt obligations. Interest income will vary over the ten-year forecast period as interest rates and cash balances available for investments will fluctuate. Miscellaneous income includes items like leases and late fees and is forecasted to increase from \$11.1 million in FY 2018/19 to \$14.2 million in FY 2027/28.

Forecasted revenues by major category are shown in the figure below.

Revenue Forecast, \$ millions



* includes revenues from water sales, exchanges and wheeling

Other Funding Sources

Other sources of funds include withdrawals from bond construction funds, Refurbishment and Replacement (R&R) Fund, General Fund, Water Stewardship Fund (WSF), Treatment Surcharge Stabilization Fund (TSSF), Water Rate Stabilization Fund (WRSF), and the Revenue Remainder Fund.

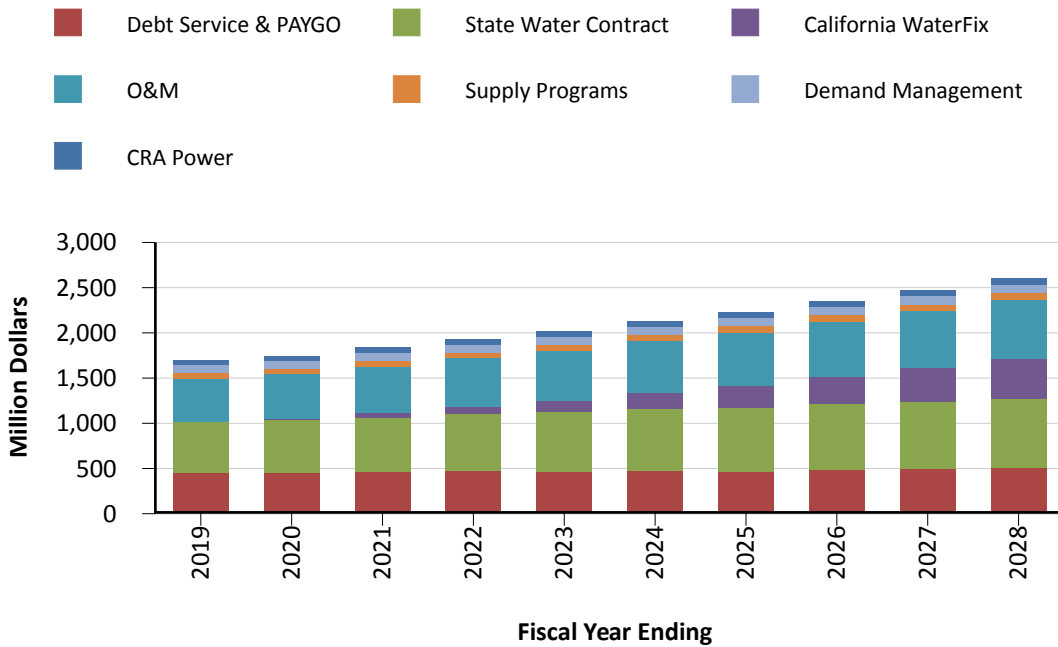
USES OF FUNDS

Over the next ten years, total annual expenditures are projected to range from \$1.7 billion to \$2.6 billion.

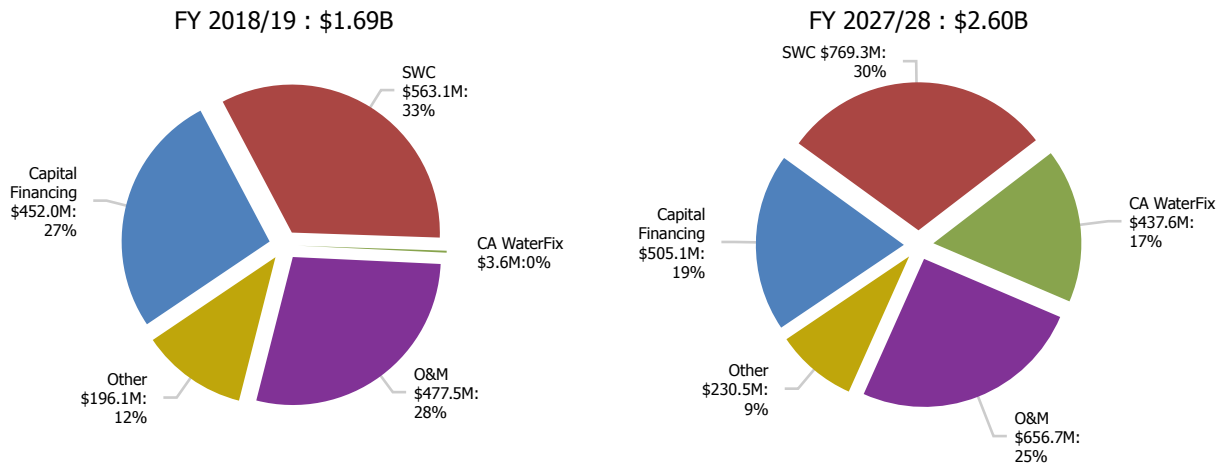
Expenses

Expenses are grouped into seven major categories: SWC, CA WaterFix, O&M, demand management programs, CRA power costs, supply programs, and capital financing. The first figure below illustrates the general trends in expenses over the ten-year period from FY 2018/19 to FY 2027/28. The second figure following shows the comparison of FY 2018/19 to FY 2027/28 in terms of the contribution of expenses to the total.

Expenditure Forecast, \$ millions



Expenditure Forecast, Contribution by Major Area



State Water Project

Metropolitan is one of 29 agencies that contract with the State of California for service from the SWP. Metropolitan is obligated to pay its share of the capital and minimum operations, maintenance, power, and replacement charges of the SWP regardless of the amount of water actually received. In addition, Metropolitan pays the power costs to convey the water. The ten-year forecast assumes that SWC annual costs, including power, will increase from \$563 million in FY 2018/19 to \$769 million in FY 2027/28, as shown in the figure below. SWC costs account for 33% of Metropolitan's expenditures in FY 2018/19, decreasing to 30% in FY 2027/28. The estimate of fixed costs is based upon information provided by the Department of Water Resources, and is associated with Transportation Capital and Minimum Operations & Maintenance, and the Delta Water Supply Capital and Minimum Operations & Maintenance. Variable SWP power costs are projected to gradually increase over the ten-year period.

Power costs will vary depending on the price of electricity, total system deliveries, storage operations, and the amount of water pumped on the SWP. SWP variable power costs are projected to increase about 4.1% percent per year over the ten-year forecast period. Increasing costs affecting the SWP include the cost of emissions allowances, adding renewable energy to the SWP power portfolio, and using the California Independent System Operator grid to transmit power from generation sources to the SWP load locations. The SWP owns generating resources, including the Hyatt complex, recovery generation units on the Aqueduct, and a contract for power from the Kings River Conservation District's Pine Flat generating facility. The SWP is a participant in the Lodi Energy Center, a natural gas-fired combined cycle generating facility located in Lodi, California, and operated by the Northern California Power Agency. The SWP has acquired renewable resources. Additional resources necessary to meet the balance of the project's energy requirements are obtained from the wholesale energy market, which exposes the SWP to wholesale energy market price volatility. Net flows through the SWP that incur power are expected to average about 1.0 MAF per year.

California WaterFix

The CA WaterFix is expected to improve the reliability of southern California's water delivery system by updating aging infrastructure. In addition to the more efficient and effective delivery of water supplies through the Delta, DWR has identified other benefits of the CA WaterFix, including allowing for more operational flexibility to deliver water through the Delta, and enabling a more natural flow of rivers in the Delta to protect sensitive fish species. It would provide greater opportunity to capture and convey water from storm flows in wet and above-normal hydrological weather years to the State Water Contractors to refill reservoirs and replenish groundwater basins. It would also improve the quality of water for export, and reduce climate change risk of increased salinity from rising sea levels. The CA WaterFix would additionally help reduce the risks from a catastrophic seismic event in the Delta.

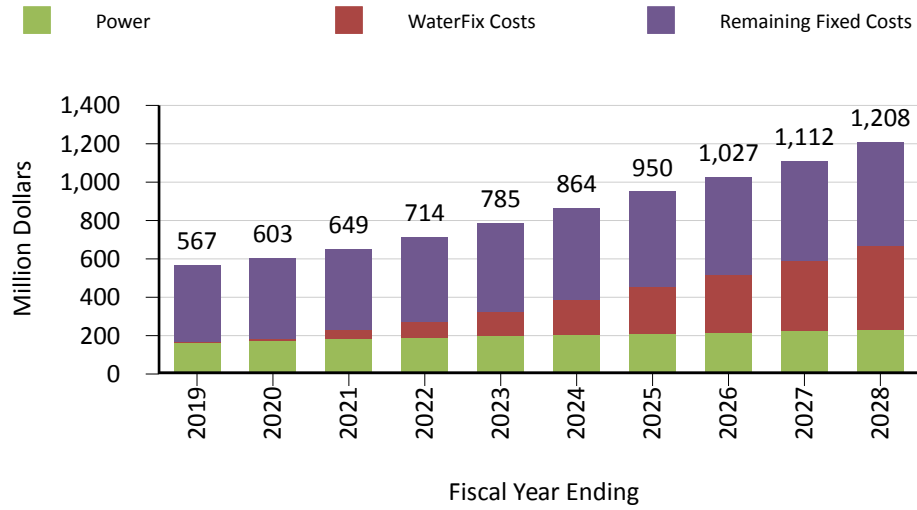
DWR estimates that it will take approximately 15 years to substantially complete the CA WaterFix after commencement of construction. Based upon DWR's preliminary estimate, the capital costs of CA WaterFix are estimated to be approximately \$17 billion (in 2017 dollars). On April 10, 2018, Metropolitan's Board approved the funding of up to 64.6 percent (approximately \$10.8 billion in 2017 dollars) of the overall capital cost of the CA WaterFix necessary to allow for the construction of the full project.

Metropolitan has projected that the impact on overall water rates and charges of an investment of this magnitude, based on Metropolitan's FY 2017/18 revenue requirements and assuming financing over a 40-year term at an assumed annual interest cost of 4.0 percent, would be an incremental increase in overall water rates and charges of approximately 2.2 percent per year over the anticipated construction timeline, or an approximate cumulative 33 percent at the end of 15 years. The incremental projected costs associated with participation by Metropolitan in the CA WaterFix at the level approved on April 10, 2018 are estimated to increase Metropolitan's long-term projected average annual rate increases to 4.1 percent.

During the ten-year forecast period, CA WaterFix costs are projected to increase from \$4.0 million in FY 2018/19 to \$438 million in FY 2027/28. Benefits from the CA WaterFix are realized outside the ten-year period of the forecast, as are operations, maintenance and energy costs.

The total SWC costs including the existing SWP and CA WaterFix are shown in the figure below. The SWP is described under the Non-Departmental Budgets section of the Biennial Budget.

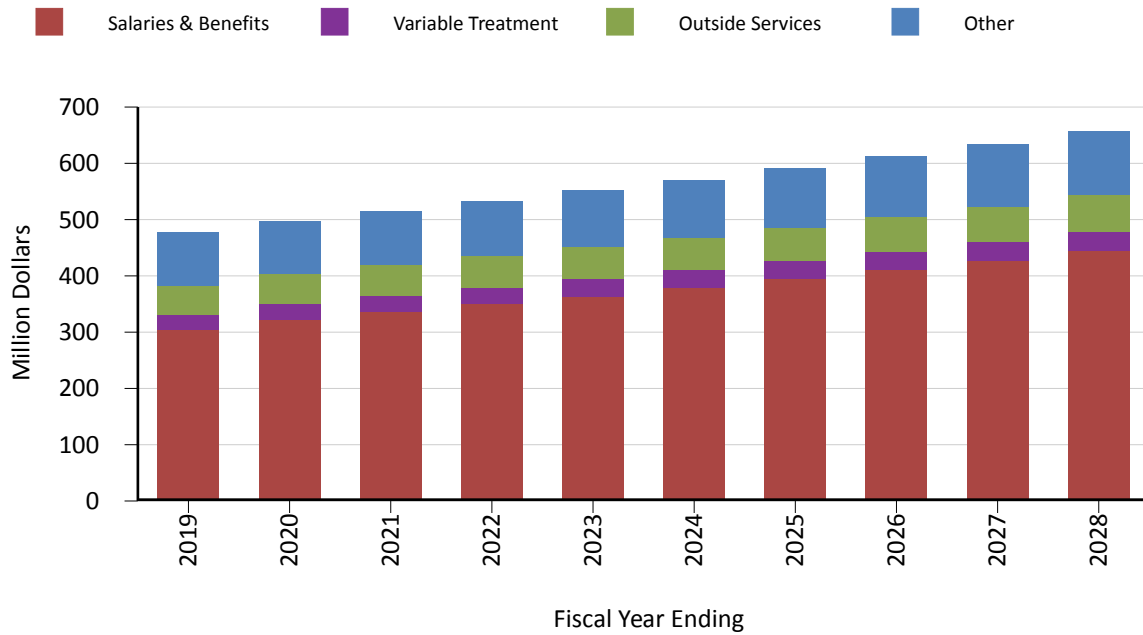
State Water Contract and California WaterFix Costs, \$ millions



Operations and Maintenance

O&M costs in FY 2027/28 are projected to be \$657 million. This represents an average annual increase of 3.6 percent from FY 2018/19. During this time frame, inflation is assumed to be 2.5 percent. The ten-year forecast assumes Metropolitan continues to fully fund the actuarially determined contribution to meet future retiree medical costs (Other Post-Employment Benefits, or OPEB) and retirement benefits.

O&M Forecast, \$ millions



Demand Management

Demand management costs include funding for the LRP and the CCP and are projected to increase from \$89.1 million in FY 2018/19 to \$93.3 million in FY 2027/28. The LRP costs are projected to be fairly flat over the ten-year period at about \$47.0 million per year. As the yield from existing LRP projects receiving incentives decreases, new projects are expected to receive funding. The CCP costs are projected to remain flat through the remainder of the ten-year period at \$43 million per year. This program provides continued funding of residential, commercial, outdoor conservation programs, and conservation messaging.

Demand Management programs are described under the Non-Departmental Budgets section of the Biennial Budget.

CRA Power Costs

CRA Power costs are projected to increase from \$45.8 million in FY 2018/19 to \$66.6 million in FY 2027/28. Power costs will vary depending on the price of electricity, Metropolitan's resource portfolio to meet electricity needs, storage operations, and the amount of water pumped on the CRA. Colorado River diversions are expected to average about 890 TAF over the ten-year period, slightly more than deliveries as water is stored.

Power costs are described under the Non-Departmental Budgets section of the Biennial Budget.

Supply Programs

Supply programs increase slightly over the ten-year period from \$61.2 million in FY 2018/19 to \$70.5 million in FY 2027/28. The estimates represent expenditures for expected conditions. If extreme weather conditions are experienced, these cost estimates could be much higher or lower. If higher than normal demand is coupled with lower than normal supply, supply program costs could be significantly higher.

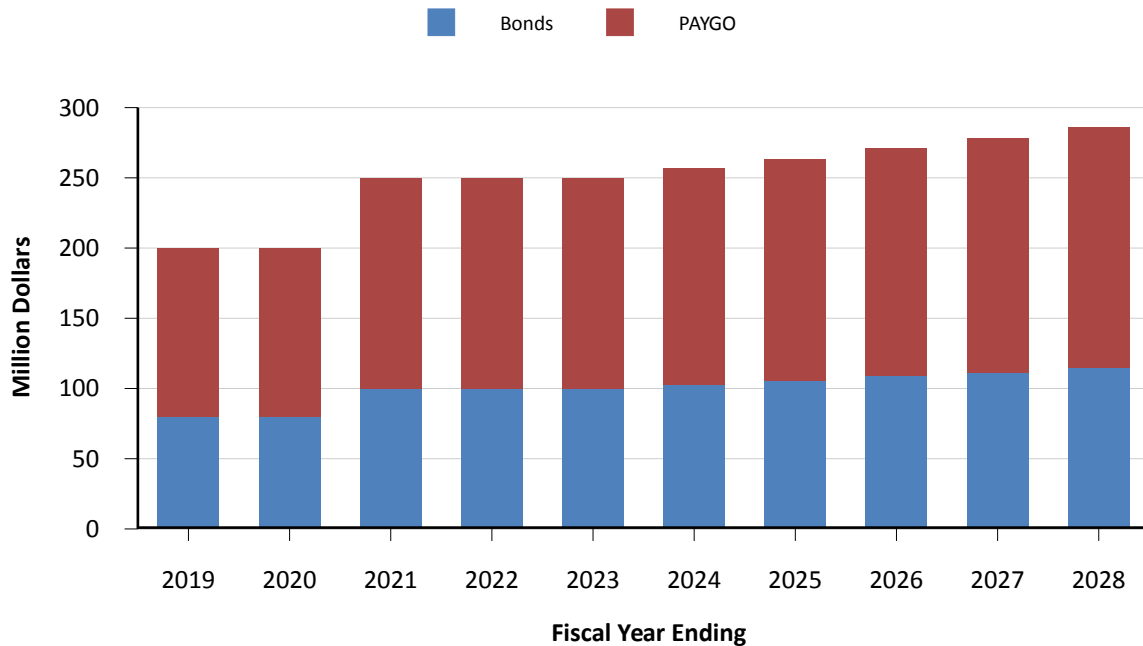
A description of Metropolitan’s Supply Programs is provided under the Non-Departmental section of the Biennial Budget.

Capital Investment Plan

The ten-year projected CIP through FY 2027/28 is estimated at \$2.5 billion. The CIP continues to reflect the deferral of facility expansion projects. The CIP focuses on projects that enhance reliability while focusing on necessary refurbishment and replacement of aging infrastructure and compliance with regulatory requirements. Accordingly, the O&M impact from the resulting CIP is negligible. Without this emphasis on repair and replacement of aging facilities O&M expenses could potentially be much higher.

The following figure shows the funding source for the ten-year CIP.

CIP Ten-Year Forecast and Funding Sources, \$ millions



Capital Financing Options

The CIP will be funded from a combination of bond proceeds and operating revenues. In order to mitigate increases in water rates, provide financial flexibility, and support Metropolitan’s high credit ratings including maintaining revenue bond debt service and fixed charge coverage ratios, it is anticipated that 60 percent of the CIP will be funded from current revenues, or PAYGo. This level of PAYGo funding is appropriate given that a significant portion of future CIP projects has been identified as R&R projects. This level of PAYGo also helps ensure that Metropolitan meets its coverage targets by generating a margin of revenues over operating and debt expenditures. The additional revenue required to meet Metropolitan’s revenue bond debt service coverage target of 2.0 times and fixed charge coverage of 1.2 times is available to fund the CIP. PAYGo funding throughout the ten-year horizon of the planning period ensures that current customers are always contributing funds

towards the capital investments they are benefiting from, and not deferring these costs entirely to future generations of ratepayers.

Bond funded expenditures may include a combination of variable and fixed rate debt. Debt has been structured to mitigate near-term rate impacts and smooth out long-term debt service. The principal advantage of variable rate debt is the opportunity for a lower interest cost. Normally, short-term interest rates are lower than long-term interest rates for debt of comparable credit quality. If interest rates remain constant, Metropolitan will generally have significantly lower interest costs on variable rate debt than on fixed rate debt, even after remarketing and liquidity facility costs. Also, if interest rates decline, Metropolitan will benefit from lower interest costs without the necessity or cost of a refunding. If interest rates rise, variable rates could stay lower than the fixed rate originally avoided, and the longer the variable rate debt is outstanding at favorable spreads, the higher the break-even point becomes on fixed rate debt. Variable rate debt is used to mitigate interest costs over the long term, and provides a natural hedge against changes in investment earnings: when interest rates are high, interest costs on variable rate debt is higher but so are earnings from Metropolitan's investment portfolio. When interest rates are low, interest earnings are lower, but so are variable rate interest costs.

Typically, fixed rate bonds are only redeemable a given number of years after their issuance. Variable rate debt, on the other hand, is generally redeemable on any interest payment or reset date.

However, variable rate debt does have risks. These risks include:

- **Rising interest rates.** Because future interest rates are unknown, the costs of capital improvements financed with variable rate debt are more difficult to estimate for revenue planning purposes. Significant interest rate increases could cause financial stress.
- **Liquidity facility renewal risk.** Variable rate debt normally requires a liquidity facility to protect the investors and issuers against "puts" of a large portion or all of the debt on a single day. Liquidity facilities generally do not cover the full term of the debt. If an issuer's credit declines or the liquidity facility capacity is not available, the issuer runs the risk of not being able to obtain an extension or renewal of the expiring liquidity facility. In that event, the issuer may have to retire the debt or convert it to fixed rate debt.

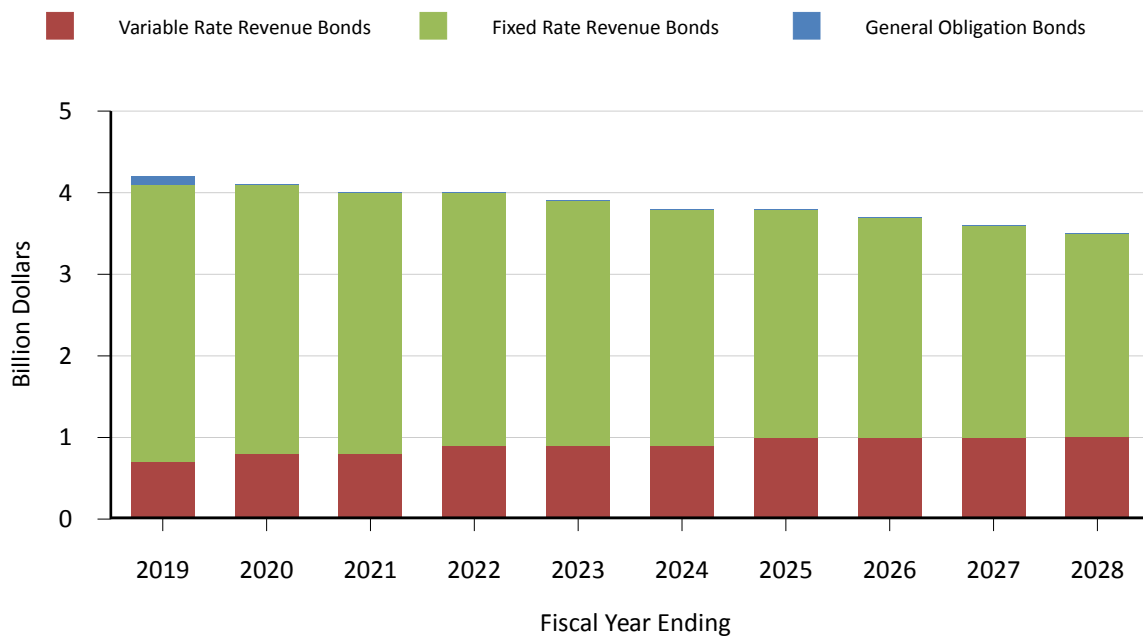
In the last several years, Metropolitan has issued self-liquidity debt. Metropolitan is irrevocably committed to purchase all self-liquidity bonds tendered pursuant to any optional or mandatory tender to the extent that remarketing proceeds are insufficient and no standby bond purchase agreement or other liquidity facility is in effect. Metropolitan's obligation to pay the purchase price of any tendered self-liquidity bonds is an unsecured, special limited obligation of Metropolitan payable from net operating revenues. In addition, Metropolitan's investment policy permits it to purchase tendered self-liquidity bonds as an investment for its investment portfolio. So, while Metropolitan is only obligated to purchase tendered self-liquidity bonds from net operating revenues, it may use the cash and investments in its investment portfolio to purchase tendered self-liquidity bonds. Metropolitan has not secured any liquidity facility or letter of credit to pay the purchase price of any tendered self-liquidity bonds; however, Metropolitan has entered into revolving credit agreements with which it may make borrowings for the purpose of paying the purchase price of self-liquidity bonds.

Debt Financing

It is anticipated that there will be about \$2.5 billion of capital expenditures over the ten-year period. Of this, \$1.0 billion, or 40 percent of future capital expenditures, are anticipated to be funded by debt proceeds. Outstanding debt, including revenue and GO bonds, as of December 31, 2017 is \$4.3 billion. The net position of Metropolitan at June 30, 2017 was \$6.8 billion. Metropolitan may not have outstanding revenue bond debt in amounts greater than 100 percent of its equity. As of June 30, 2017, the debt to equity ratio was 64 percent.

Total outstanding debt is illustrated below. Total outstanding debt is estimated to be \$3.5 billion by FY 2027/28, approximately 20 percent lower than the current level.

Outstanding Debt, \$ billions

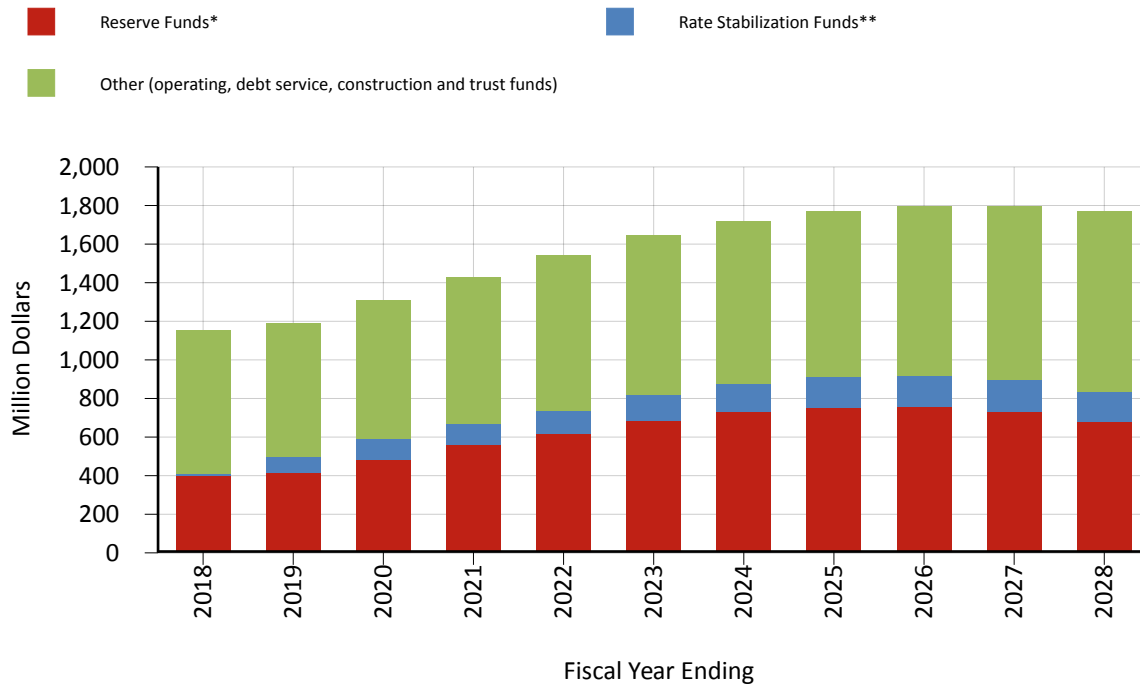


Metropolitan’s variable rate debt as a percentage of total revenue bond debt is projected to increase to 30% percent over this time period as fixed rate debt is retired and new variable rate debt is issued. The appropriate amount of variable rate debt will continue to be monitored and adjusted depending on market rates, financing needs, available short-term investments, and fund levels in the investment portfolio with which variable interest rate exposure can be hedged. GO bond debt will decrease as voter approved indebtedness matures.

FUND BALANCES AND RESERVES

As shown in the figure below, over the next ten years total fund balances are projected to increase to \$1.8 billion in FY 2027/28.

End of Year Fund Balances, \$ millions



* Includes Water Rate Stabilization Fund and Revenue Remainder Fund.
 ** Includes Water Stewardship Fund and Treatment Surcharge Stabilization Fund.

FINANCIAL RATIOS

Revenue bond debt service coverage is one primary indicator of credit quality, and is calculated by dividing net operating revenues by debt service. Revenue bond debt service coverage measures the amount that net operating revenues exceed or "cover" debt service payments over a period of time. Higher coverage levels are preferred since they indicate a greater margin of protection for bondholders. For example, a municipality with 2.0 times debt service coverage has twice the net operating revenues required to meet debt service payments. The ten-year forecast projects that Metropolitan's revenue bond coverage ratio achieves 2.0 times by FY 2020/21. Metropolitan's minimum coverage policy is vital to continued strong credit ratings and low cost bond funding.

In addition to revenue bond debt service coverage, Metropolitan also measures total coverage of all fixed obligations after payment of operating expenditures. This additional measure is used primarily because of Metropolitan's recurring capital costs for the SWC. Rating agencies expect that a financially sound utility consistently demonstrate an ability to fund all recurring costs, whether they are operating expenditures, debt service payments or other contractual payments. The ten-year forecast projects that Metropolitan's fixed charge coverage ratio is at least 1.2 times over the ten-year period. These levels help maintain strong credit ratings and access to the capital markets at low cost, and provides PAYGo funding for the CIP.

Ten-Year Financial Forecast, Sources and Uses of Funds, \$ millions

Fiscal Year Ending	2019 Adopted	2020 Adopted	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast
SOURCES OF FUNDS										
Revenues										
Taxes	116.6	118.1	119.5	120.9	122.4	123.8	125.3	126.7	128.2	131.2
Interest Income	16.9	18.1	19.9	21.7	23.3	24.6	25.5	26.1	26.3	26.1
Hydro Power	20.9	19.1	19.4	19.8	20.4	19.9	19.2	19.8	21.2	21.7
Fixed Charges (RTS & Capacity Charge)	170.3	165.8	178.7	198.5	215.8	237.5	261.8	285.7	311.6	338.8
Water Revenues (1)	1,395.5	1,528.5	1,616.2	1,668.1	1,727.9	1,787.0	1,845.4	1,907.1	1,971.1	2,038.0
Miscellaneous Revenue	11.1	11.5	11.9	12.2	12.5	12.8	13.2	13.6	13.9	14.2
Bond Proceeds	79.4	79.4	99.3	99.3	99.3	99.3	99.3	109.2	109.2	119.2
Sub-total Revenues	1,810.8	1,940.4	2,064.8	2,140.5	2,221.7	2,305.0	2,389.7	2,488.2	2,581.6	2,689.1
Fund Withdrawals										
R&R and General Fund	120.0	120.0	150.0	150.0	150.0	154.0	158.0	162.0	167.0	171.0
Bond Funds for Construction	0.6	0.6	0.7	0.7	0.7	3.5	6.4	—	1.9	—
Water Stewardship Fund	13.6	—	5.4	5.2	4.2	4.4	4.7	4.9	5.4	5.7
Treatment Surcharge Stabilization Fund	—	—	—	—	—	—	—	—	—	1.7
Decrease in Water Rate Stabilization Fund	—	—	—	—	—	—	—	18.4	38.6	61.4
Sub-total Fund Withdrawals	134.1	120.6	156.1	155.9	154.9	161.9	169.1	185.4	212.9	239.8
TOTAL SOURCES OF FUNDS	1,944.9	2,060.9	2,220.9	2,296.4	2,376.5	2,466.8	2,558.7	2,673.6	2,794.5	2,928.9
Water Transactions (1) (MAF)	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8

Totals may not foot due to rounding.

(1) includes water sales, exchanges, and wheeling

Fiscal Year Ending	2019 Adopted	2020 Adopted	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast
USES OF FUNDS										
Expenses										
State Water Contract*	563.1	589.5	598.1	632.2	657.6	678.4	704.3	723.8	744.7	769.3
Supply Programs	61.2	54.4	59.0	60.1	63.9	64.8	66.5	68.2	69.3	70.5
California WaterFix	3.6	13.0	50.9	82.3	128.4	185.9	245.3	303.2	367.7	437.6
Colorado River Power	45.8	52.9	56.8	56.9	58.0	59.6	62.5	63.7	64.7	66.6
Debt Service	332.0	330.9	317.3	322.8	316.0	322.1	310.4	328.1	330.7	334.1
Demand Management	89.1	85.8	93.0	93.0	93.0	93.1	93.1	93.2	93.2	93.3
Departmental O&M	441.9	461.7	478.4	495.8	513.8	532.4	551.8	571.9	592.7	614.4
Treatment Chemicals, Sludge & Power	27.1	27.7	29.1	29.8	30.4	31.0	31.7	32.4	33.1	33.8
Other O&M	8.5	7.0	7.1	7.3	7.5	7.7	7.9	8.1	8.3	8.5
Sub-total Expenses	1,572.2	1,623.0	1,689.7	1,780.1	1,868.5	1,975.2	2,073.5	2,192.6	2,304.3	2,428.2
Capital Investment Plan	200.0	200.0	250.0	250.0	250.0	256.8	263.7	270.8	278.1	285.6
Fund Deposits										
R&R and General Fund	120.0	120.0	150.0	150.0	150.0	154.0	158.0	162.0	167.0	171.0
Revenue Bond Construction	—	—	—	—	—	—	—	0.4	—	4.5
Water Stewardship Fund	—	4.8	—	—	—	—	—	—	—	—
Treatment Surcharge Stabilization Fund	6.6	16.5	13.2	12.4	18.2	16.4	17.5	9.3	3.6	—
Interest for Construction & Trust Funds	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3
Increase in Required Reserves	31.6	41.3	64.0	59.5	39.5	39.4	41.5	38.2	41.2	39.3
Increase in Water Rate Stabilization Fund	14.2	55.2	53.7	44.2	50.1	24.8	4.2	—	—	—
Sub-total Fund Deposits	172.7	238.0	281.2	266.3	258.0	234.9	221.5	210.1	212.0	215.1
TOTAL USES OF FUNDS	1,944.9	2,060.9	2,220.9	2,296.4	2,376.5	2,466.8	2,558.7	2,673.6	2,794.5	2,928.9

Totals may not foot due to rounding.

* Without California WaterFix Costs

Ten-Year Financial Forecast, Coverage Ratios and Fund Balances, \$ millions

Fiscal Year Ending	2019 Adopted	2020 Adopted	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast
RATIOS										
Fixed Charge Coverage	1.5	1.7	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
Revenue Bond Coverage	1.6	1.9	2.1	2.1	2.2	2.3	2.5	2.5	2.6	2.7
Var. Rate Debt as % of Rev. Bond Debt	18.1%	19.1%	21.2%	22.2%	23.4%	24.1%	25.5%	27.1%	28.4%	29.8%
RESTRICTED FUNDS EOY balance										
General Fund	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Other	613.6	642.0	685.1	729.5	748.7	766.2	781.8	799.9	823.7	860.5
Sub-total Restricted Funds	683.6	712.0	755.1	799.5	818.7	836.2	851.8	869.9	893.7	930.5
UNRESTRICTED FUNDS EOY balance										
Reserve Funds (1)	415.2	483.0	557.1	616.0	685.9	729.5	753.5	755.9	733.1	679.0
Treatment Surcharge Stabilization Fund	14.8	31.3	44.5	56.9	75.1	91.4	109.0	118.2	121.8	120.2
Water Stewardship Fund	69.8	74.5	69.1	63.9	59.8	55.4	50.7	45.7	40.3	34.6
R&R Fund	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Sub-total Unrestricted Funds	506.6	595.6	677.5	743.6	827.5	883.1	919.9	926.7	902.1	840.6
TOTAL FUNDS	1,190.2	1,307.5	1,432.7	1,543.1	1,646.3	1,719.3	1,771.8	1,796.6	1,795.8	1,771.1

Totals may not foot due to rounding.

(1) includes Water Rate Stabilization Fund and Revenue Remainder Fund.

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CAPITAL INVESTMENT PLAN

Summary

The primary focus of the CIP Appendix is to provide information on all capital programs and projects that are scheduled to begin or will be underway during FY 2018/19 and FY 2019/20. Scope, accomplishments, objectives and financial projections are provided for each capital program and appropriation. Every project with work planned for the two budget years is listed under the Individual Appropriation Summaries.

CIP planned spending for FY 2018/19 and FY 2019/20 is estimated to be \$254.7 million and \$259.8 million, respectively, and is planned to be funded by a combination of current operating revenues (R&R and PAYGO) and debt.

The total CIP planned spending for FY 2018/19 and FY 2019/20 of \$514.5 million includes all anticipated costs for labor including administrative overhead, construction and professional services contract costs, right of way, materials, operating equipment, and incidental expenses.

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

Capital Investment Plan Organization

CIP Structure

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 1. Under each capital program, there is one to several appropriations, each with multiple projects.

Table 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 Metropolitan’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 Metropolitan facilities that cost less than \$250,000.
Prestressed Concrete Cylinder Pipe (PCCP) Reliability	Projects under this program will refurbish or upgrade Metropolitan’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 Metropolitan’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 Metropolitan’s pipelines in order 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 Metropolitan’s water supply and delivery infrastructure to meet current and projected service demands.

Program	Definition
System Reliability	Projects under this program will improve or modify facilities throughout Metropolitan’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 SCADA) system and other Information Technology projects.
Treatment Plant Reliability:	Projects under this program will replace or refurbish facilities and components at Metropolitan’s five water treatment plants in order to continue to reliably meet treated water demands.
<ul style="list-style-type: none"> • Diemer Plant • Jensen Plant • Mills Plant • Skinner Plant • 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 Metropolitan’s treatment plants and throughout the distribution system.

Capital Investment Plan Development

Background

The projects that comprise the 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 SWP.

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 2.

Table 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:

Section	Guideline
	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	<p>Describe the nature of the issue to be addressed by the project. What is the problem? Consider issues such as:</p> <ul style="list-style-type: none"> • 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? <p>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.</p>

Section	Guideline
Directive	<p>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 a MND or EIR).</p> <p>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.</p>
Service Disruption	Describe how Metropolitan’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.
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	<p>Include an itemized list of all costs for the project, as follows:</p> <ol style="list-style-type: none"> 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 <p>All new project proposals and existing projects must include this estimate.</p>

Section	Guideline
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	<ol style="list-style-type: none"> 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 3 provides a description of the criteria and multiplier.

Table 3 - Evaluation Criteria and Multiplier

Criteria	Description
Justification	<p>Assessment of the overall importance of a project. Criterion looks at whether or not a project supports the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Supply reliability <input type="checkbox"/> Infrastructure reliability <input type="checkbox"/> Regulatory compliance <input type="checkbox"/> GM Business Plan <input type="checkbox"/> Other goals (e.g., cost savings, revenue generation, and energy savings)
Directive	<p>Assessment of whether or not 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:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Regulatory/Legal Settlement <input type="checkbox"/> Special Initiative/Directive <input type="checkbox"/> Board authorization
Service Disruption	<p>Assessment of not doing a project. Criterion evaluates the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Impact to Metropolitan’s business operations <input type="checkbox"/> Impact to water system operations (e.g., system delivery and/or reliability, cascading impact on system due to failure, etc.)

Criteria	Description
Cost/Productivity/Sustainability	<p>Assessment of whether or not a project improves cost efficiency/productivity, specifically:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cost/benefit analysis <input type="checkbox"/> Increased productivity <input type="checkbox"/> Sustainability <input type="checkbox"/> Customer service
Multiplier	Description
Risk Assessment	<p>Assessment of the probability of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Facility/component/process failure <input type="checkbox"/> Workplace health and safety <input type="checkbox"/> Water quality or environmental impact <input type="checkbox"/> Missed opportunity (e.g., available resources, shutdown, revenue generation, cost savings, supply) <input type="checkbox"/> Not meeting service demands

Project Evaluation

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 FY 2018/19 and FY 2019/20 are reflected in the budget and objectives summarized for each of the individual appropriation narratives that appear later in this document.

Capital Investment Plan for Fiscal Years 2018/19 and 2019/20

Additions

Eighteen projects totaling \$22.7 million were added to the FY 2016/17 and FY 2017/18 budget as authorized by the Board. These projects were identified after adoption of the budget and included projects such as Lake Perris Seepage Water Conveyance Pipeline, Second Lower Feeder Urgent PCCP Repairs, Casa Loma Siphon Repairs, CRA Housing Improvements, Valley View Hydroelectric Plant Refurbishment, and Headquarters Facility Security Upgrades.

New Projects

This year, a total of 83 new projects, excluding Minor Capital projects, have been recommended by the CIP Evaluation Team to either proceed as proposed, or be staged to perform only a portion of the work in the biennial budget period, and have been incorporated into the capital programs.

Overall, there are a total of 345 projects (excluding Minor Capital Projects) in 70 appropriations within the CIP for FY 2018/19 and FY 2019/20.

Major Objectives

Below, grouped by CIP Program, are descriptions of some of the capital project major activities anticipated to be underway or completed over the next two fiscal years.

Colorado River Aqueduct Reliability

Complete construction of the 6.9 kV Switch House seismic retrofit. Commence construction of the pumping plant overhead crane improvements and discharge line isolation couplings. Commence construction of the pumping plant sump system rehabilitation and main pump power cable replacement.

Cost Efficiency and Productivity

Complete installation and deployment of a new, enhanced corporate project controls and reporting system that will replace the outdated Project Management Information System.

Distribution System Reliability

Complete the replacement of the liner and floating cover and sodium hypochlorite feed system at the Palos Verdes Reservoir. Complete construction of the Orange County Region Operations and Maintenance Facility. Depending on the SWP allocation, commence construction of Stage 3 relining of the Etiwanda Pipeline, and the relining of 9 miles of the Orange County Feeder. Complete final design of the Sepulveda Canyon Control Facility improvements (Bypass Line). Begin design to refurbish pressure control structures and multiple underground valve structures.

Complete assessments and begin design of instrumentation upgrades for the dams at Lake Skinner and Lake Mathews.

Prestressed Concrete Cylinder Pipe Reliability

Continue pipe procurement, valve procurement, and construction to rehabilitate the remaining PCCP portions of the Second Lower Feeder. Continue preliminary design to rehabilitate the PCCP portions of the Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder. Continue annual electromagnetic inspections of all PCCP pipelines.

Regional Recycled Water Supply

Complete construction of a demonstration-scale recycled water treatment plant for a Regional Recycled Water Supply Program.

Right of Way and Infrastructure Protection

Commence construction of pipeline protection and access improvements in the Orange County Region. Certify the Programmatic EIR for the Western San Bernardino County Region. Complete preliminary design of pipeline protection and access improvements in the Los Angeles, Riverside and San Diego County Regions.

System Reliability

Operation Support

Continue design, construction, and renovation of District housing facilities.

La Verne Shop Facilities

Complete construction of remaining utility extensions and final building improvements. Complete procurement of replacement fabrication and machine shop equipment.

Information Technology

Complete design and begin replacement of input/output components and operating systems for approximately 300 Remote Terminal Units that monitor and control Metropolitan's treatment plants and distribution system.

Headquarters Building

Complete final design of building improvements and commence construction of seismic upgrades to Metropolitan's Headquarters Building in Los Angeles.

Supply Reliability/System Flexibility

Start construction of upgrades to the Greg Avenue Pump Station depending on the SWP allocation.

Treatment Plant Reliability

Weymouth Plant

Complete construction to upgrade the west washwater tank. Complete construction of the domestic and fire water system improvements. Complete design of the seismic upgrades for the Administration Building. Complete construction of the chlorine system upgrades.

Diemer Plant

Complete construction of seismic upgrades and control room improvements at the Administration Building. Commence rehabilitation of the remaining four flocculation/sedimentation basins and upgrade of the plant's filter buildings, including valve replacement and seismic strengthening on the west side of the plant.

Jensen Plant

Complete the first phase upgrades to the plant's electrical systems. Complete construction of the inlet water quality instrumentation upgrades.

Mills Plant

Complete chemical tank replacement.

Water Quality/Oxidation Retrofit

Weymouth Plant Oxidation Retrofit

Complete all remaining construction to support ozone system operation.

Financial Projections

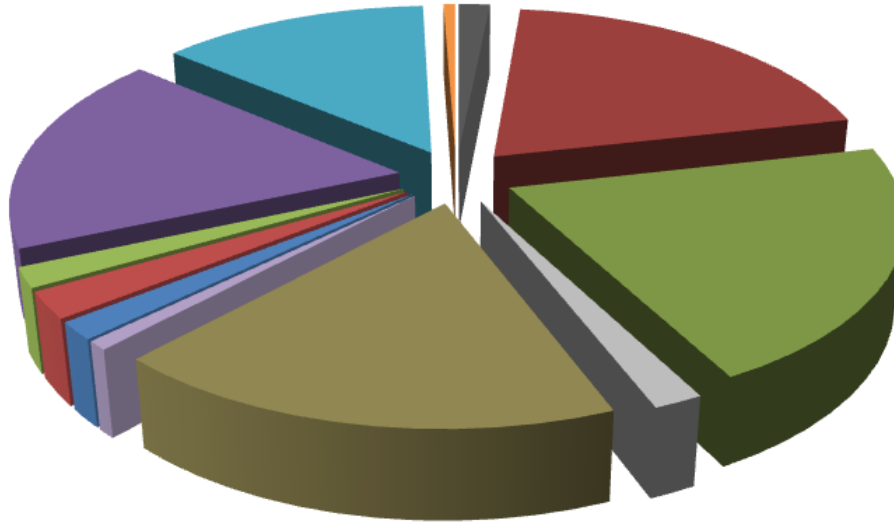
The CIP planned spending for FY 2018/19 and FY 2019/20 is estimated to be \$254.7 million and \$259.8 million, respectively, and is planned to be funded by a combination of current operating revenues (R&R and PAYGO) and debt. All of the projects in the CIP are reviewed as part of the biennial budgeting process. Considerations for timing of nearby projects and facility shutdowns, urgency, aging infrastructure, updated service demand projections, and regulatory requirements are taken into account. Estimates on CIP spending are updated on a regular basis as new projects are added, other projects are completed, construction cost estimates are refined or contracts awarded. From time to time, projects that have been undertaken are delayed, redesigned or deferred for various reasons and no assurance can be given that a project in the CIP will be completed in accordance with its original schedule.

The total CIP planned spending for the FY 2018/19 and FY 2019/20 biennium is \$514.5 million as shown in Figure 1 by Program. Planned spending has been estimated based on anticipated project progress and estimated costs for the new biennium budget period. Planned spending on CIP for FY 2018/19 is approximately \$15 million more than what was planned for FY 2017/18. This increase in planned spending supports the long-standing core business objective to maintain infrastructure reliability and provides a new emphasis on enhanced infrastructure safety, security, and resiliency as reflected in the General Manager's Strategic Priorities. Actual expenditures in FY 2017/18 are projected to be about \$43 million less than planned. Therefore, planned spending in FY 2018/19 of \$255 million reflects a \$58 million increase from projected actual expenditures in FY 2017/18 of approximately \$197 million.

Figure 2 depicts the capital expenditure profile, including actual and projected cash flow, for the 10-year period from FY 2013/14 through FY 2022/23 and Table 4 provides a more detailed three-year outlook.

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

Capital Investment Plan for FY2018/19 and FY19/20 - \$515 M



- Cost Efficiency & Productivity \$8 M
- CRA Reliability \$102 M
- Distribution System Reliability \$107 M
- Minor Capital Projects \$9 M
- PCCP Reliability \$92 M
- Regional Recycled Water \$4 M
- Regulatory Compliance \$8 M
- ROW & Infrastructure Protection \$12 M
- System Flexibility/Supply Reliability \$9 M
- System Reliability \$91 M
- Treatment Plant Reliability \$68 M
- Water Quality/ORP \$3 M

Figure 2 - CIP 10-year Window by Program FY 2013/14 through FY 2022/23

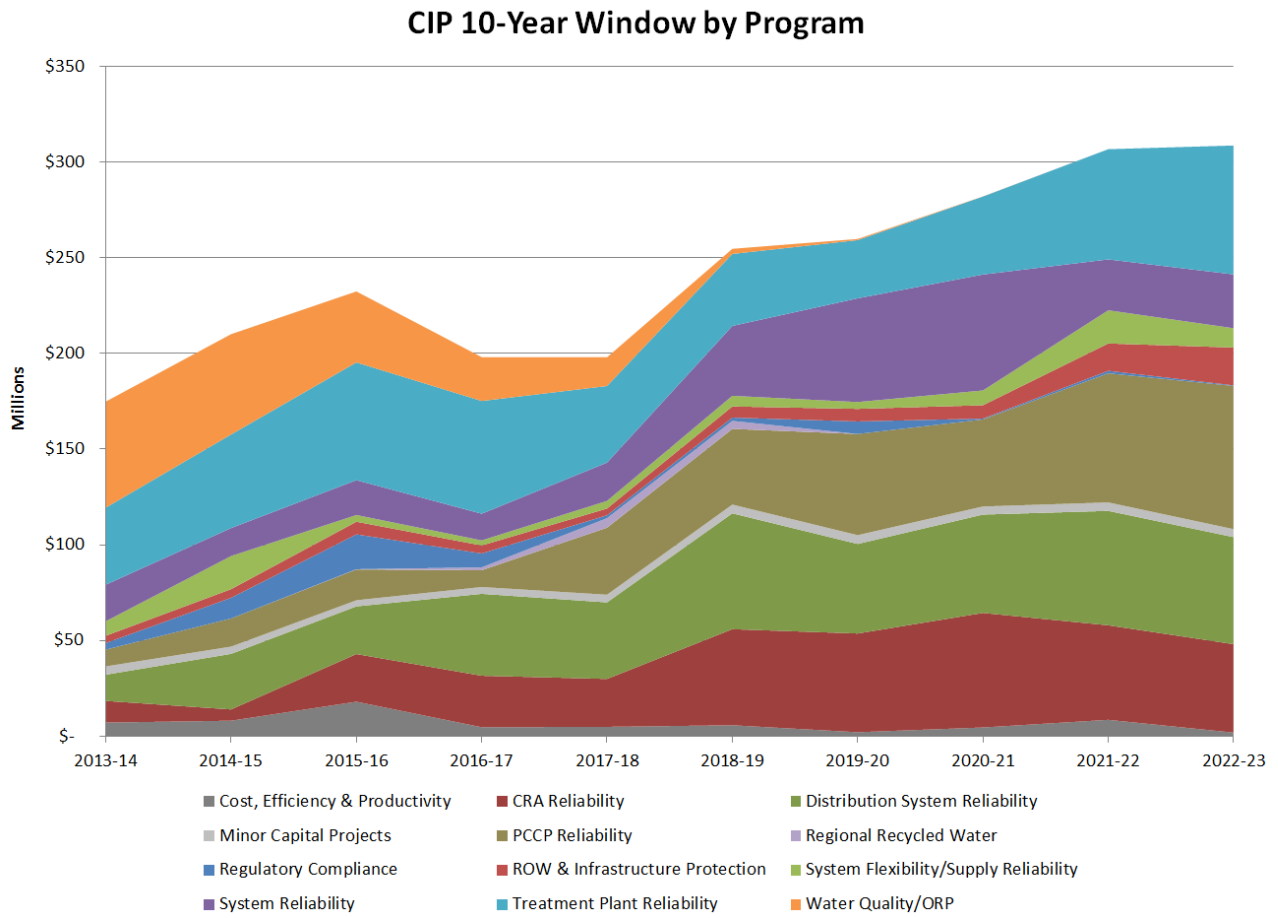


Table 4 - Three-Year Outlook

Capital Program and Appropriations	Appn. No.	FY 2018/19	FY 2019/20	FY 2020/21
Cost Efficiency & Productivity Program		\$5,838,700	\$2,185,875	\$4,658,636
DVL Recreation Facilities	15334	\$397,565	\$402,434	\$3,656,496
Power Reliability and Energy Conservation	15391	\$21,472	\$2,934	\$2,143
Information Technology System - Business, Finance, and HR	15411	\$757,626	\$135,510	—
Business Operations Improvement	15484	\$1,108,002	\$500,000	—
Project Controls and Reporting System	15490	\$2,319,035	—	—
Enterprise Content Management	15500	\$1,235,000	\$1,144,997	\$999,997
Colorado River Aqueduct Reliability Program		\$50,150,170	\$51,571,939	\$59,826,214
Cabazon Radial Gate Facility Improvements	15320	—	—	—
White Water Siphon Protection	15341	\$2,940,513	—	—
CRA - Conveyance Reliability	15373	\$9,391,601	\$1,673,986	—
CRA - Electrical/Power Systems Reliability	15384	\$7,653,620	\$12,556,202	\$12,068,498
CRA - Reliability for FY2006/07 through FY2011/12	15438	\$9,741,992	\$7,864,908	\$14,597,293
CRA Main Pump Reliability	15481	\$4,051,386	\$12,534,760	\$9,241,866
CRA - Reliability for FY2012/13 through FY2017/18	15483	\$15,115,391	\$14,240,575	\$19,394,760
CRA - Reliability for FY2018/19 through FY2023/24	18901	\$1,255,667	\$2,701,508	\$4,523,797
Distribution System Reliability Program		\$60,506,270	\$46,762,828	\$55,362,538
Conveyance and Distribution System - Rehabilitation	15377	\$10,174,007	\$14,281,382	\$1,698,451
Reservoir Cover Replacement	15417	\$16,485,432	\$3,718,547	\$6,484,709
Dam Rehabilitation & Safety Improvements	15419	\$6,233,677	\$4,841,995	\$4,729,001
Conveyance and Distribution System - Rehabilitation for FY2006/07 through FY2011/12	15441	\$2,549,373	\$1,274,191	\$9,293,434
Hydroelectric Power Plant Improvements	15458	\$3,469,641	\$250,000	\$421,374

Capital Program and Appropriations	Appn. No.	FY 2018/19	FY 2019/20	FY 2020/21
Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	15480	\$20,009,824	\$19,918,892	\$20,489,116
Pipeline Rehabilitation and Replacement	15482	—	—	—
Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	18902	\$1,584,316	\$2,477,821	\$12,246,453
Minor Capital Projects Program		\$4,614,738	\$4,598,624	\$4,265,945
Capital Program for Projects Costing Less Than \$250,000 for FY2014/15 through FY2015/16	15489	\$1,067,653	—	—
Capital Program for Projects Costing Less Than \$250,000 for FY2016/17 through FY2017/18	15498	\$2,374,956	\$2,366,656	\$912,001
Capital Program for Projects Costing Less Than \$250,000 for FY2018/19 through FY2019/20	18908	\$1,172,129	\$2,231,968	\$2,353,944
Capital Program for Projects Costing Less Than \$250,000 for FY2020/21 through FY2021/22	Future	—	—	\$1,000,000
Prestressed Concrete Cylinder Pipe Rehabilitation		\$39,519,326	\$52,832,893	\$45,440,250
PCCP Rehabilitation and Replacement	15471	\$1,940,449	\$1,956,224	\$1,948,334
Sepulveda Feeder PCCP Rehab	15496	\$1,500,000	\$996,240	\$7,984,647
Second Lower Feeder PCCP Rehab	15497	\$30,307,285	\$47,300,725	\$31,139,430
Allen-McColloch Pipeline, Calabasas Feeder, and Rialto Pipeline PCCP Rehabilitation	15502	\$5,771,592	\$2,579,704	\$4,367,839
Regional Recycled Water Supply Program		\$4,192,261	—	—
Demonstration-Scale Recycled Water Treatment Plant	15493	\$4,192,261	—	—
Regulatory Compliance Program		\$1,680,035	\$6,573,370	\$427,489
Chlorine Containment and Handling Facilities	15346	—	—	—
CRA - Discharge Containment	15385	\$1,680,035	\$6,573,370	\$427,489
Right of Way & Infrastructure Protection Program		\$5,831,896	\$6,554,364	\$6,998,356
Right of Way & Infrastructure Protection	15474	\$5,831,896	\$6,554,364	\$6,998,356
System Flexibility/Supply Reliability Program		\$5,556,301	\$3,576,433	\$7,714,204
Hayfield and Lake Perris Groundwater Recovery	15402	\$567,342	\$1,200,000	\$3,221,413
Perris Valley Pipeline	15425	\$318,998	—	\$586,400

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

Capital Program and Appropriations	Appn. No.	FY 2018/19	FY 2019/20	FY 2020/21
Weymouth Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15440	\$250,000	\$1,414,479	\$6,327,514
Jensen Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15442	\$2,003,971	—	\$5,836,278
Mills Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15452	\$2,191,195	\$834,520	\$413,468
Weymouth Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15477	\$5,545,488	\$6,081,917	\$1,801,952
Diemer Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15478	\$159,877	\$250,000	\$3,270,002
Mills Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15479	\$1,406,241	\$1,836,099	\$59,374
Jensen Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15486	\$1,087,514	\$212,180	\$79,181
Diemer Water Treatment Plant Improvements for FY2018/19 through FY2023/24	18903	\$248,872	\$1,117,816	\$153,033
Jensen Water Treatment Plant Improvements for FY2018/19 through FY2023/24	18904	\$526,274	\$3,741,799	\$1,946,008
Mills Water Treatment Plant Improvements for FY2018/19 through FY2023/24	18905	\$1,387,000	\$30,000	—
Skinner Water Treatment Plant Improvements for FY2018/19 through FY2023/24	18906	\$448,157	\$1,722,842	—
Weymouth Water Treatment Plant Improvements for FY2018/19 through FY2023/24	18907	\$113,764	\$209,407	\$424,449
Water Quality/Oxidation Retrofit Program		\$2,682,517	\$609,058	\$36,662
Diemer Water Treatment Plant Oxidation Retrofit	15389	\$1,240,526	\$609,058	\$36,662
Weymouth Water Treatment Plant Oxidation Retrofit	15392	\$1,325,311	—	—
Enhanced Bromate Control	15472	\$116,680	—	—

Proposed Funds for Paving and Roof Replacements

The criteria used to evaluate, score, and rank CIP proposals is designed such that projects for critical infrastructure used directly for transmission, treatment, distribution, or storage of water receive the highest priority. Consequently, pavement or roof restoration projects normally are not prioritized over water system or infrastructure technology improvements. These projects are often deferred until it can be demonstrated that existing paving or roofing has deteriorated to the point that water system reliability may be impacted, and the need to replace them becomes urgent and sometimes more expensive.

Rather than wait until pavement or roof conditions threaten system reliability, staff will recommend establishing an appropriation similar to the Minor Capital Projects Program, where a limited amount of funds may be authorized by the General Manager to perform paving and roof replacement projects before they reach this point. The replacement projects would continue to be prioritized based on need, but would not compete directly with other infrastructure reliability projects. Establishing a limited replacement fund would allow these recurring projects to be performed quickly and efficiently.

Capital Investment Plan Detail

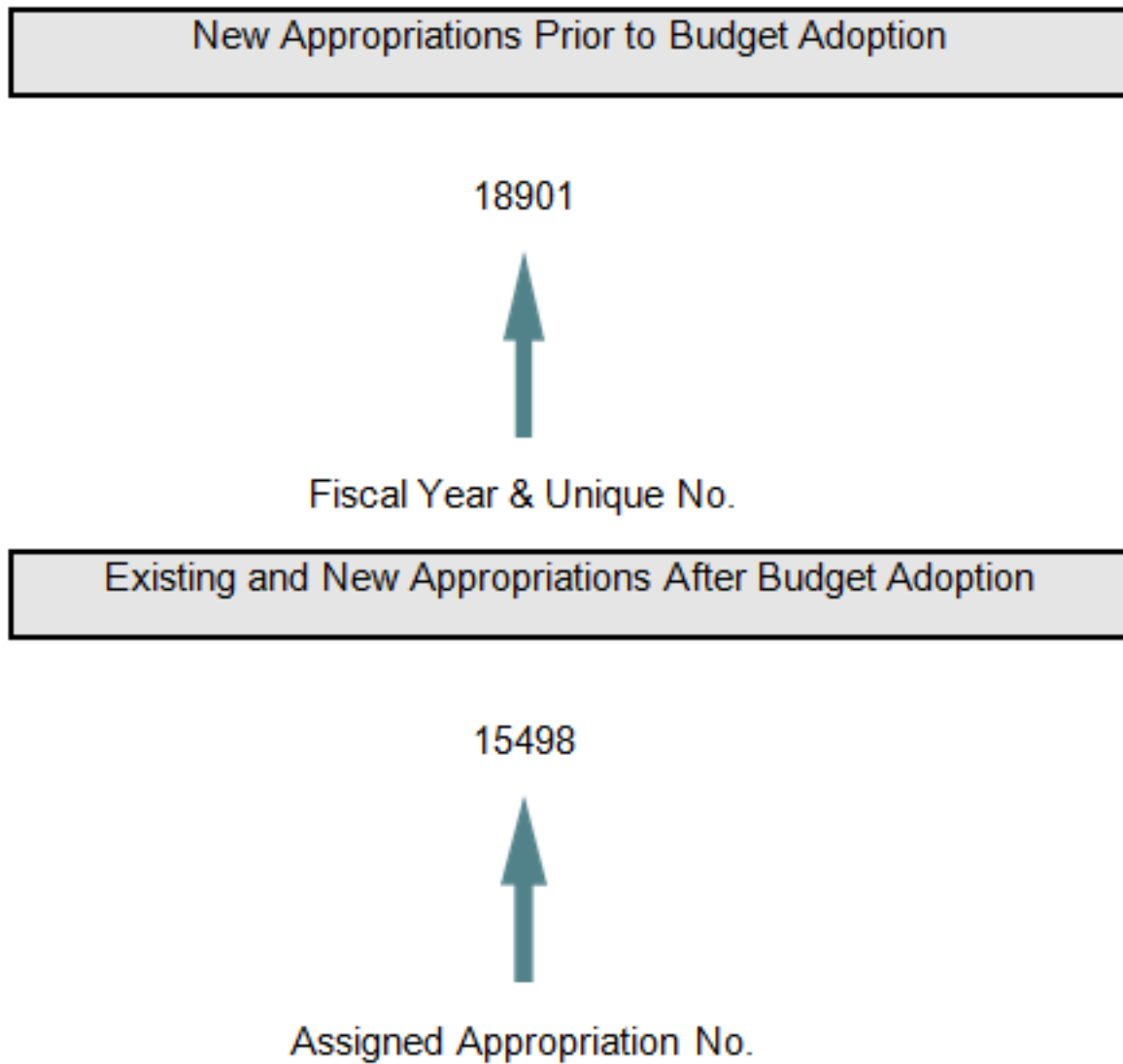
The core of this section is the Individual Appropriation Summaries, which provides information for each capital project that is scheduled to begin or will be underway during FY 2018/19. The information provided reflects appropriation and project details current as of the time of publication and is subject to change. The Individual Appropriation Summaries are ordered alphabetically by Appropriation title. For assistance in locating a specific appropriation, refer to Table 6. The information contained in the Individual Appropriation Summaries is described in further detail below.

Capital Appropriation Numbers

Appropriation numbers are comprised of a five-digit number. The five-digit number uniquely identifies an appropriation.

For new appropriations prior to budget adoption, the first three numeric digits represent the fiscal year the appropriation was identified (e.g., “189” is FY 2018/19), the last two numeric digits uniquely identify the new appropriation placeholder number. After Board adoption of the budget, the five-digit numbers in the placeholder number change to an assigned appropriation number. Figure 3 shows examples of the placeholder and appropriation numbers.

Figure 3 – Appropriation Number Naming Convention



Key Information

For each appropriation, key information is highlighted at the top of the Individual Appropriation Summary page and includes total appropriation estimate, appropriated amount, FY 2018/19 and FY 2019/20 biennial estimate, and total cost to date through September 30, 2017. Table 5 provides an explanation of each item.

Table 5 - Key Appropriation Information

Item	Description
Total Appropriation Estimate	The total estimate of cost from inception to completion of budgeted projects in an appropriation. It includes a contingency amount and actual expenditures if projects in the appropriation are complete or underway. The total appropriation estimate may have: (a) no funding authorization from the Board; (b) partial funding from the Board; or (c) complete funding from the Board.
Appropriated Amount	Amount of expenditures the General Manager is authorized by the Board to spend on projects in an appropriation. The amounts shown reflect actual appropriated amounts as of September 30, 2017.
Biennial Estimate	Estimate of expenditures from July 2018 through June 2020. It does not include a contingency amount.
Cost Through 9/30/2017	Actual expenditures to date through September 2017.

Narratives

Each Individual Appropriation Summary also contains a narrative portion that includes the purpose and scope of the appropriation, accomplishments through FY 2017/18, and objectives for FY 2018/19 and FY 2019/20. In these narratives, major activities, milestones, and actions are highlighted. The narratives conclude with a description of each currently authorized and/or planned project.

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Allen McColloch Pipeline, Calabasas Feeder, and Rialto Pipeline PCCP Rehabilitation

15502

Total Appropriation Estimate: \$986,976,000 Biennial Estimate: \$8,351,296
 Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain the reliability of the Allen-McColloch Pipeline, Calabasas Feeder, and Rialto Pipeline through specific PCCP repair and rehabilitation projects.

Scope

This appropriation was established to plan and implement projects to rehabilitate PCCP portions of the Allen-McColloch Pipeline, Calabasas Feeder, and Rialto Pipeline.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Allen-McColloch Pipeline PCCP Rehabilitation
- Calabasas Feeder PCCP Rehabilitation
- Rialto Pipeline PCCP Rehabilitation

Major Milestones Achieved Last Period:

- Allen-McColloch Pipeline PCCP Rehabilitation - Started preliminary design
- Calabasas Feeder PCCP Rehabilitation - Started preliminary design
- Rialto Pipeline PCCP Rehabilitation - Started preliminary design

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Allen-McColloch Pipeline PCCP Rehabilitation	247,275,000	2034	Complete preliminary design
Calabasas Feeder PCCP Rehabilitation	92,125,000	2028	Complete preliminary design
Rialto Pipeline PCCP Rehabilitation	557,851,000	2037	Complete preliminary design

Authorized Projects

Allen-McColloch Pipeline PCCP Rehabilitation

The planned rehabilitation work involves lining the existing PCCP segments with steel liner pipe designed as a stand-alone pipeline which can accommodate full internal and external pressures on the line. The project includes restoring the Allen-McColloch Pipeline to “As Like New Conditions” as possible. This would include relocation of all air release and vacuum valves (AR/VV) that have not already been relocated above ground and replacing all valves: sectionalizing, service connection turnout, pumpwell, AR/VV, shutoff, blowoff, etc. In addition, all master meters will be evaluated and possibly replaced, and sectionalizing and meter structures modified or replaced. Preliminary design was authorized by the Board in January 2018.

Calabasas Feeder PCCP Rehabilitation

The planned rehabilitation work involves lining the existing PCCP segments with steel liner pipe designed as a stand-alone pipeline which can accommodate full internal and external pressures on the line. The project includes restoring the Calabasas Feeder to “As Like New Conditions” as possible. This would include relocation of all air release and vacuum valves (AR/VV) that have not already been relocated above ground and replacing all valves: sectionalizing, service connection turnout, pumpwell, AR/VV, shutoff, blowoff, etc. In addition, all master meters will be evaluated and possibly replaced, and sectionalizing and meter structures modified or replaced. Preliminary design was authorized by the Board in January 2018.

Rialto Pipeline PCCP Rehabilitation

The planned rehabilitation work involves lining the existing PCCP segments with steel liner pipe designed as a stand-alone pipeline which can accommodate full internal and external pressures on the line. The project includes restoring the Rialto Pipeline to “As Like New Conditions” as possible. This would include relocation of all air release and vacuum valves (AR/VV) that have not already been relocated above ground and replacing all valves: sectionalizing, service connection turnout, pumpwell, AR/VV, shutoff, blowoff, etc. In addition, all master meters will be evaluated and possibly replaced, and sectionalizing and meter structures modified or replaced. Preliminary design was authorized by the Board in January 2018.

Planned Projects

No additional projects are planned.

Business Operations Improvement

15484

Total Appropriation Estimate:	\$11,900,000	Biennial Estimate:	\$1,608,002
Appropriated Amount 9/30/2017:	\$6,500,000	Cost Through 9/30/2017:	\$5,914,027

Purpose

To ensure reliability, efficiency and effectiveness of Metropolitan's business applications.

Scope

This appropriation was established to assess and implement projects ensuring customer service, efficiency/productivity, risk management and reliability of Metropolitan's business applications. Projects include replacing the budgeting system used to produce the biennial budget; updating the incident reporting system used to report incidents occurring on Metropolitan facilities including spills, injuries and accidents; and upgrading the employee learning management system which tracks required compliance training and offers other work-related curriculum to employees.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Learning Management System - completed market assessment

Projects Completed To Date:

- Four projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Budget System Replacement	1,800,000	2019	Complete deployment

Authorized Projects

No projects are currently authorized.

Planned Projects

Budget System Replacement

This project delivers a replacement system for the 10 year-old budgeting system, which produces the capital and O&M budgets.

Incident Reporting

This project delivers a replacement for the 15+ year-old Incident Reporting System. This system reports and tracks incidents that occur on Metropolitan property. Incidents include: safety, environmental, security and workers compensation related events.

Learning Management System Replacement

This project replaces the 8 year-old Learning Management System. This system supports Metropolitan's required compliance and safety training, mandatory employee training and other educational opportunities for employees.

MWDH20.com Redesign

The existing website will be replaced with a new site offering more functionality and capability to spread Metropolitan's mission of providing water to the public.

Cabazon Radial Gate Facility Improvements

15320

Total Appropriation Estimate:	\$535,000	Biennial Estimate:	\$0
Appropriated Amount 9/30/2017:	\$456,000	Cost Through 9/30/2017:	\$454,067

Purpose

To divert flow in the event of an emergency shutdown of the Colorado River Aqueduct into the San Gorgonio Wash, and ultimately into the Whitewater River.

Scope

This appropriation was established to convert the Cabazon Radial Gates Facility from an "active" spillway, which requires an operator to activate the gates, to a "passive" spillway which does not require an operator, by replacing both radial gates with a weir structure.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Cabazon Radial Gate Facility Improvements	5,032,000	Dec 2021	Deferred to continue after this biennium

Authorized Projects

Cabazon Radial Gate Facility Improvements

The Cabazon Radial Gate facility is located on the Colorado River Aqueduct (CRA) in the city of Cabazon within Riverside County and approximately one mile upstream of the San Jacinto Tunnel. The Cabazon Radial Gate facility was constructed in 1936 and consists of a 17-foot-wide by 16-foot-tall radial gate controlled by an electric motor actuator. The facility was designed to protect the downstream conduits and tunnels from becoming over-pressurized in the event of a blockage by diverting water into an 800-foot long, concrete-lined channel which flows into the San Gorgonio Wash. The existing radial gate, motor, and controls have reached the end of their service life and are no longer reliable.

This project will replace the discharge radial gate with a concrete weir structure. The weir system is a passive overflow system which will reject water above a set hydraulic grade and thereby prevent downstream over-pressurization. Approximately 100 feet of the approximately 800-foot-long discharge channel will be widened to accommodate the weir structure.

Planned Projects

No additional projects are planned.

Capital Program for Projects Costing Less Than \$250,000 for FY2014/15 through FY2015/16 15489

Total Appropriation Estimate: \$8,000,000 Biennial Estimate: \$1,067,653

Appropriated Amount 9/30/2017: \$8,000,000 Cost Through 9/30/2017: \$5,651,800

Purpose

To increase operational reliability and efficiency, and decrease maintenance costs.

Scope

This appropriation was established to implement capital projects costing less than \$250,000 on the distribution system, conveyance system, and treatment plants during FY 2014/15 - 2015/16. In addition to the scheduled projects, the need invariably arises for additional unscheduled capital projects where there is no viable alternative but to perform the work. The common driver for most of the projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- 13 projects were completed during the last biennium.

Projects Completed To Date:

- 13 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Various projects costing less than \$250,000	8,000,000	2020	Continue design and construction of remaining projects

Authorized Projects

20 projects are currently active.

Planned Projects

No additional projects are planned.

Capital Program for Projects Costing Less Than \$250,000 for FY2016/17 through FY2017/18 15498

Total Appropriation Estimate: \$10,000,000 Biennial Estimate: \$4,741,612

Appropriated Amount 9/30/2017: \$10,000,000 Cost Through 9/30/2017: \$1,707,396

Purpose

To increase operational reliability and efficiency, and decrease maintenance costs

Scope

This appropriation was established to implement capital projects costing less than \$250,000 on the distribution system, conveyance system, and treatment plants during FY 2016/17 - 2017/18. In addition to the scheduled projects, the need invariably arises for additional unscheduled capital projects where there is no viable alternative but to perform the work. The common driver for most of the projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Thirty-three projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Various projects costing less than \$250,000	10,000,000	2021	Continue design and construction of remaining projects

Authorized Projects

30 projects are currently active.

Planned Projects

No additional projects are planned.

Capital Program for Projects Costing Less Than \$250,000 for FY2018/19 through FY2019/20 18908

Total Appropriation Estimate: \$10,000,000 Biennial Estimate: \$3,404,097

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To increase operational reliability and efficiency, and decrease maintenance costs

Scope

This appropriation will be established to implement capital projects costing less than \$250,000 during FY 2018/19 - FY 2019/20. In addition to the scheduled projects, the need invariably arises for additional unscheduled capital projects where there is no viable alternative but to perform the work. The common driver for most of the projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved. This is a new appropriation.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Various projects costing less than \$250,000	10,000,000	2023	Complete all projects within 3 years

Authorized Projects

None, this is a new appropriation.

Planned Projects

Various Projects Costing Less Than \$250,000

The Minor Capital Projects Program enables staff to expeditiously execute small capital projects that arise throughout each fiscal year. These projects often arise after preparation of the CIP budget, are of an urgent nature, and are relatively small or less complex. Once the Minor Capital Projects Program has been approved by the Board, individual projects meeting the criteria may be authorized by the General Manager without further Board action.

These projects typically address recent equipment failures, urgent safety or regulatory compliance concerns, or essential replacements and refurbishments. Types of infrastructure typically refurbished or replaced under the Minor Capital Projects Program include pumps, valves, meters, structural components, plumbing, electrical systems, and water treatment equipment. The timing of the work may be expedited in order to take advantage of shutdown opportunities.

Chlorine Containment and Handling Facilities

15346

Total Appropriation Estimate: \$164,255,000 Biennial Estimate: \$0

Appropriated Amount 9/30/2017: \$162,370,000 Cost Through 9/30/2017: \$158,920,610

Purpose

To enhance hazardous chemical safety by reducing the potential for exposure to plant personnel or the public of a release of chlorine, and ensure compliance with current California Fire Code requirements.

Scope

This appropriation was established to construct facilities that handle and contain chlorine to prevent a chlorine release and to comply with security and safety regulations; and other related facilities that handle chlorine to meet water treatment process requirements. Since its inception, new chlorine containment and handling facilities have been completed at all five water treatment plants.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Chemical Unloading Facility (CUF) Chlorine Containment Facility - Completed construction
- Weymouth Filter Outlet Chlorination Capacity Increase - Completed construction

Projects Completed To Date:

- 17 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CUF Dechlorination System Upgrade	4,100,000	2023	Deferred to start after this biennium

Authorized Projects

Chemical Unloading Facility (CUF) Chlorine Containment

CUF is used to transfer liquid chlorine from vendor-supplied rail cars to cargo trailers, which will then be delivered to the three treatment plants that do not receive direct chlorine deliveries. Metropolitan's Board has adopted a policy to provide containment facilities where chlorine is handled or stored for safety and enhanced security. This project constructed an enclosed building to house chlorine rail cars, cargo trailers, trans-loading equipment, chlorinators and evaporators, and a number of supporting facilities to provide a consistent level of chlorine safety across Metropolitan facilities. Construction was authorized by the Board in March 2014 and has been completed. Production of record drawings is underway.

Weymouth Filter Outlet Chlorination Capacity Increase

When ozone disinfection is used, the required chlorine dosage at the filter outlet channel is increased in order to meet the Disinfectants/Disinfection By-Products Rule requirements and to control bacteriological growth in the distribution system. This project constructed a chlorine ejector building, increased the capacity of existing chlorinators serving the filter outlet injection points, and installed higher capacity ejectors. Design and construction were authorized by the Board in August 2010 and have been completed. Production of record drawings is underway.

Planned Projects

CUF Dechlorination System Upgrade

Evaluation of dechlorination options is needed to enhance compliance with discharge regulations and allow the transfer of liquid chlorine from rail cars to cargo trailers to occur over a wide range of operating conditions. This project will upgrade the existing system that neutralizes chlorine at CUF.

Conveyance and Distribution System - Rehabilitation

15377

Total Appropriation Estimate: \$127,927,000 Biennial Estimate: \$24,455,389

Appropriated Amount 9/30/2017: \$81,895,700 Cost Through 9/30/2017: \$78,372,247

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 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Garvey Reservoir Sodium Hypochlorite Upgrades - Completed design
- Hydroelectric Power Plant Discharge Elimination - Completed preliminary design
- Orange County Feeder Blow-Off Structure and Access Road Repair - Completed preliminary design
- Orange County Feeder Lining Repair - Continued design/started valve procurement
- West Valley Feeder 1, Access Roads and Structures Improvements, Stage 3 - Started design
- West Valley Feeder No. 1 - Stage 2 Valve Structure Mod - Completed construction

Projects Completed To Date:

- 47 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Hydroelectric Power Plant Discharge Elimination	1,200,000	2020	Complete design & construction
Orange County Feeder Blow-Off Structure and Access Road Repair	2,413,000	2019	Complete design & construction
Orange County Feeder Lining Repair	32,853,000	2020	Complete design
West Valley Feeder 1, Access Roads and Structures Improvements - Stage 3	5,000,000	2020	Complete design

Authorized Projects

Garvey Reservoir Sodium Hypochlorite Upgrades

Upgrades to the sodium hypochlorite feed system at Garvey Reservoir are needed to maintain treated water quality within the Central Pool portion of Metropolitan's distribution system. The existing hypochlorite system has exceeded its expected service life and has deteriorated over time, requiring frequent repairs. Failure of the chemical feed system would negatively affect water quality within the distribution system by not maintaining minimum chlorine residual. This project will replace the current hypochlorite system with new valves, piping, electrical systems, and instrumentation and updated controls that will allow both automated and remote control of the chemical feed system. Design was authorized by the Board in June 2013.

Hydroelectric Power Plant Discharge Elimination

This project consists of upgrades to the Foothill Power Plant to eliminate discharge of lubrication water flows into adjacent storm drains, as part of the Cross Connection Prevention Program, initiated in 2004. By eliminating the discharge, the increasingly costly and time-consuming tasks of monitoring and testing discharges for compliance with National Pollutant Discharge Elimination Standards (NPDES) permits will be sharply reduced, and discharge fees will no longer be required. Design and construction was authorized by the Board in August 2008.

Lake Skinner West Bypass Screening Structure Rehabilitation

The San Diego Canal West Bypass Screening Structure is located at the terminus of the San Diego Canal and is the starting point for water which bypasses Lake Skinner to downstream users. The bypass screening structure is fitted with an electrically powered revolving screen extending across the channel, which dips into the channel to intercept and collect algae mats and other floating debris. This system prevents algae mats and other debris from entering the treatment plant or member agency water systems via the bypass pipelines. The screening equipment was installed in the 1960s and has reached the end of its useful life. The screens' rotating components are currently inoperable, so they function as stationary screens; material collects on the screens until the debris is manually removed. Clogged screens may reduce deliveries to downstream users. Preliminary design was authorized by the Board in September 2007.

Orange County Feeder Blow-Off Structure and Access Road Repair

The existing blow-off structure on the Orange County Feeder enables the pipeline to be dewatered in the event of an emergency, and provides access for routine maintenance and inspection. Following 73 years of continuous operation in a moist environment near Upper Newport Bay, the blow-off valves and piping inside the structure have corroded and need to be replaced. In addition, due to ongoing erosion, the only road available to access the blow-off structure has been damaged and requires repairs. This project will restore access to the structure and replace its internal valves and piping. The planned repairs include regrading of the existing access road and reinforcement of crossings where the road intersects drainage channels; strengthening of the existing turn-around area adjacent to the blow-off structure, which will allow maintenance vehicles to set up for repair activities; installation of new valves and replacement of corroded piping; and modification of piping to ensure continued compliance with current California Division of Drinking Water regulations to prevent potential cross connections. Final design was authorized by the Board in March 2016.

Orange County Feeder Lining Repair

The Orange County Feeder conveys treated water from the Weymouth plant in La Verne to six member agencies in Los Angeles and Orange Counties. Recent internal inspections of the feeder have identified significant deterioration of the existing coal-tar enamel lining, which is 75 years old. While the pipeline's structural integrity remains sound at present, the interior lining displays blistering and disbonding, which expose the pipeline to accelerated rates of corrosion and eventual leakage. The lining needs to be repaired in order to maintain long-term reliability of the pipeline.

This project repairs the lining on the 11-mile-long Feeder, which is being accomplished in three stages. Stages 1 and 2 of this three-stage project have been completed, and rehabilitation of the remaining nine miles of the middle reach of the feeder will be completed under Stage 3. The stage 3 work includes replacement of the lining, welding of corroded pipe joints, and also replacement of 59 deteriorated valves along the feeder. Design was authorized by the Board in November 2014, and the valve procurement was authorized by the Board in September 2017.

West Valley Feeder No. 1, Access Roads and Structures Improvements - Stage 3

In 2001, a condition assessment of West Valley Feeder No. 1 identified that most of the blowoff valves, air release/vacuum valves, and sectionalizing valves were deteriorating and needed to be replaced. The existing valves were installed when the line was constructed in 1962 and no longer seal properly. Furthermore, several of the valves were directly buried and cannot be accessed without excavating the pipeline. This project will replace deteriorated valves, add valve structures, and improve access for maintenance and repairs. The work was prioritized and divided into three stages over multiple shutdown seasons to minimize the duration of pipeline outages. The first stage, which addressed 42 structures over four shutdown seasons, was completed in 2006. The second stage, which addressed 14 structures over two shutdown seasons, was completed in 2012. The third stage of work will add new valve structures in Chatsworth Park and replace valves located near Rinaldi Avenue. Design was authorized by the Board in October 2017.

Planned Projects

No additional projects are planned.

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 SWP 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.

Orange County Feeder Cathodic Protection

In 1974, Metropolitan installed an impressed current system on the 8.8-mile-long welded steel portion of the feeder. The impressed current system consists of deep-well anode groundbeds, rectifiers, and associated equipment. Recent testing performed by staff identified that three of the deep-well anode groundbeds no longer provide corrosion protection to the pipeline and need to be replaced. While the corrosion damage is not yet extensive, continued deterioration of the pipelines could lead to eventual leakage and possible rupture. This project will replace the existing cathodic protection system on the Orange County feeder to protect approximately 8.8 miles of pipeline. Ongoing design phase activities include utility verifications, preparation of drawings and specifications, local agency permitting development of a construction cost estimate, and receipt of competitive bids. The contract scope will include traffic control and street closures, drilling of vertical wells to install graphite anodes, installation of rectifier and electrical service cabinets, installation of electrical conduits, and street surface restoration. Metropolitan force activities will include procurement of rectifiers and remote monitoring units, final connection of the anodes to the pipelines, and start-up testing. The Board authorized design and installation in September 2016.

Palos Verdes Reservoir Sodium Hypochlorite Feed System Upgrade

The sodium hypochlorite system was constructed in 1993 to comply with drinking water standards. The system is old, getting outdated, and parts are hard to procure for repairs. Failure of these pump systems could jeopardize water quality. This project will replace outdated equipment and automate the sodium hypochlorite process to maximize efficiency, reliability, and maintainability while complying with applicable water quality standards. The Board authorized construction in November 2015.

San Gabriel Tower Seismic Upgrade

The San Gabriel Tower (SGT), 86-foot tall free-standing with a 24-foot by 14-foot rectangular base, was constructed in 1936, north of the city of Azusa. It sits at the base of the steep and weathered San Gabriel Mountains, between the west portal of Monrovia Tunnel No. 1 and the east portal of Monrovia Tunnel No. 2. The tower is surrounded by Angeles National Forest and is adjacent to Morris Reservoir. The function of the SGT is to regulate and isolate flows from the Weymouth Water Treatment Plant via the Upper Feeder pipeline to the Eagle Rock Control Facility located in the city of Los Angeles. It is situated between two active faults. The Sawpit and the Sierra Madre faults, which both capable of generating a magnitude 6.5 earthquake. While the tower was designed and constructed to the codes and standards in place during the 1930s, significant advancements have been made since that time in predicting the response and performance of structures as a result of seismic ground shaking. Seismic assessment and study are completed. The upgrades to the San Gabriel Tower will include: (1) reducing the height of the tower to increase its structural stability; (2) capping the tower with a protective slab designed to withstand a potential debris slide or rockfall; (3) adding new vacuum relief valves for surge protection; (4) replacing the slide gates and actuators to restore isolation capability for the Upper Feeder; (5) improving access to the tower and spillway, including the river crossing; (6) repairing the spillway's concrete; and (7) stabilizing the adjacent rocky slope. The Board authorized an initial investigation in December 2011.

Santiago Lateral Station 216+40 Butterfly Valve Replacement

The Santiago Lateral is a pre-cast concrete pipeline, ranging in size from 60-inch to 72-inch, and was constructed in 1955. It extends southerly from the Santiago Control Tower in the Anaheim Hills approximately 7.4 miles to Irvine Lake. The pre-cast concrete pipeline provides raw CRA water to Anaheim, IRWD and Irvine Lake. The 42-inch sectionalizing valve currently leaks at a rate of 0.5 to 1.0 cfs, and results in uncontrolled flows to the south portion of the Santiago Lateral. All leakage water from this location ultimately discharges to Irvine Lake at the terminus of the Santiago Lateral, which results in lost revenue to Metropolitan. This project will replace the valve and construct a bypass line to handle the lower flow rates. The location of the bypass line is not yet determined. A new vault upstream or downstream will be considered because there is not enough room in the current vault to construct a new bypass line, and the existing location does not provide room for expansion of the vault. The Board authorized preliminary design in August 2013.

OC-88 Pumping Plant Surge Tanks Upgrades

The OC-88 Pumping Plant was constructed in 1990 and is located in the city of Lake Forest. Treated water from the Diemer plant is conveyed through the Allen McColloch Pipeline (AMP) to the OC-88 Pumping Plant, which in turn pumps water directly into the Municipal Water District of Orange County's (MWDOC's) South County Pipeline. The surge tank system protects the AMP and the South County Pipeline from pressure surges. Two new surge tanks were added when the OC-88 Pumping Plant modifications were completed in 2005. However, the air compressor was not upgraded at that time. A recently completed high-flow test at the OC-88 Pumping Plant identified that a second air compressor should be installed to adequately protect the AMP and the South County Pipeline. This project will upgrade the OC-88 Pumping Plant's surge tank system and install a second air compressor. Preliminary design was authorized by the Board in August 2013.

Santa Ana Bridge Expansion Joint Replacement

The expansion joint located on the Upper Feeder as it crosses the Santa Ana River allows for thermal expansion and contraction of the pipeline. The existing expansion joint's seals have deteriorated from continuous use over a period of 80 years. The joint has a history of leaks and has required several repairs to date. A new expansion joint has been procured that will be more durable and will significantly reduce the level of maintenance required. Due to the importance of the Upper Feeder in delivering untreated water to the Weymouth plant, staff successfully installed a new joint during a shutdown of the feeder January 2018. The scope of the contract included removal of bridge structural members to access the pipe and joint; removal of the existing expansion joint from the pipeline by cutting and removing an eight-foot pipe segment; installation of the new bellows-type expansion joint; construction of a steel cage to provide lateral restraint at the joint; and minor adjustments to the bridge truss isolators. Metropolitan force activities included grading of the access road to the project site, support by divers to close the Upper Feeder gates at the Lake Mathews Forebay, dewatering of the feeder, final disinfection, and return of the line to service. A construction contract was awarded by the Board in August 2017.

Sepulveda Canyon Control Facility Seismic Upgrades

The Sepulveda Canyon Facility consists of a pressure control structure, hydroelectric plant, and two water storage tanks. The pressure control structure was constructed in the early 1970s to reduce pressure in the 9-foot-diameter Sepulveda Feeder as it conveys treated water from the Jensen plant. The two water tanks have a combined capacity of 18 million gallons of water and are used to regulate flows through the pipeline. The hydroelectric plant, which was constructed in 1982, takes advantage of excess pressure in the Sepulveda Feeder to generate up to 8.6 megawatts of electricity with its single turbine. The facility is located on top of a large pad that was constructed by filling a steeply sloped V-shaped ravine. The pad is approximately 120 feet above the toe of the slope. The site is located within one mile of the Santa Monica Fault, which is capable of generating a 6.8 magnitude earthquake. Preliminary slope analyses indicate that the fill could slide down the slope during a major earthquake, causing significant damage to the pressure control structure, the water tanks, and the hydroelectric plant. This project will consolidate all seismic upgrade efforts for the entire Sepulveda Canyon Control Facility and seismically upgrade the facility. The Board authorized preliminary design in May 2011.

Planned Projects

No additional projects are planned.

Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18 15480

Total Appropriation Estimate: \$335,454,000 Biennial Estimate: \$39,928,716

Appropriated Amount 9/30/2017: \$48,210,000 Cost Through 9/30/2017: \$29,753,679

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:

- Casa Loma Siphon Barrel 1 Joint Repair
- Colorado River Aqueduct Casa Loma Siphon Barrel No. 1 Project 2 - Permanent Repairs
- East Orange County Feeder No. 2 Service Connection A-6 Rehabilitation
- Electrical Upgrades at 15 Structures in the Orange County Region
- Fairplex and Walnut Pressure Control Structure Valves Replacement
- Lake Mathews Electrical Upgrades
- Wadsworth Pumping Plant Yard Piping Lining Repairs
- West Orange County Feeder OC-09 Rehabilitation
- West Orange County Feeder Valve Replacement

Major Milestones Achieved Last Period:

- Casa Loma Siphon Barrel No. 1 Joint Repair - Completed construction
- Casa Loma Siphon No 1, Casa Loma Canal & San Diego Canal Flow Meter Replacement - Completed construction
- DVL East Dam Electrical Upgrades - Completed construction
- Garvey Reservoir Control Valves Replacement - Completed construction
- Middle Feeder Relocation for SCE Mesa Substation - Completed construction
- Rialto Pipeline Service Connections CB-12 and CB-16 Valve Replacement - procurement of valves for MFE to contractor - Completed procurement
- Upper Feeder - Structural Protection - Completed construction

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Allen-McColloch Pipeline OC-76 Turnout	1,670,000	2020	Complete construction
Colorado River Aqueduct Casa Loma Siphon Barrel No. 1 - Permanent Repairs	7,000,000	2023	Complete preliminary investigation
Conveyance and Distribution System - Electrical Upgrade	90,176,000	2027	Begin investigation
Electrical Upgrades at 15 Structures in OC Region	3,432,000	2020	Complete construction
Fairplex and Walnut Pressure Control Structure Valves Replacement	873,000	2019	Complete construction
Garvey Reservoir Drainage & Erosion Control Improvements	4,400,000	2021	Complete drainage improvements for Zones 2, 3 & 4
Hollywood Tunnel North Portal Equipment Upgrades	4,150,000	2021	Begin design
Lake Mathews Electrical Reliability	5,782,000	2022	Begin design
Lake Skinner Area Distribution System Valve Replacement	900,000	2020	Begin procurement
Lakeview Pipeline Repairs	82,000,000	2021	Complete design
Orange County Area Distribution System Valve Replacement	2,400,000	2020	Begin procurement
Orange County C&D Team Support Facility	12,747,000	2020	Complete construction
Rialto Pipeline Service Connections CB-12 and CB-16 Valve Replacement & Electrical Upgrades	4,030,000	2020	Complete construction
San Dimas and Red Mountain Power Plants Standby Diesel/Engine Generator Replacements	1,700,000	2021	Begin design
Sepulveda Canyon Control Facility Bypass	50,000,000	2021	Complete design
West Orange County Feeder OC-09 Rehabilitation	3,700,000	2021	Begin design
West Orange County Feeder Valve Replacement	2,000,000	2020	Begin design and valve procurement

Authorized Projects

Allen-McColloch Pipeline OC-76 Turnout

The Allen-McColloch Pipeline (AMP) delivers treated water from the Diemer plant in Yorba Linda to southern Orange County. Metropolitan acquired the AMP, including Service Connection OC-76, from MWDOC in the mid-1990s. OC-76 has a nearly two-mile-long connecting pipeline between the AMP turnout and the service connection meter. A section of the connecting pipeline has become exposed due to erosion in Serrano Creek. While the line is currently intact, it could be undermined by continued erosion or could be damaged by debris flows in the creek. The project will bypass the exposed portion of the connecting pipeline by relocating the AMP turnout from the north side of Serrano Creek to the south side and eliminate 6,850 feet of pipeline, including the exposed section in the creek. An isolation butterfly valve and two air release/vacuum valve assemblies will be installed. Construction was authorized by the Board in October 2017.

Colorado River Aqueduct Casa Loma Siphon Barrel No. 1 - Permanent Repairs

In November 2016, leaks were detected on Barrel No. 1 of the Casa Loma Siphon. It was determined that the pipe has had significant horizontal and vertical movements. The leaks do not immediately jeopardize the structural integrity of the aqueduct but if repairs are not performed, the continued leakage over time could erode soil, undermine the siphon, and cause damage to the siphon structures. The Casa Loma Siphon Barrel No. 1 is vital to Metropolitan's conveyance system moving water from the desert pumping plants to Lake Mathews. The work is conducted in two stages. Under Project 1, internal seals were installed on 13 joints as an interim measure to address the leaks. These repairs were completed in February 2017, during a planned shutdown of the CRA. Project 2, will develop options to permanently repair the pipe joints within the siphon. The potential repairs may include installation or replacement of the existing sleeve-type couplings, or installation of recently developed earthquake-resistant pipe joints. Construction for Project 1 and preliminary investigations for Project 2 were authorized by the Board in January 2017.

DVL East Dam Electrical Upgrades

Diamond Valley Lake (DVL) was completed in 2000. During the original construction of DVL, a permanent electrical system was installed to power the dam monitoring equipment at Owen Dam and the Saddle Dam. However, only a temporary system was installed to serve the monitoring system at the East Dam. This project installed permanent electrical system at the East Marina and East Dam area to reliably support the dam monitoring equipment, the WAN system, and security throughout the area. Construction was authorized by the Board in May 2016 and has been completed. Production of record drawings is in progress.

East Orange County Feeder No. 2 Service Connection A-6 Rehabilitation

The A-06 Valve and Meter structure is a service connection for the City of Anaheim and is located on the East Orange County Feeder #2. The meter is a 24-inch venturi meter with a design capacity of 40 CFS. The meter was first put into service in August of 1964. During routine maintenance, staff noticed a leak from a weld-o-let near the bottom of the venturi meter. The Materials and Metallurgy Team inspected the meter in June 2014, and recommend replacement the venturi meter. The scope of work is to replace the A-06 Venturi meter, valve, steel grating, and adjacent piping that is deteriorated. The work will also include replacing the sump pump and identifying and restoring all electrical components to like new condition. Procurement and design were authorized by the Board in May 2017.

Electrical Upgrades at 15 Structures in the Orange County Region

Fifteen service connection structures within the Orange County operating region of Metropolitan's distribution system contain deteriorated electrical components. The conduits and electrical equipment inside the structures have corroded and no longer provide adequate grounding. In addition, the wiring inside the conduits may be compromised. These electrical components have been in continuous service in a damp, underground environment for over 50 years, and need to be upgraded. The upgrades will prevent the loss of sensitive electronic equipment and data, improve reliability, and enhance safety. The planned work includes replacing the existing service panels, conduits, wiring lights, and receptacles; and providing new grounding systems, sump pumps, exhaust fans, and remotely monitored flood alarms at each structures. This is part of the overall Conveyance and Distribution System Electrical Structures Rehabilitation. This initial upgrade addresses the highest priority structures. Design was authorized by the Board in September 2016.

Fairplex and Walnut Pressure Control Structure Valves Replacement

The Fairplex and Walnut Pressure Control Structures regulate upstream pressure and control flows within the Orange County Feeder. These structures are located in the cities of Pomona and Walnut. Each structure has two trains of piping that contain two 24-inch isolation valves and one 24-inch pressure-control valve. The eight isolation valves have deteriorated and leak excessively, preventing staff from performing maintenance on the control valves without shutting down the feeder. These shutdowns impact deliveries to eight service connections located between the Weymouth plant and Orange County Reservoir. The eight butterfly valves will be replaced during an upcoming shutdown of the northern reach of the feeder. The four control valves will then be refurbished in a sequential manner while the feeder remains in service. The scope of work includes: (1) procurement of valves and materials; (2) fabrication of fittings; (3) installation of the new valves; (4) rehabilitation of the existing control valves; and (5) shutdown activities. Construction was authorized by the Board in September 2017.

Garvey Reservoir Drainage & Erosion Control Improvements

Garvey Reservoir was constructed in 1954 as a component of the Middle Feeder system. The reservoir receives treated water from the Weymouth plant and has a maximum storage volume of 1,600 acre-feet. The reservoir is located within the city of Monterey Park on a hill that is surrounded on the west and south by residential properties that are lower in elevation. During significant storm events, surface runoff collects and flows downhill through improved drainage systems and natural drainage courses to Metropolitan's property boundaries. Connecting off-site drainage systems that were constructed by developers more than 50 years ago do not meet current minimum design standards and have deteriorated over time. Recognizing the mutual benefit of addressing runoff issues from the reservoir, Metropolitan entered into an agreement with the city of Monterey Park to implement drainage and erosion control improvements both within Metropolitan's property, and improvements to drainage in city streets. There are 14 separate drainage outlets emanating from the 11 geographically defined drainage zones at Garvey Reservoir to be mitigated. Construction for the two drainage zones around the reservoir was authorized by the Board in August 2017.

Lake Mathews Electrical Reliability

The existing electrical distribution system at Lake Mathews constructed during the 1930s needs to be upgraded for reliability. This system has been in service for over 75 years and serves the lake's outlet towers and junction shaft, hydroelectric plant, forebay, chlorination system, administrative offices, and maintenance and repair shops. The electrical distribution system is outdated, has experienced numerous overloads, and lacks capacity for planned additional equipment. The system needs to be upgraded to maintain reliability and meet future power demands. Planned upgrades include replacing the underground and overhead distribution lines; replacing the existing unit power centers and adding additional unit power centers where needed; and integrating the new electrical system with Metropolitan's system-wide supervisory control and data acquisition system. Preliminary design was authorized by the Board in March 2017.

Lake Skinner Area Distribution System Valve Replacement

The valves on the Lake Skinner Outlet Conduit, San Diego Pipeline No. 3, San Diego Pipeline No. 4, and San Diego Pipeline No. 5 have been in service up to 50 years, and have reached the end of their useful and expected service life. Failure of these valves or their associated components may result in an unplanned emergency shutdown of one of these pipelines impacting delivery to our member agencies. The scope of work is to replace approximately 30 deteriorated valves ranging in size from 8 to 12 inches in diameter on multiple pipelines in the Skinner Distribution System.

Lakeview Pipeline Repairs

The Lakeview Pipeline was constructed in 1973 to provide water from the East Branch of the SWP to the Skinner area. Since it was completed, the Lakeview Pipeline has been shut down on numerous occasions to repair leaking joints. The line has experienced significant deformation which has caused leaks at pipe joints and loss of mortar lining. Due to the significant potential for corrosion of the pipeline, and the lack of structural integrity in many locations, permanent repairs should proceed expeditiously. In March 2015, in response to the ongoing state-wide drought, the Stage 1 repairs were completed. This work included lining a one-mile portion of the Lakeview Pipeline known as the Bernasconi Tunnel with a steel liner. In conjunction with the recently completed Lakeview Pipeline/Inland Feeder intertie, this improvement enables up to 200 cubic feet per second (cfs) of water stored in Diamond Valley Lake to be delivered to the Mills plant. The Stage 2 work includes lining 3.7 miles of the Lakeview Pipeline between the Inland Feeder's PC-1 control structure and the Perris Control Facility, along with installation of a 1,000-foot-long reach of 9.5-foot-diameter pipe to bypass the Perris Control Facility. Upon completion of the Stage 2 work, the Lakeview Pipeline will be capable of delivering up to 340 cfs from Devil Canyon through the Inland Feeder to the Mills plant, providing an alternate delivery route to the plant as backup to the Santa Ana Valley Pipeline. The future Stage 3 repairs will include lining the remaining 6.7 miles of the Lakeview Pipeline that extends from PC-1 to the San Diego/Casa Loma Canal junction structure. Stage 2 final design was authorized in December 2015.

Orange County Area Distribution System Valve Replacement

The valves on the Second Lower Feeder, Orange County Feeder, East Orange County Feeder, Lower Feeder, Santiago Lateral, and the Allen-McColloch Pipeline have been in service up to 50 years, and have reached the end of their useful and expected service life. Failure of these valves or their associated components may result in an unplanned emergency shutdown of one of these pipelines impacting delivery to our member agencies. The scope of work is to replace approximately 70 deteriorated valves ranging in size from 1 to 12 inches in diameter on various pipelines in the Orange County Distribution System. Construction was authorized by the Board in September 2017.

Orange County C&D Team Support Facility

O&M support functions for the 700-square-mile Orange County region of the distribution system are being performed from temporary trailers, shipping containers, and an aging warehouse. A permanent service center is required and will provide local storage of materials and equipment, house staff, and contain shops for minor repairs. A permanent facility will provide a safer and more efficient workplace to support shutdowns, routine maintenance activities, and urgent repairs. In February 2018, staff completed the final design for the new 12,000 square foot building and award of a construction contract for the building is planned. The scope of the construction contract includes: (1) site development work includes vehicle parking; perimeter lighting; storm water system; utility extensions including potable water, sewer, natural gas, and electrical service; and hazardous material storage; and (2) building construction which includes: offices and workspace for approximately 24 staff; a welding/fabrication shop with specialized equipment including a drill press, band saw, grinder, welder, parts cleaner, welding hood, and 3-ton bridge crane; a pipe and conduit-bending area; work bench and parts cleaning areas; and tool crib and storage areas for fabrication and welding supplies.

Rialto Pipeline Service Connections CB-12 and CB-16 Valve Replacement and Electrical Upgrades

The Rialto Pipeline is a 96-inch-diameter PCCP Feeder that was constructed in 1972. It supplies State project water to the Weymouth plant and directly serves member agencies through 11 service connections including, CB-12 and CB16. Service connection CB-12 and CB-16 valves are no longer operating correctly. The 48-inch-diameter isolation valves no longer seal and continuously leak. Repair of the butterfly valves is not possible, since the rubber seats are vulcanized and no longer available. This project will install new isolation valves and perform electrical upgrades at the two service connections. Design and procurement were authorized by the Board in August 2016.

San Diego Canal Radial Gate (VO-8) Rehabilitation

The San Diego Canal Turnout Radial Gate VO-8 is an integral component in the operation of the system that conveys Colorado River water to the San Diego Canal from the Casa Loma Canal. This radial gate controls flows and isolates the Casa Loma Canal from the San Diego Canal. The radial gate was completely replaced during the San Diego Canal Enlargement Project in the early 1990's. The original coating/corrosion protection is in a state of failure and no longer protecting the steel from corrosion. The scope of work is to remove and replace the VO-8 radial gate, strengthen or replace steel members as needed, prepare and coat steel surfaces with a galvanic coating.

San Dimas and Red Mountain Power Plants Standby Diesel/Engine Generator Replacements

The emergency generator at Red Mountain Hydroelectric plant was installed during the original plant construction in 1983. The generator at the San Dimas Hydro Electric Power Plant was installed during original Pressure Control Structure construction in 1975. These generators are necessary to ensure all operating equipment performs the required flow transfers between the Hydroelectric Power Plant (HEP) and the Pressure Control Structure (PCS) during un-scheduled HEP interruptions and SDGE station-power failures. The scope of work is to design, procure, and construct two standby diesel engine generators, one each at the San Dimas and Red Mountain Power Plants. The project scope includes removal of the existing generators and fuel tanks, construction of a new unloading facility with spill containment, steel overhead canopies, and electrical and mechanical system upgrades to the replacement generator to meet current emission and fire code.

Sepulveda Canyon Control Facility Bypass

The Sepulveda Canyon Control Facility is located in the Sepulveda Pass and was constructed in 1970. The facility consists of a hydroelectric power plant, a pressure control structure, two water storage tanks, and a chlorination station. All of the water conveyed by the Sepulveda Feeder passes through the facility and its storage tanks. There is presently no means to bypass the tanks. The scope of work is to add a bypass to the existing facility and to perform seismic upgrades and slope remediation below the tanks. The improvements will accommodate planned future upgrades including lining of the pre-stressed concrete cylinder pipe (PCCP) portions of the Sepulveda Feeder, and the potential addition of a pump station to provide a backup source of supply for the western portion of the distribution system. Preliminary design was authorized by the Board in July 2015.

Wadsworth Pumping Plant Yard Piping Lining Repairs

The yard piping system at Wadsworth Pumping Plant connects the pump/turbine units within the pump house to Diamond Valley Lake's (DVL) outlet conduit, pressure control structure, the Eastside Pipeline, and the pumping plant forebay. This piping network is designed for multiple flow configurations that allow power generation, filling of DVL, or withdrawal from the lake. The yard piping consists of a 144-inch-diameter main conduit with 54-inch-diameter manifold pipes at the pumping plant; a 144-inch-diameter main conduit with 66-inch-diameter manifold pipes at the pressure control structure; and a lake outlet conduit that varies in diameter from 90 to 192 inches. The scope of work is to replace the existing epoxy coating with a polyurethane lining on the internal surfaces of the Wadsworth yard piping. Design was authorized by the Board in September 2016.

West Orange County Feeder OC-09 Rehabilitation

The West Orange County Feeder was constructed in 1956 as a component of the Lower Feeder system. It delivers treated water from the Robert B. Diemer Water Treatment Plant in Yorba Linda to the northwestern portion of Orange County. Service Connection OC-09 on the West Orange County Feeder consists of a turnout tee, a venturi meter, and a shutoff valve. The turnout tee is encased in concrete and is located beneath the traffic lanes of Katella Avenue in the city of Garden Grove, adjacent to the boundary line with the city of Stanton. The meter vault is located below Dale Street. This structure contains a 14-inch conical plug valve, a venturi meter, and associated piping and electrical systems. Gradual corrosion from over 60 years of operation in a damp underground environment has led to deterioration of the equipment within the vault. This equipment needs to be replaced to maintain reliable deliveries from the service connection. Preliminary Design Phase was authorized by the Board in October 2017.

West Orange County Feeder Valve Replacement

The West Orange County Feeder was constructed in 1956 as a component of the Lower Feeder system. It delivers treated water from the Diemer plant in Yorba Linda to the northwestern portion of Orange County. A recent condition assessment identified that 13 structures require rehabilitation, including the replacement of air release/vacuum valve assemblies and adjacent plug valves. These valves were installed during the original construction of the feeder, and have been in service for over 60 years. Six of the air release/vacuum valves will also be relocated from a manhole to an above ground cabinet within the street-side parkway zone to prevent the potential of treated water in the distribution system becoming exposed to contaminants under certain operating conditions. Relocation is needed to comply with California State Water Resources Control Board requirements. Design and valve procurement were authorized by the Board in October 2017.

Planned Projects

Conveyance and Distribution System Electrical Structures Rehabilitation

Metropolitan's distribution system includes over 1,000 structures which house equipment used to measure pipeline flow, control pipeline flow and/or pressure, relieve pressure or vacuum, and isolate or sectionalize a pipeline. The conduits and electrical equipment inside the structures have corroded and no longer provide adequate grounding. In addition, the wiring inside the conduits may be compromised. These electrical components have been in continuous service in a damp, underground environment for over 50 years, and need to be upgraded. The rehabilitation for the Conveyance and Distribution System Electrical Structures has been prioritized and will be completed in five stages. The Stage 1 upgrades, described under a separate project, will upgrade 15 highest priority service connection structures within the Orange County. Stage 2 improvements will upgrade remaining 244 structures within the Orange County. Stage 3 improvements will upgrade 258 structures in northern Los Angeles County. Stage 4 improvements will upgrade 258 structures in southern Los Angeles County. Stage 5 improvements will upgrade 301 structures in Riverside, San Diego, and San Bernardino Counties. The planned work includes replacing the existing service panels, conduits, wiring lights, and receptacles; and providing new grounding systems, sump pumps, exhaust fans, and remotely monitored flood alarms at each structure.

Corona Hydroelectric Plant Seepage Remediation

The Corona Hydroelectric Plant was constructed in 1982 along the Lower Feeder and can generate up to 2.8 megawatts. A sinkhole appeared on the east side of the Corona Hydroelectric Plant accompanied by groundwater intrusion into the plant building. Damage to the structure rebar of the south wall of the plant prompted immediate repairs to damaged rebar and concrete around them. Groundwater seepage into the power plant is causing failure of the east wall of the Corona HEP, compromising the reliability and operational continuity of the conveyance system in general and loss of power generation capability of the power plant in particular. The scope of work consists of drilling of monitoring wells, demolition of existing obsolete Chlorine Injection building, excavation of the existing sinkhole area and backfilling it with compacted soil up to the existing grade along with waterproofing of the exterior wall upstream of the Corona HEP structure.

East Lake Skinner Bypass & Bypass #2 Screening Structure Upgrade

The East Lake Skinner Bypass Slide Gates were built 50 years ago in 1967 and are in need of rehabilitation. The gates are binding during operation which is rendering them in-operable. In addition, the East Lake Skinner Bypass Afterbay Trash Rack needs to be replaced with a new stainless steel rack to minimize the corrosion which caused the existing galvanized material to collapse under the weight of a severe algae bloom during bypass operations. The scope of work consists of reconditioning the East Lake Skinner Bypass Slide Gates (3 of them), and to replace the East Lake Skinner Bypass After-bay trash rack which is severely corroded and partially collapsed. In addition, this project will modify the East Lake Skinner Bypass Algae Screening Mechanisms Discharge Piping to bypass the Algae Shakers, and upgrade the Lake Skinner Bypass #2 Forebay Trash Rack Lifting Mechanisms.

East Orange County Feeder #2 Seismic Retrofit at Diemer Water Treatment Plant

A recent assessment identified a slope near the south western pad at the Diemer plant as having the potential to damage the EOCF2 pipeline during a significant earthquake. The pipeline may no longer meet current seismic codes and regulations. This structure requires further analysis to ensure that it meets Metropolitan's current structural standards and the facility is reliable in the event of seismic activity. This project will assess, design, and complete seismic retrofit construction near the south western pad at the Diemer plant.

Hollywood Tunnel North Portal Equipment Upgrades

Built as part of the Santa Monica Feeder in 1937, the North Portal of the Hollywood Tunnel is one of three control points along the feeder, which delivers water to the cities of Burbank, Beverly Hills, Los Angeles, and Santa Monica. The valves and mechanical control system at the North Portal of the Hollywood Tunnel are obsolete. Repair parts are not available and must be fabricated at a machine shop. This project will replace the existing sleeve valves and hydraulic actuators at the North Portal of the Hollywood Tunnel with new control valves with electric actuators. The upgrade includes replacing the mechanical controls with electronic, PLC/SCADA controls, which will allow the facility to be monitored and controlled from the Eagle Rock Operations Control Center.

Live Oak Reservoir Bypass Pipeline Cathodic Protection

Constructed in 1973, the Live Oak Reservoir Bypass (LORB), Inlet, and Outlet Pipelines are dielectrically coated welded steel pipelines with a diameter of 97-inches and are approximately 0.6 miles long. The 24-inch dielectrically coated Desilting pipeline ties in to the Outlet pipeline, crosses the Bypass pipeline and is approximately 800 feet long. The LORB connects the prestressed reaches of the Rialto Pipeline to the east and the west. The pipeline is one of the few reaches of welded steel pipe that is not yet cathodically protected. A failure of the Live Oak Reservoir Bypass would inhibit Metropolitan's ability to convey water through its system and potentially disrupt Metropolitan's ability to deliver water to several member agencies. The scope of work is to design and install a comprehensive cathodic protection system in the Live Oak Reservoir Bypass.

Olinda Pressure Control Structure and Santiago Tower Emergency Generators

The Santiago Control Tower, constructed in 1955, acts as a control and diversion facility for water supplied to the Santiago Lateral, the Santiago Lateral Spillway, and the Lower Feeder. The Olinda Pressure Control Structure was constructed in 1969 to provide regulation of flows in the Lower Feeder between the Santiago Control Tower and Diemer Filtration Plant. This project will procure and install emergency generators at the Olinda Pressure Control Structure (OPCS) and the Santiago Control Tower (SCT) on the Lower Feeder. The SCT and OPCS are a vital link in the delivery of water in the Lower Feeder, from Lake Mathews to the Diemer Treatment Plant. In the event of a power outage in the Yorba Linda area, control of flow will be lost until a portable generator can be delivered and connected.

Santa Monica Feeder Cathodic Protection

The Santa Monica Feeder is a mortar coated welded steel pipeline with a diameter of 49-inches and is approximately 4.25 miles long. The pipeline is one of the few reaches of welded steel pipe that is not yet cathodically protected. A failure of the Santa Monica Feeder would inhibit Metropolitan's ability to convey water through its system and potentially disrupt Metropolitan's ability to deliver water to several member agencies. The scope of work is to design and install a comprehensive cathodic protection system in the Santa Monica Feeder.

Skinner Bypass Pipelines Cathodic Protection

The Lake Skinner Bypass Pipeline # 1 (97-inch diameter), Lake Skinner Bypass Pipeline #3 (49-inch diameter), and Skinner Plant effluent Conduit # 1 (7-inch diameter) alignments have portions traversing inside and outside of the Skinner Treatment Plant property. The three pipelines are dielectrically coated steel pipelines. The original impressed current cathodic protection system was installed in 1980. The system was turned off as concerns emerged about exposing prestressed pipelines to cathodic protection. In addition, several modifications to the pipelines made the existing system unsuitable for the present pipeline configurations. The existing cathodic protection system requires full rehabilitation to adequately protect the pipeline from corrosion. A failure of the Feeders would inhibit Metropolitan's ability to convey water through its system and potentially disrupt Metropolitan's ability to deliver water to several member agencies. The scope of work is to design and install a comprehensive cathodic protection system in the feeders.

West Orange County Feeder Cathodic Protection

The West Orange County Feeder (WOCF) was constructed in 1956, and is mortar and dielectrically coated welded steel pipeline with a diameter of 43-inches and 55-inches. The pipeline is approximately 13 miles long. The WOCF connects to the cathodically protected Orange County Feeder (OCF), prestressed and steel reaches of the Second Lower Feeder (SLF), and the cathodically protected Lower Feeder (LF). The pipeline is one of the few reaches of welded steel pipe that is not yet cathodically protected. A failure of the WOCF would inhibit Metropolitan's ability to convey water through its system and potentially disrupt Metropolitan's ability to deliver water. The scope of work is to design and install a comprehensive cathodic protection system in the WOCF.

**Conveyance and Distribution System - Rehabilitation for
FY2018/19 through FY2023/24** **18902**

Total Appropriation Estimate: \$124,438,000 Biennial Estimate: \$4,062,137

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

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 will be 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- None, this appropriation will be initiated in FY 2018/19.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
108th Street Pressure Control Structure Valve Replacement	700,000	2021	Begin preliminary design
Appian Way Valve Replacement	900,000	2021	Begin preliminary design
Flowmeter Replacement	5,000,000	2024	Begin preliminary design
Foothill Feeder - Castaic Valley Blow-off Valves Replacement	535,000	2019	Complete construction
Lake Mathews Aboveground Storage Tank Replacement	555,000	2020	Begin preliminary design
Lake Mathews Outlet Tower No. 2 Valve Rehabilitation	347,000	2020	Begin preliminary design
Lake Mathews Sodium Hypochlorite Injection System	4,220,000	2020	Begin preliminary design
Lake Mathews Sodium Hypochlorite Tank Replacement	762,000	2020	Begin preliminary design
Live Oak Reservoir Rehabilitation	5,920,000	2022	Begin preliminary design
Olinda Pressure Control Structure Valve Replacement	3,073,000	2022	Begin preliminary design
Sepulveda-West Basin Interconnection Valve Replacements	945,000	2021	Begin preliminary design

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

108th Street Pressure Control Structure Valve Replacement

The 108th Street Pressure Control Structure (PCS) located on the Palos Verdes Feeder was constructed in 1941. The pipeline has a design capacity of 80 CFS in this area and provides the flexibility to deliver water through the Inglewood Lateral and Culver City Feeders to member agencies, including the city of Los Angeles, Central Basin Municipal Water District, and West Basin Municipal Water District. This project will replace two failing valves at the 108th Street PCS. The work will include replacing a corroded ladder, catwalk grating, and identify and restore all electrical components to new condition. Electrical components consist of electrical panel boards and grounding, sump pumps, and associated instrumentation.

Appian Way Valve Replacement

The Appian Way Sectionalizing Valve Structure on the Palos Verdes Feeder was constructed in 1937. The pipeline has a design capacity of 60 CFS in this area and delivers water to Metropolitan's member agencies, Central Basin Municipal Water District, and the city of Los Angeles. The sectionalizing valve provides Metropolitan the flexibility to isolate flows on the Palos Verdes Feeder between the Long Beach Lateral Turnout Structure and Appian Way Sectionalizing Valve Structure to perform preventive maintenance, planned shutdowns, and emergency activities if required. This operational reliability allows for continued delivery of water to Metropolitan's central pool. The failing sectionalizing valve is 80 years old. Over the past few years, the 24-inch valve has been rebuilt several times to extend its service life. This valve can no longer be rebuilt and has become extremely difficult to operate as it gets stuck and does not fully open or close. The body and cone have eroded, which prevents the valve from properly sealing. This project will replace two failing valves, dresser couplings, corroded pipe spools, and install a new precast concrete roof slab at the Appian Way Sectionalizing Valve Structure. Additionally, the project would identify and restore all electrical components. Electrical components include electrical panel boards and grounding system, sump pumps, and associated instrumentation.

Cathodic Protection of the Orange County Feeder from Sta. 1467+15 to Sta. 2053+97

The Orange County Feeder conveys treated water from the F. E. Weymouth Water Treatment Plant in La Verne to its terminus at service connection CM-1 in Newport Beach. The feeder is approximately 41 miles long and was installed in 1942. The feeder consists of approximately 21 miles of welded and un-bonded steel pipe, 19 miles of precast concrete pipe, and one mile of prestressed concrete cylinder pipe. Previously, cathodic protection could not be effectively applied to the subject reach; however, recent pipeline rehabilitation has made cathodic protection a viable option to prevent external corrosion and thus prevent future pipe leaks. This project will install a new cathodic protection system on the Orange County feeder to protect approximately 11.2 miles of feeder. The scope of work includes design and installation of the anodes and rectifier system.

Coyote Creek Hydroelectric Plant/PCS Emergency Standby Generator Replacement

The existing emergency stand-by generator was installed when the Hydroelectric Plant/Pressure Control Structure (HEP/PCS) was constructed in 1982. The emergency generator is 34 years old and has deteriorated with age. This project will replace the existing emergency generator with a new 150 kW, 3-phase 480-volt, diesel engine driven generator and construct an additional manual transfer switch outside the stationary generator room to provide for a secondary portable generator hookup. The project scope will include electrical and mechanical system upgrades to the generator building to meet current emission and fire code regulations under the Environmental Protection Agency's Tier 3 Emission and Fuel Standards Program.

Diamond Valley Lake Oxygenation System

This project will construct a liquid oxygen (LOX) storage and feed system at Diamond Valley Lake to improve water quality, reduce impacts of cyanobacterial blooms, and maintain operational flexibility to ensure reliable and high-quality water deliveries under drought and emergency conditions. The LOX system will maintain oxygenated conditions in the deeper waters of DVL and prevent the formation of reduced compounds (sulfides, metals) that interfere with water treatment processes. This will allow for high-quality water to be released from the reservoir year-round. The system consists of: (1) a LOX tank; (2) evaporators to convert LOX to gas; (3) supply lines to deliver oxygen; (4) diffusers to mix the oxygen; (5) and a control system to regulate oxygen flow.

Eastern Region - C&D Maintenance & Fleet Vehicle Service Center

These facilities are located at the Skinner plant and service the Eastern Region Conveyance & Distribution (C&D) Team, Eastern Region Fleet Unit, and other maintenance staff. Over the past 40 years maintenance of equipment and structures has increased, requiring additional space to house spare parts, materials, specialty tools, and space to break down equipment for repair. Currently, because of space restrictions, maintenance teams use areas throughout the facility to do maintenance and store equipment and materials. Equipment must be sent or transported to other facilities for repair due to lack of room and lifting capabilities. This fragmentation of work areas and storage drastically reduces worker efficiency.

East Orange County Feeder No. 2 Service Connection OC-44A Valve Replacement

The East Orange County Feeder #2 is a 25-mile-long pipeline which delivers treated water from the Diemer plant to the cities of Anaheim, Orange, Santa Ana, and Irvine. Service Connection OC-44A, which is located in Newport Beach, was constructed in 1967 and delivers water to the Municipal Water District of Orange County. Gradual corrosion and wear from over 50 years of operation has led to the deterioration of the 16-inch plug valve. The valve is currently leaking and needs to be replaced. The plug valve shaft was installed in the horizontal position to allow placement of the valve within the vault. This unconventional position may have accelerated the deterioration of the valve. This project will replace a 16-inch-diameter plug valve, flowmeter, and appurtenant piping as required in the Service Connection OC-44A Structure. The work will also identify and restore all electrical components to new condition. Electrical components consist of electrical panel boards and grounding system, sump pump, and associated instrumentation.

East Valley Feeder Valve Structure Electrical Upgrade

The East Valley valve structure is located on the north sidewalk of the Rinaldi Street and Hayvenhurst Avenue intersection in Granada Hills. During the wet season, this structure receives intrusive storm water leakage causing the junction boxes, electrical enclosures, and conduits to corrode and short circuit. The extent of damage has accelerated, and storm water now enters the structure through damaged high voltage electrical conduits. This project will install new wiring and control panels for operation of the existing valve, remove the existing aboveground disconnect switch and install a new power distribution panel, install new duct banks and conduits to supply power to each of the critical structures, install additional bollards around the distribution panel to minimize damage from vehicles, repair damaged sidewalk, and assess potentially relocating the existing metering structures.

Etiwanda Reservoir Rehabilitation

The Etiwanda Reservoir has been in operation for 26 years. The liner and appurtenances are in need of refurbishing to maintain their integrity and prevent excessive seepage as noted during periodic inspections. This project will rehabilitate the reservoir by replacing the reservoir liner with a geomembrane liner, replacing the sub-drain sump pump system, and installing new electronic monitoring instrumentation and equipment to better monitor operational status of the sump pump system. The project scope will also include inspection and evaluation of: 1) the asphalt pavement for the reservoir perimeter roads and parking lot for rehabilitation as needed; and 2) the isolation drop gates, emergency discharge slide gate, effluent gate, and reservoir sleeve valves.

Flowmeter Replacement

Metropolitan has over 500 flowmeters used for water revenue metering at service connections, operation of the conveyance and distributions, and for process control. Many flowmeters have been in operation over 50 years. Some of these meters are exhibiting signs of deterioration. Spare parts for older meters are increasingly difficult to procure.

This project will be conducted in three stages. Under Stage 1, a comprehensive evaluation of the flowmeters will be conducted to assess their current condition and availability of spare parts. Under Stage 2, deteriorating meters in critical services will be replaced. Under Stage 3, a comprehensive, risk-based approach will be implemented to replace the remaining flow meters.

Foothill Feeder - Castaic Valley Blow-off Valves Replacement

The Foothill Feeder pipeline's Castaic valley blow-off structure was constructed in 1967 and has two existing 16-inch 150-lb plug valves that are extremely difficult to operate. The blow-off structure is one of several critical blow-offs used to dewater the downstream side of the Foothill Feeder Pressure Control facility and pipeline during planned shutdowns, periodic maintenance operations, and in emergency scenarios. This blow-off is the only one available to the Foothill Feeder prior to entering the Castaic tunnel. The two plug valves are 50 years old. They are not repairable, pose operational difficulties, and may not be suitable to efficiently drain the pipeline when needed especially during an urgent or emergency situation. This project will replace two failing 16-inch plug valves in the Castaic Valley Blow-off Valve Structure located on the Foothill Feeder. The work will include modifying the top of the valve structure for easier access to accommodate maintenance, repairs, and replacement of valves.

Lake Mathews Aboveground Storage Tank Replacement

The Lake Mathews existing diesel aboveground storage tank does not conform to current regulations and needs to be removed from service. In its present condition the tank cannot be operated in a safe manner. The Lake Mathews Spill Prevention Countermeasure and Control Plan cannot be certified as long as the diesel aboveground storage tank remains in service. This project will replace the existing 10,000-gallon diesel fuel aboveground storage tank (AST) with its associated containment dike, venting, fill system, level monitoring, fuel dispensing system, catwalk, and continuous release detection system with a new 6,000-gallon AST system, and design and construct a roof over the storage tank containment and unloading area.

Lake Mathews Junction Shaft Gate Hydraulic Power Unit Rehabilitation

The roller gates at the Lake Mathews junction shaft do not operate consistently and reliably. The large isolation gates utilize hydraulic power units to operate under normal conditions and store energy for use in emergency conditions when electric power is not available. Although maintained in accordance with the manufacturer's recommendations, the gates no longer function as designed. This project will refurbish or replace the two roller gate operators at the Lake Mathews junction structure that provide isolation for Outlet Tower No. 2. The initial study will focus on the condition of hydraulic power unit equipment, safety elements related to pressurized hydraulic reservoirs/tanks, and operating procedures/practices.

Lake Mathews Outlet Tower No. 2 Valve Rehabilitation

The outlet tower valves operate intermittently and do not open and close completely. Without proper operation of the valves, tier selection and flow rates are impacted which may adversely affect system operations including raw water quality, water treatment processes at the downstream Weymouth and Diemer plants, and secure isolation of the tower from the lake needed for maintenance and inspection work. This project will complete a comprehensive study and implement recommendations on replacement or refurbishment of the butterfly valves on the Lake Mathews Outlet Tower No. 2.

Lake Mathews Reservoir Dredging and Emergency Dewatering Facilities

Sediment has accumulated in the reservoir since it was first built and filled in 1938. Sediment is a result of continual erosion within the Lake Mathews watershed and has led to increased turbidity at water treatment plants, reservoir storage loss, and plugged the main dam diversion tunnel into Cajalco Creek. In addition, the California Department of Water Resources, Division of Safety of Dams (DSOD), has specific outlet dewatering requirements for large dams/reservoirs that impound over 5,000 acre-feet of water. Although the current dewatering method at the forebay meets DSOD's requirement, there is a possibility that the Upper Feeder and Lower Feeder that take water from the forebay may be damaged and become unusable during a seismic event. It is now recommended to reestablish access to the diversion tunnel at the bottom of the main dam by dredging. This project will evaluate dredging options for Lake Mathews Reservoir. Dredging will remove decades of accumulated sediment that reduces reservoir storage capacity, contributes to decreased water quality, and blocks access to dewatering infrastructure at both Outlet Tower No. 1 and the main dam diversion tunnel. The evaluation will identify and prioritize dredging locations through bathymetric surveys and other remote methods, as well as identify mitigation options for the environmental hazards of dredging. The project will also determine the condition of the main dam diversion tunnel and all its mechanical equipment in anticipation of a comprehensive refurbishment.

Lake Mathews Sodium Hypochlorite Injection System

Update and redesign the Lake Mathews sodium hypochlorite injection system to relocate the injection point to a location that will minimize the impacts of chlorine injection on the forebay and appurtenant structures. The design will also consider effective Quagga Mussel control, enhancing safety and reliability of the injection system, and adherence to water quality goals and requirements. The project will develop options to replace the existing interim sodium hypochlorite system at the Lake Mathews Forebay with a system at Lake Mathews Outlet Tower No. 1 and Outlet Tower No. 2, and to provide continuous chemical injections from the towers through the Lake Mathews Forebay, Power Plant, and into the Upper and Lower Feeders.

Lake Mathews Sodium Hypochlorite Tank Replacement

The Lake Mathews sodium hypochlorite tanks are an integral part of Metropolitan's Quagga Mussel control program. The tanks are at the end of their service life and need replacement. This project will replace two 16,700 gallon fiber-reinforced plastic sodium hypochlorite storage tanks and replace two sodium hypochlorite chemical feed pumps.

Live Oak Reservoir Rehabilitation

The Live Oak Reservoir has a 2500 acre-foot capacity and is located in the city of La Verne. The main purpose of the reservoir is to allow peaking of the Devil Canyon Power Plant and to provide for outages. The reservoir water surface controls the upstream hydraulic gradient for the San Dimas Hydroelectric Power Plant. An inspection identified the following: 1) several valves that are leaking; 2) the reservoir liner is damaged in several areas; 3) the emergency backup generator is no longer manufactured and parts are obsolete; 4) the existing HVAC system including the ductwork for the control room has exceeded its expected service life; 5) improvements to provide access control, intrusion alarm, surveillance are needed; and 6) improvements to the grading, surface drainage, and paved roads adjacent to the Live Oak Reservoir are also needed. This project will replace three leaking butterfly valves, spot repair the existing asphalt concrete (AC) liner, replace the existing Emergency Standby Generator, replace the existing Heating, Ventilation, and Air Conditioning (HVAC) system, improve erosion controls for the facility, identify and restore all electrical components to new condition, including electrical, panel boards and grounding, sump pumps, and associated instrumentation, and conduct a security assessment of the facility to reinforce or upgrade physical features and protect infrastructure. This includes replacement of the inner fencing for the reservoir with security type fencing.

Olinda Pressure Control Structure Valve Replacement

The Olinda Pressure Control Structure was constructed in 1969 to provide regulation of flows in the Lower Feeder between the Santiago Control Tower and Diemer Filtration Plant. This project will replace two conical plug valves to increase efficiency, reliability, and mitigate the vibrations caused by operating the valves. The aging electrical and control systems that support the pressure control structure will also be replaced or refurbished. Replacing the existing 49 year old valves and restoring electrical and control systems will improve operational control of the Lower Feeder between the Santiago Control Tower and the Diemer plant.

Palos Verdes Feeder - Long Beach Lateral Turnout Structure Sta. 1442+15 Valve Replacements

The Palos Verdes Feeder - Long Beach Lateral turnout structure, located in the County of Los Angeles, was constructed in 1938. The Long Beach Lateral turnout structure consists of seven valves that allows Metropolitan to continue delivering water upstream and downstream to member agencies during preventive maintenance, shutdowns, and emergencies. This project will replace the seven valves on the Palos Verdes Feeder/Long Beach Lateral Turnout Structure that are 80 years old. The structure will also be refurbished and include replacing the existing catwalk grating, a new precast concrete roof slab, lifting mechanism, security type entry hatches, and identify and restore all electrical components to like new condition. Electrical components consist of electrical panel boards and grounding system, sump pump and associated instrumentation.

Rio Hondo Pressure Control Structure Valve Replacements

The Rio Hondo Pressure Control Structure (PCS) on the Middle Feeder pipeline was constructed in 1983. Construction of the Rio Hondo PCS incorporated an existing valve structure, so the valves at this location have been in operation since 1953 as part of the original underground valve structure. The existing valves have been in continuous service for approximately 65 years, and over time have required frequent repairs/rebuilding.

The Eagle Rock Operations Control Center utilizes the Rio Hondo PCS to maintain the lower pressure zone on the southern half of the Middle Feeder, and to assure deliveries to member agency water demands in the southwestern service area. This project will replace thirteen failing valves at the Rio Hondo PCS. The work will include replacing dresser couplings, pipe spools, and pipe supports; providing adequate ventilation for the structure; rehabilitating the existing wastewater system; and identifying and restoring all electrical components to new condition. Electrical components consist of electrical panel boards and grounding system, sump pumps, and associated instrumentation.

San Diego Canal Radial Gate V-06 Rehabilitation

The protective coatings on the radial gate at the San Diego Canal and the operating components of the gates have begun to fail, and significant metal loss has occurred. In addition, the performance of the existing motor actuators used to open and close the gates has diminished. Should this gate fail, there would be loss of control to regulate flow into Lake Skinner from the San Diego Canal, along with loss of control in surface elevation that regulates flows through the Lake Skinner Bypass screening structures. The bypass structures supply the Skinner area raw water pipelines and the Skinner plant when Lake Skinner is being bypassed, typically due to a taste and odor issue in the lake. This project will rehabilitate or replace the San Diego Canal Radial Gate V0-6. The rehabilitation may include strengthening or replacing steel members as needed, replacing the radial gate actuator and controls, and preparing and coating steel surfaces with an approved coating, such as a galvanic metalized coating.

San Jacinto Diversion Structure Slide Gate V-03

The San Jacinto Diversion Structure, located at the base of the San Jacinto Mountains, was constructed in 1939. The diversion structure is located at the west portal of the San Jacinto Tunnel on the Colorado River Aqueduct (CRA). This gate was designed to shutoff flow to the San Jacinto pipeline. The slide gate does not fully close to provide isolation, when needed, or flow regulation. This project will replace or rehabilitate and modify the existing V-03 cast iron slide gate and its appurtenances at the diversion structure.

Santa Ana River Discharge Pad - Upper Feeder

Severe storm events eroded the north slope of the Santa Ana River near the Upper Feeder crossing. This damage resulted in large voids in the river bank to the footing supporting the bridge span and the foundation of the emergency discharge bunger valve. Continued erosion may create safety risks to the public that accesses the popular hiking area. This project will construct a concrete discharging pad to prevent erosion from storms and discharge from the bunger valve.

Santa Monica Feeder and Calabasas Feeder Bypass for Sectionalizing Valves

The lack of a bypass line at the Santa Monica Feeder and Calabasas Feeder creates the potential for damage to the valves and their operators due to the inability to equalize pressure across the valves before operating. Further operation of these valves, without installing a bypass, will continue to place the valves and pipeline at risk for damage and potentially emergency or unplanned shutdown. This project will design, fabricate, and install bypass lines at three sectionalizing valve locations that currently do not have a bypass line.

Santiago Control Tower Seismic Improvements

The Santiago Control Tower acts as a control and diversion facility for water supplied to the Santiago Lateral pipeline, the Santiago Lateral Spillway Discharge Pipeline, and the Lower Feeder pipeline. This project will evaluate the Santiago Control Tower's ability to resist expected seismic forces based on the latest geotechnical and geological considerations. A detailed geotechnical analysis is required to determine the structure's interaction with surrounding soil and analyze the soil stability of the structure. The structure is located in close proximity to the Whittier Fault on a raised area adjacent to a slope.

Sepulveda Canyon Power Plant and Control Facility - 3-D Infrastructure Mapping of Underground Facilities Phase 1

With advancements in information technology, such as Building Information Modeling (BIM) and Geographical Information System (GIS), Metropolitan has the opportunity to update and centralize its underground infrastructure database. This will provide the accuracy needed when routing pipes, duct banks, trenches or buried structures. The project will purchase hardware and software to develop a comprehensive 3-D infrastructure map that includes underground utilities at critical Metropolitan facilities along our conveyance and distribution system. This map will show the exact locations of Metropolitan's underground utilities and intelligent 3-D models of the facilities, pipelines, and structures, which will aid operations, design, and disaster response and recovery. Phase 1 of the project will develop a comprehensive 3-D infrastructure map of the Sepulveda Canyon facility that includes underground utilities, pipelines, and structures.

Sepulveda-West Basin Interconnection Valve Replacements

The Sepulveda-West Basin Interconnection was constructed in 1970. The interconnection allows Metropolitan's Sepulveda Feeder pipeline the flexibility to convey supplemental flow to the West Basin Feeder. The structure includes two 16-inch lines with sleeve valves and one 12-inch line with a globe valve. Each line may be isolated at the either end with plug valves. This project will replace three failing valves at the Sepulveda-West Basin Interconnection structure. The work will include replacing associated dresser couplings, pipe spools, and pipe supports. Additionally, work on the structure will include installing a new precast concrete roof slab, providing adequate ventilation for the structure, replacing a sump pump, structure modifications to address algae accumulation on adjacent sidewalk due to frequent water discharge from the sump pump, and identifying and restoring all electrical components to new condition. Electrical components will consist of electrical panel boards and grounding, sump pumps, and associated instrumentation.

Service Connection LA-17 Rehabilitation

Service Connection LA-17 is located in the city of Los Angeles at the terminus of the Eagle Rock Lateral. It includes three lines: 1) 17A is a 24-inch line with a capacity of 30 cfs, 2) 17B is a 48-inch line with a capacity of 100 cfs, and 3) 17C is an 85-inch line with a capacity of 310 cfs. Three venturi tubes at the LA-17 service connection have been in service for more than 60 years and require significant rehabilitation or replacement.

Significant coating deterioration and metal loss with extensive pitting and corrosion were identified on the bottom side of the 48-inch venturi tube. The wall thickness of this venturi tube is approximately 30% of its original thickness. Failure to replace this venturi tube will lead to eventual leakage, flooding the structure, and impacting water deliveries to the member agency. This project will replace the deteriorating LA-17B welded steel venturi tube located at the Service Connection LA-17 structure. The work will also recoat the LA-17A and LA-17C venturi tubes within this structure. Additionally, work will include replacing the sump pump and identifying and restoring all electrical components to new condition. Electrical components will consist of electrical panel boards and grounding, and associated instrumentation.

Upper Feeder Relining across Santa Ana Bridge

The Upper Feeder was constructed between 1933 and 1941 with a 116-inch-diameter steel pipe and lined with coal tar enamel liner (CTE). This portion of the Upper Feeder is located above ground and crosses the river bed via a bridge. Exposure to the sun subjects the pipeline to a thermal cycle that is continuous heating and cooling of the pipe material. Over the past five years, staff have performed inspections on this segment of the Upper Feeder and determined that approximately 90% of the pipe's internal lining has failed. Mild to moderate pitting on the interior of the pipe indicate rust tuberculation and corrosion. This project will reline approximately 1,000 feet of the 116-inch diameter pipeline with an approved liner material.

Wadsworth Pumping Plant Stop Logs

The Wadsworth Pumping Plant was built with 12 pump/generation units. Units 1, 5, and 9 were decommissioned to allow DVL generation to be certified as "renewable energy" by the California Energy Commission. Hydroelectric plants are required to have a nameplate capacity of 30 MW or less to be certified. At 3.3MW per unit, the nine remaining units provide a generation capacity of 29.7MW. Generated energy must be certified renewable for electric utilities to meet the requirement that 33% of their energy come from renewable resources by 2020. The stop logs would provide a means to isolate the three decommissioned pumps from the DVL forebay keeping them out of the water and dry. Isolating the pumps from water contact reduces corrosion damage to the pumps and provides flexibility in the event pump/generation units need to be re-commissioned or repaired. This project will fabricate three sets of stop logs to isolate three decommissioned Wadsworth plant generation/pumping units from the forebay. Each set of stop logs consists of three stop log sections, for a total of nine sections of stop logs to isolate three pump units.

Washington Street Pressure Control Structure Valve Replacements

The Washington Street Pressure Control Structure (PCS) located on the Palos Verdes Feeder was constructed in conjunction with the Palos Verdes Feeder pipeline in 1941. The pipeline has a design capacity of 100 CFS in this area. This project will replace two failing hydraulically operated globe valves at the Washington Street PCS. The work will include identifying and restoring all electrical components to new condition. Electrical components consist of electrical panel boards and grounding, sump pump, and associated instrumentation. Additionally, a security assessment of the facility will be conducted to determine the need to reinforce or upgrade physical features for enhanced infrastructure protection.

Willits Street Pressure Control Structure

The Willits Street Pressure Control Structure (PCS), located in the city of Santa Ana, was built in 1944. This pressure control structure located on the Orange County feeder regulates pressure and conveys treated water to the Irvine Regulating Structure. This PCS is an underground structure consisting of three parallel trains of pressure control valves. At full capacity, two trains are in operation while the third train acts as a stand-by. The existing structure is congested and does not provide suitable access for maintenance, repairs or the replacement of valves. The maintenance access was impacted during street widening that required the size of the structure to be reduced. The modified structure configuration does not have a lifting mechanism to remove or transport these valves out of the structure for replacement or repairs. Additionally, the existing catwalk does not have adequate coverage. This project will construct a new pressure control structure to replace the existing Willits street PCS located on the Orange County Feeder. The work includes a new concrete substructure, relocating and replacing the control and isolation valves, new sampling connections for water quality and all necessary electrical and ventilation equipment. Once the new structure is complete, the older structure will be abandoned and the pipeline will be attached to the new structure during a brief outage.

CRA - Conveyance Reliability

15373

Total Appropriation Estimate:	\$125,567,000	Biennial Estimate:	\$11,065,587
Appropriated Amount 9/30/2017:	\$101,128,000	Cost Through 9/30/2017:	\$99,949,731

Purpose

To ensure the reliability and operational efficiency of the Colorado River Aqueduct (CRA).

Scope

This appropriation was established to plan and implement multiple projects throughout the Colorado River Aqueduct Conveyance 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- CRA Sand Trap Rehabilitation - Completed construction
- Copper Basin and Gene Wash Reservoirs Discharge Valve Rehabilitation - Completed design

Projects Completed To Date:

- 12 projects have been completed

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Copper Basin and Gene Wash Reservoirs Discharge Valve Rehabilitation	11,500,000	2020	Begin construction
CRA Pumping Plants - Surge Chamber Slide Gates for Delivery Line Bypass pipes	5,700,000	2020	Complete construction

Authorized Projects

Copper Basin and Gene Wash Reservoirs Discharge Valve Rehabilitation

The Gene Wash and Copper Basin Reservoirs provide critical storage that enables flowrates along the CRA to be stabilized and controlled. If the reservoirs needed to be drained rapidly in the event of an emergency, the discharge valves located at the base of each dam would be opened to safely release the water. Following 70 years of continuous service, the valves have begun to leak and need to be replaced. Both dams are under the jurisdiction of the California Division of Safety of Dams (DSOD), which requires that the discharge valves be fully operational at all times. The project scope includes replacement of the fixed cone valves at the base of the dams; upgrade of the electrical systems; and access improvements to safely enable construction personnel, materials, and equipment to reach the work site. Design was authorized by the Board in February 2015.

CRA Pumping Plants - Surge Chamber Slide Gates for Delivery Line Bypass Pipes

At each of the CRA pumping plants, whenever maintenance or repairs are required for the main pump delivery lines, the pumping plant must be shut down and long reaches of the aqueduct must be drained. This project adds a slide gate on each of the delivery line bypass pipes within the surge chamber on the hill above each pumping plant that would allow for safe entry into individual pump delivery lines while the adjacent lines remain in service. Construction was authorized by the Board in December 2017.

Copper Basin Reservoir Outlet Structure Rehabilitation

This project rehabilitates the outlet structure at Copper Basin Reservoir that regulates flow out of Copper Basin into the aqueduct. In January 2012, Metropolitan's Board authorized construction which has since been completed. Completion of record drawings is in progress.

CRA Sand Trap Rehabilitation

This project replaced deteriorated sand trap equipment located upstream of Iron Mountain, Eagle Mountain, and Hinds Pumping Plants. The sand trap's traveling bridge system had been in operation for almost 75 years. The scope of work included the replacement of the traveling bridges, deck and truss supports, control cabins, rails, pump hoist, and dredge pumps. In addition, a concrete slab, perimeter fencing, guard rails, and new power cables and supports was installed. Construction was authorized by the Board in October 2015 and had been completed. Production of record drawings is in progress.

Iron Mountain Tunnel Rehabilitation

The Iron Mountain Tunnel was constructed between 1933 and 1938 as part of the CRA system. The tunnel is located downstream of the Iron Mountain pumping plant, and is eight miles long. The tunnel's cross-section is horseshoe-shaped, with overall dimensions of 16 feet high by 16 feet wide. Longitudinal and transverse cracks up to 1 inch wide have developed along a 2,500-foot-long stretch of the tunnel. This project will repair the cracks with focus on tunnel strengthening and corrosion protection. Preliminary design was authorized by the Board in October 2010.

Planned Projects

No additional projects are planned.

CRA - Discharge Containment

15385

Total Appropriation Estimate:	\$20,589,000	Biennial Estimate:	\$8,253,405
Appropriated Amount 9/30/2017:	\$7,864,000	Cost Through 9/30/2017:	\$7,039,903

Purpose

To decrease risk of discharging chemicals and waste to the environment and violating regulations.

Scope

This appropriation was established to plan and implement multiple projects throughout the Colorado River Aqueduct. The common driver for many of the projects in this appropriation is regulatory compliance.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Pumping Plant Wastewater System Replacement (Intake) -Completed preliminary design
- Pumping Plant Wastewater System Replacement (Gene and Iron Mountain) - Completed preliminary design

Projects Completed To Date:

- Four projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA Pumping Plant Wastewater System Replacement - Gene and Iron Mountain	8,543,000	2020	Start construction

Authorized Projects

CRA Pumping Plant Wastewater System Replacement - Gene and Iron Mountain

Gene and Iron Mountain pumping plants are located in remote areas of San Bernardino County, where municipal wastewater collection and treatment facilities are not available. These plants are served by a community on-site wastewater system. These on-site systems collect, treat, and dispose of domestic wastewater generated from bathrooms, kitchen facilities, maintenance buildings, guest lodges, and staff residences at the plants. The on-site systems consist of three primary components: community septic tanks and leach fields; collector lines located throughout the pumping plants which convey wastewater to the septic tanks and sewer laterals which convey wastewater from individual buildings to the collector lines. The existing wastewater systems at these plants have deteriorated through continual use and need to be replaced. This project will replace the wastewater systems at the Gene and Iron Mountain pumping plants. The systems will include new main-line pipes, building laterals, septic tanks and leach fields. Design was authorized by the Board in December 2012.

CRA Pumping Plant Wastewater System Replacement - Intake

Intake pumping plant is located on the Colorado River in a remote area of San Bernardino County and is served by a community on-site wastewater system which includes collector lines, laterals, a septic tank and a leach field. Similar to Gene and Iron Mountain Pumping Plants, the on-site system is deteriorated through continual use and needs to be replaced. This project will upgrade the existing wastewater system at the Intake pumping plant by replacing the entire main and lateral sewer lines, manholes, and cleanouts; including a new wastewater storage and treatment system. Preliminary design was authorized by the Board in January 2012.

Planned Projects

No additional projects are planned.

CRA - Electrical/Power Systems Reliability

15384

Total Appropriation Estimate: \$137,788,000 Biennial Estimate: \$20,209,822

Appropriated Amount 9/30/2017: \$23,565,000 Cost Through 9/30/2017: \$21,655,311

Purpose

To ensure reliability of the power systems along the Colorado River Aqueduct (CRA) by repairing or replacing aging and/or deteriorated electrical equipment/parts.

Scope

This appropriation was established to plan and implement multiple projects throughout the CRA's electrical and power systems. 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:

- CRA Pumping Plant Auxiliary Power Systems

Major Milestones Achieved Last Period:

- CRA Over-Current Relay Replacement - Completed construction
- CRA UPS Replacement - Completed final design
- CRA 6.9 kV Power Cable Replacement - Completed final design

Projects Completed To Date:

- Nine projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA 6.9 kV Power Cable Replacement	43,365,000	2021	Begin Construction
CRA Main Transformer Rehabilitation	40,520,000	2024	Complete Preliminary Design
CRA Pumping Plant Auxiliary Power Systems	20,360,000	2024	Begin Design
CRA UPS Replacement	2,530,000	2019	Complete Construction

Authorized Projects

CRA 6.9 kV Power Cable Replacement

There are a total of 45 primary pumps and motors at the five CRA pumping plants. Power is transmitted to the motors via 3-inch-diameter cables which run through a tunnel that connects each switch house to each pump house. The quantity of cables varies from nine to twenty-seven per plant. These cables were installed in four phases from 1939 through 1959. After 55 to 75 years of continuous service, the power cables have deteriorated and need to be replaced. Oil has begun to leak through cracks in the lead jacket, at the cable connection joints, and at the cable termination points. Frequent repairs are required to address the leaks and maintain the cables' insulating capacity. This project includes the replacement of the deteriorated main power cables at each of the five CRA pumping plants. Final design was authorized by the Board in June 2014.

CRA Main Transformer Rehabilitation

Six transformers provide electrical power to each CRA pumping plant to maintain continuous operation. All existing transformer units are original equipment, with many dating from the 1940s. Recent inspections revealed oil leakage and other signs of aging for some of the transformers. Failure of an existing transformer would disrupt power supply to a pumping plant and interrupt water delivery. The scope of the project includes rehabilitation of existing transformers, replacement of transformers, or the addition of spare transformers along with spill containment structures. This work also includes replacement of leaky circulating oil pumps that are used to cool the transformers and construction of secondary spill containment for the transformer banks. Preliminary investigations were authorized by the Board in March 2004.

CRA Pumping Plant Auxiliary Power Systems

All five CRA pumping plants have medium and low voltage systems that were constructed to the design standards of the 1930s-1950s. They provide power for general lighting, cranes, computers, shop equipment, and critical equipment such as the pumping plant sump pumps and lubrication oil pumps. Over the years, numerous additional electrical loads have been added to the auxiliary power systems. As a result, the distribution panel capacity limits have been exhausted, and some wiring is now undersized. Portions of the auxiliary power system upgrades to support the new domestic water treatment system at each of the CRA pumping plants will be completed under Appropriation No. 15483. The scope of this project includes upsizing the distribution panels to allow additional capacity and space for future loads, and replacing the cables and conduits to comply with current National Electrical Code and safety standards throughout the CRA pumping plants and villages. Preliminary investigations were authorized by the Board in March 2016.

CRA UPS Replacement

Each CRA pumping plant has an Uninterruptable Power Supply (UPS) system to prevent fluctuations in power quality and to serve as a backup power supply in case of loss of station power. The UPS systems continuously protect computers, servers, telecommunication equipment, and process control equipment from power disruptions which could cause damage to equipment or loss of critical data or process control. The existing UPS systems at the five pumping plants are 20 years old and are beginning to fail. The existing UPS units are also undersized based on current power demands at the plants, and lack up-to-date features typical of newer systems, such as built-in redundancy. The planned upgrades include replacement of the UPS units with larger capacity units that are more efficient, reliable, and economical. In addition, UPS panels will be installed to allow flexible control of loads, and to allow for future expansion. Final design was authorized by the Board in June 2014.

Planned Projects

No additional projects are planned.

CRA - Main Pump Reliability

15481

Total Appropriation Estimate: \$184,908,000 Biennial Estimate: \$16,583,366

Appropriated Amount 9/30/2017: \$12,090,000 Cost Through 9/30/2017: \$2,333,080

Purpose

To complete rehabilitation work necessary to ensure reliability and operation performance, provide operational flexibility and prolong the useful life for the pumping plants.

Scope

This appropriation was established to continue to implement multiple projects throughout the Colorado River Aqueduct (CRA) Pumping plants. 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:

- CRA Main Pumping Plants Discharge Line Isolation Bulkhead Couplings
- CRA Pumping Plants Crane Improvements
- CRA Main Pump Rehabilitation (Stage 1)
- CRA Main Pump Rehabilitation (Stage 1 - Demonstration Project)

Major Milestones Achieved Last Period:

- CRA Pumping Plants Crane Improvements - Completed preliminary design

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA Main Pumping Plants Discharge Line Isolation Bulkhead Couplings	13,628,000	2021	Complete design
CRA Main Pump Rehabilitation (Stage 1)	6,200,000	2021	Begin Investigations
CRA Main Pump Rehabilitation (Stage 1 - Demonstration Project)	1,400,000	2020	Begin design
CRA Pumping Plants Crane Improvements	9,518,000	2019	Complete design

Authorized Projects

CRA Main Pumping Plants Discharge Line Isolation Bulkhead Couplings

Each of the nine main pumps at the five CRA pumping plants discharges the water into an individual 6-foot diameter discharge line. The nine discharge lines then merge into three 10-foot diameter pipelines that convey flow to the top of the lift and discharge into a headgate structure which empties the water into the next section of the aqueduct. Isolation of a single pump or its discharge valve, currently requires a lengthy flow reduction where three pumps have to be removed from service while cutting and welding activities are performed to install a steel bulkhead in one pump's 6-foot discharge line. This operation is labor-intensive and requires more than 72 hours to complete the isolation and removal of the isolation bulkhead. This project will install isolation couplings in the 6-foot discharge lines downstream of each main pump discharge valve. The discharge line couplings will allow individual pump units and discharge valves to be isolated significantly faster by eliminating the current cutting and welding process required to isolate a unit; thus, minimizing impacts to overall pumping capacity. Design was authorized by the Board in January 2016.

CRA Main Pump Rehabilitation (Stage 1)

Each of the five CRA pumping plants has nine main pumps that lift the water to the required elevation necessary to continue flow down the aqueduct. The 45 main pumps rely on multiple auxiliary systems including lubricating oil systems, circulating water systems, instrumentation, electrical and control panels, and individual equipment components. In the mid-1980s, a major rehabilitation project was undertaken on the 45 main pumps. As a result, the 45 main pumps have performed well over the nearly 30 years since the rehabilitation work was completed. However, the pumps are now showing signs of deterioration caused by continuous operation over that length of time. While that project successfully extended the service life of the pumps and increased their hydraulic capacity, the pump auxiliary systems were not addressed at that time. The pump auxiliary systems are from the original CRA construction and are now deteriorating and need to be replaced. This project will perform a comprehensive condition assessment of all 45 main pumps and their auxiliary systems at all five CRA pumping plants. The assessment will capture current operating conditions, create updated baseline documents of all existing equipment and systems, and provide replacement or rehabilitation recommendations for all pump and auxiliary system components. Preliminary investigations were authorized by the Board in October 2016.

CRA Main Pump Rehabilitation (Stage 1 - Demonstration Project)

A comprehensive condition assessment is underway on the 45 main CRA pumps, their motors and on the multiple auxiliary systems that the main pumps rely on. To ensure a successful rehabilitation of all the main pumps, motors and their multiple auxiliary systems, a single main pump unit and its support equipment at just one pumping plant will be completed in its entirety as a demonstration project. The information and experience gained from this demonstration project will be invaluable for planning and design of the large-scale rehabilitation of the remaining pump units. This project will rehabilitate Pump Unit No. 1 at the Gene Pumping Plant as a demonstration project. Design was authorized by the Board in October 2016.

CRA Pumping Plants Crane Improvements

All five CRA Pumping Plants have a single overhead bridge crane which spans the motor room floor and a portable bridge crane for the individual pump bay below the motor room floor. These overhead cranes were installed in the pumping plants during the original CRA construction and have been in operation since 1939. The cranes are used to raise, shift, and lower main pump components and motors for maintenance and replacement. These cranes were rehabilitated in the late 1980s. They have now reached the end of their service life where spare parts for the original crane components are difficult to obtain or no longer available. Parts which were replaced in the 1980s are outdated and the electronic features are no longer supported by vendors. This project will replace all the overhead bridge cranes on the motor room floor and the portable pump-bay cranes below the motor room floor at all five pumping plants. The replacement includes the bridges, trolleys, hoists, drive trains and the system controls. Design was authorized by the Board in January 2016.

Planned Projects

CRA Main Pump and Motor Refurbishment

Each of the five CRA pumping plants has nine main pumps that lift the water to the required elevation necessary to continue flow down the aqueduct. In the mid-1980s, a major rehabilitation project was undertaken on the 45 main pumps. The pumps have performed well over the past 25 years since the rehabilitation work was completed. Since then these pumps and their motors have been in continuous operation and are now showing signs of deterioration. This project will refurbish the main pumps and their motor systems. Pump refurbishment will include recoating the pump casing, replacing the upper rotating and stationary wear rings, and refurbishing the impeller. Motor refurbishment will include refurbishing the fan wheel; refurbishing the rotor and stator; and refurbishing the upper guide bearing, thrust block, thrust runner, and thrust shoes.

CRA Main Pump Controls and Instrumentation Upgrades

The CRA main pump controls and instrumentation systems have enabled decades of reliable pump operation. The systems, which are from the original CRA construction, use industrial quality relays, switches, and instrumentation that are maintained on a regular basis. Over the years, industry standards have changed and many of the replacement parts for the original instrumentation are extremely difficult to obtain. This project will rehabilitate and upgrade the CRA main pump controls and instrumentation systems. The new systems will follow modern industry open standards, be consistent with Metropolitan's current electrical protection and control system practices and be compatible with Metropolitan-wide supervisory control and data acquisition system.

CRA Main Pump Discharge Valve Refurbishment

Each of the nine main pumps at the five CRA pumping plants discharges water into an individual 6-foot diameter discharge line. Each pump has a 42-inch conical plug discharge valve located immediately downstream of the pump. The valve is used to isolate the pump from the 6-foot-diameter discharge line to perform routine maintenance and to protect the pump following an unplanned shutdown. The valves are from the original CRA construction. In the mid-1980s, a major rehabilitation project was undertaken on the 45 discharge valves and they have been in continuous operation since then. The valves are now showing signs of deterioration and are leaking. This project will refurbish the 45 main pump discharge valves. Refurbishment may include the replacement or repair of internal valve components, valve seats, upper and lower shaft bearings, bearing lubricator piping, and grease fittings. An automatic valve lubricator system may be added.

CRA Main Pumping Plant Sand Removal System Upgrades

At each of the five CRA pumping plants, water is withdrawn from the CRA, filtered to remove large debris and sand, and then pumped through a circulating water system. The circulating water system feeds the pump house service water system, the cooling system at each pump unit, the fire water system, the irrigation water system, and the domestic water treatment system. The existing filtration system is not designed to strain out fine silts. Consequently, the fine silt has built up as sediment in the circulating water systems leading to excessive wear and failure of equipment such as pump packing, cooling water piping, and heat exchangers. This project will upgrade the filtration system to remove fine silt and eliminate sediment build up.

CRA Main Pumping Plant Unit Coolers and Heat Exchangers Refurbishment

Each of the five CRA pumping plants has nine main pumps. Each main pump has a cooling system to cool various components of the pump system. At each pump house, water is pumped through a circulating water system, which feeds multiple unit coolers and heat exchangers for each individual main pump unit. Over the years, the unit coolers have developed many leaks. Lack of sufficient cooling water could cause equipment overheating, and the leaks could damage nearby electrical equipment. This project will replace, refurbish, or upgrade the cooling system at each pump unit.

CRA Pump Plants Circulation Water Systems

Each of the five CRA pumping plants has nine main pumps. Each of these pump units use cooling equipment to cool various components of the pump system that feeds from the plant's circulating water system. This system has a loop with branch connections and an isolation valve at each unit. The piping and the valves that supply the circulating water systems run through the entire length of the plants and are all from the original CRA construction. The piping and the valves are now showing signs of deterioration. They are clogged, corroded and leaking. This project will replace and upgrade the circulation water systems for each pumping unit.

CRA Pump Plants Secondary Cooling Water System

Each of the five CRA pumping plants has nine main pumps. Each of the pumping plant uses a circulating water system to cool various components of the pump units. Each pumping plant also has a secondary cooling water system to enhance reliability. The secondary cooling water systems include approximately 400 linear feet of eight inch diameter piping, three manual isolation valves and two electrically actuated valves at each plant. Most of the piping and valves are original CRA construction and have begun to show signs of deterioration. Staff has replaced approximately 25 percent of existing pipe, however, pipes continue to corrode and leak. This project will replace and upgrade the secondary cooling water system at each pumping plant.

CRA - Reliability for FY2006/07 through FY2011/12

15438

Total Appropriation Estimate: \$146,849,000 Biennial Estimate: \$17,606,900

Appropriated Amount 9/30/2017: \$78,364,000 Cost Through 9/30/2017: \$69,155,128

Purpose

To ensure the reliability and operational efficiency of the Colorado River Aqueduct (CRA) and related facilities and equipment.

Scope

This appropriation was established to continue to implement multiple projects throughout the CRA 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Canal Improvements - Completed construction
- Intake Pumping Plant 2.4 kV Power Line Relocation - Completed design
- Seismic Upgrade of 6.9kV Switch Houses - Completed design

Projects Completed To Date:

- Seven projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Intake Pumping Plant 2.4kV Power Line Replacement	6,000,000	2019	Complete construction
Mile 12 Flow and Chlorine Monitoring Station Upgrades	1,556,000	2019	Complete construction
Pumping Plant Sump System Rehabilitation	29,500,000	2020	Complete construction
Pump Plant Flow Meter Replacement	1,878,000	2019	Complete construction
Switch House Buildings Seismic Upgrades	17,128,000	2018	Complete construction

Authorized Projects

CRA Radial Gates Rehabilitation

There are a total of 14 hydraulic radial gates located along the CRA. The gates are needed to dewater and isolate various reaches of the CRA for maintenance and repairs. Inspections have identified that eight gates are corroded and require refurbishment or replacement. Protective coatings on various components of the gates have begun to fail. The existing motor actuators used to open and close the gates have also deteriorated from 70 years of use in the harsh desert environment. This project will involve refurbishment or replacement of eight radial gates. The motor actuators and the gates' electrical and control equipment will also be replaced. In addition, the concrete walls and floors within the diversion channels will be repaired. Design was authorized by the Board in May 2014. One of the eight gates is located at Eagle Mountain Reservoir. This gate is used to dewater the reservoir for maintenance and repairs, and to safely release water in case of an emergency. Due to its deteriorated condition, the spillway gate at Eagle Mountain Reservoir has been prioritized for replacement in advance of the seven other CRA gates. Construction for this location was authorized by the Board in December 2017.

Intake Pumping Plant 2.4 kV Power Line Replacement

The 2.4 kV power electrical service to Intake Pumping Plant is conveyed by over a 3-mile-long overhead power line originating at Gene Pumping Plant. The poles for this line were installed during the original construction of the Colorado River Aqueduct (CRA) for use as a telephone line. In the 1950s, power cables were added and the poles were retrofitted with extensions and cross arms to provide adequate clearance between the power and communication cables. The existing wood poles have deteriorated due to weathering in the desert environment and need to be replaced. The scope of the project includes relocating a portion of the power and communication lines from steep mountain slopes to areas adjacent to existing patrol and maintenance roads within Metropolitan's fee property. The relocated power and communication lines will include 50 new utility power poles. Final design was authorized by the Board in June 2013 and has been completed.

Mile 12 Flow and Chlorine Monitoring Station Upgrades

One of the CRA's critical points for monitoring flow rates and chlorine levels is located at Mile Marker 12 (Mile 12) along the aqueduct. Monitoring equipment includes a set of flowmeters with instrumentation, chlorine analyzers, communication equipment, solar panels, and batteries. Although the equipment has performed well, it has exceeded its life span and is beginning to fail. This project will replace the existing deteriorated flow meters with new ultrasonic models that are compatible with other meters in use throughout the CRA; relocate the data and communications equipment from the underground manhole to a new aboveground monitoring station with air-conditioned cabinets to enable stable operation; and construct a reliable power source. Construction was authorized by the Board in August 2010.

Pumping Plant Sump System Rehabilitation

Each of the five CRA pumping plants has two independent main sumps that collect water leakage from the main pumps and discharge valves. Each main sump is approximately 9 feet wide, 20 feet long, and 35 feet deep, and can hold up to 48,000 gallons, or approximately one day's worth of leakage water. The sump system pumps this water back to the pumping plant's main intake manifold or to its forebay, depending on the plant. The 70-year-old sump piping systems and support structures are deteriorating and have exceeded their service lives. Failure of the sump piping systems has the potential to cause extensive flooding and damage to valves and pumps within the pumping plants. This project will rehabilitate the pumping plant sump systems, including replacement of corroded sump mechanical equipment, piping, and access structures at all five CRA pumping plants. Access features will be upgraded by replacing corroded catwalks, ladders and handrails within the sumps. This project will also rehabilitate circulating water equipment and piping systems, which are in the sump area. Design was authorized by the Board in October 2014; and replacement of the gate valves in advance of the sump rehabilitation work to allow isolation of the circulating water system and to minimize disruptions to CRA operations was authorized by the Board in January 2017.

Pumping Plant Flow Meter Replacement

Acoustic flow meters are installed at each of the five Colorado River Aqueduct (CRA) pumping plants on each 10-foot-diameter delivery lines. Flow measurements are used to adjust pumping rates and balance the flows from plant to plant. The existing meters units have begun to deteriorate due to their age and exposure to harsh desert conditions. Continued loss of accuracy could lead to incorrect flow adjustments or unsynchronized pumping rates, which could cause flooding at the plants or overtopping of the aqueduct. This project will install new acoustic flow meters on the delivery lines which will connect to nearby flow meter consoles housed inside new pre-fabricated equipment enclosures. Construction was authorized by the Board in June 2013.

Pumping Plant Standby Generators Replacement

Back-up power for critical auxiliary systems at the Iron Mountain, Gene, and Intake pumping plants is provided by stand-by diesel generators. The standby generators are over 50 years old, require frequent repairs, and have reached the end of their service lives. In addition, upgrades to the generator's ancillary equipment are planned to meet current fire codes and environmental regulations. This project will improve the reliability of emergency power for critical auxiliary systems at the pumping plants. The scope of the project includes relocation and installation of new generators. The replacement generator will include alarms, valves, meters, and a control system capable of automatic start-up upon loss of primary power, automatic transfer back to primary power once the normal source is reestablished, and remote status monitoring. Preliminary design for all three pumping plants' standby generators was authorized by the Board in April 2008; and final design and equipment procurement for Iron Mountain standby generator was authorized by the Board in March 2012.

Switch House Buildings Seismic Upgrades

The 6.9 kV switch houses located at each of the five Colorado River Aqueduct (CRA) pumping plants contain critical electrical circuit breakers and other equipment used to control, protect, and isolate the high voltage power that serves the nine aqueduct pumps located in the nearby pump house. The switch houses were constructed in 1938 and are essential to maintaining reliable water deliveries from the CRA. A seismic risk assessment of the 6.9 kV switch houses identified that these structures are vulnerable to damage during a major seismic event, such as a magnitude 8 earthquake on the San Andreas Fault. This project will seismically upgrade the Hinds, Eagle Mountain, and Iron Mountain 6.9 kV switch houses including bracing of walls to support the steel towers mounted on the roofs; reinforcement of roof decks; addition of an exterior buttress wall; bracing of interior partition walls; and injection grouting of cracks in the walls and roof decks. For the Gene switch house, seismic upgrades will include bracing of walls, reinforcement of the roof deck, and injection grouting of cracks in the walls and roof deck. For the Intake switch house pumping plant, the only seismic upgrade is injection grouting of cracks.

Planned Projects

Seismic Upgrades of CRA Support Structures

A recent initial seismic risk assessment has revealed that several CRA support structures may be vulnerable from a major seismic event. These support structures include office and maintenance buildings, guest lodges, and dining and recreation halls located at Hinds, Eagle Mountain, Iron Mountain and Gene Pumping Plants. This project will perform detailed seismic assessments and retrofit the support structures if necessary.

CRA - Reliability for FY2012/13 Through FY2017/18

15483

Total Appropriation Estimate: \$145,204,000 Biennial Estimate: \$29,355,966

Appropriated Amount 9/30/2017: \$11,620,000 Cost Through 9/30/2017: \$6,723,116

Purpose

To ensure the reliability and operational efficiency of the Colorado River Aqueduct and related facilities and equipment.

Scope

This appropriation was established to implement multiple projects throughout the Colorado River Aqueduct 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:

- CRA Pumping Plant Storage Buildings
- CRA and Iron Mountain Reservoir Panel Repairs

Major Milestones Achieved Last Period:

- CRA Delivery Line Expansion Joint Repairs - Completed construction
- CRA Pumping Plant - Drainage Improvements - Began design
- CRA Conduit Erosion Control Improvements - Began design
- CRA Domestic Water Distribution System Replacement - Began design

Projects Completed To Date:

- Two projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA Conduit Structural Protection	7,650,000	2019	Complete construction
CRA Domestic Water Distribution Systems Replacement	7,000,000	2020	Complete construction
CRA Domestic Water Treatment System Replacement	11,000,000	2021	Complete design
CRA Pumping Plant Storage Buildings	4,317,000	2020	Complete construction
CRA and Iron Mountain Reservoir Panel Repairs	4,500,000	2019	Complete construction

Authorized Projects

CRA and Iron Mountain Reservoir Panel Repairs

The CRA is a 242-mile-long conveyance system which consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons, and reservoirs. The aqueduct is routinely shut down and inspected for signs of deterioration and to perform needed repairs. Recent inspections of the Iron Mountain Reservoir found that concrete panels at two locations along the embankment have deteriorated and need to be replaced. In addition, approximately 60 locations along a 100-mile reach of the canal were found to be cracked and buckling. This project will remove and replace the distressed panel sections with new concrete along the canal and at the Iron Mountain Reservoir. Design was authorized by the board in June 2017.

CRA Conduit Erosion Control Improvements

The CRA is comprised of 55 miles of cut-and-cover conduits. The cut-and-cover conduits are arch or horseshoe shape, unreinforced, cast-in-place concrete. In most locations along the CRA, the overlying soil protects the cut-and-cover conduits from rock and debris flows. However, at narrow ravine crossings, heavy storm events often erode the soil and expose the conduits making them vulnerable to structural damage from the rock and debris flows. This project will provide erosion protection features such as gabion structures or concrete slabs; including grading of the eroded areas to protect the conduit. In addition, diversion berms or concrete swales will be constructed to divert storm flows over the concrete slabs. Preliminary Design was authorized by the Board in January 2016.

CRA Conduit Structural Protection

The CRA has 55 miles of cut-and-cover conduits where vehicles and storm water flows can cross over the aqueduct. These conduits are unreinforced concrete horseshoe-shaped structures placed upon an invert slab. At some locations, these conduits are subject to heavy vehicle loading. Few locations include existing dirt roads that cross the aqueduct with insufficient soil cover over the conduit; including locations where heavy equipment must be placed over or near the conduit for access into tunnels or siphons. This project will install new protective structures such as reinforced concrete slabs that span over the unreinforced conduits at specific locations. The slabs will protect the conduits from damage by distributing the equipment loading to the surrounding soil. Design was authorized by the Board in January 2016.

CRA Domestic Water Distribution Systems Replacement

All five of Metropolitan's Pumping Plants are located in remote areas of Riverside and San Bernardino Counties where municipal water distribution systems are not available. Each plant is instead served by a community on-site water treatment system. Water from the CRA is treated and conveyed to each village house and to the industrial portions of the pumping plants through a gravity-fed water distribution system which consists of distribution piping, isolation valves and valve boxes. Recent inspections of the distribution systems have found blockages, leaks, taste and odor problems, and root intrusion. This project will replace the domestic water distribution systems at all five CRA pumping plants which include the main line pipes, building laterals, new backflow prevention devices, valves, meters and remote water quality analyzers. Final design was authorized by the board in December 2017.

CRA Domestic Water Treatment System Replacement

All five of Metropolitan's Pumping Plants are located in remote areas of Riverside and San Bernardino Counties where municipal water treatment systems are not available. Each plant is instead served by a community on-site water treatment system. These on-site treatment systems are skid-mounted membrane filtration units that include a strainer, a pair of activated carbon vessels, and a domestic water storage tank. These systems have been in continuous operation for 25 years and now suffer from frequent membrane and pipe failures. This project will replace the skid-mounted water treatment systems in its entirety. Preliminary design was authorized by the board in January 2016.

CRA Nonpotable Water Distribution Systems Replacement

The CRA nonpotable water distribution systems supply: (1) untreated water for all cooling water needs at each pump house; (2) service water to buildings such as storage warehouses, fleet services, machine shops, and carpenter shops; and (3) irrigation water for the pumping plants and villages. The existing nonpotable water systems were installed during the original construction of the CRA and have recently experienced numerous leaks and breaks. This project will replace the nonpotable water distribution systems at all five CRA pumping plants which include the main line pipes, building laterals, valves, and meters. Final design was authorized by the board in December 2017.

CRA Pumping Plant Drainage Improvements

The five CRA pumping plants are located in remote areas of the California desert which are periodically subjected to flash floods that carry high volumes of water, silt, and debris. During major storm events, the pumping plants' pump houses and support facilities are susceptible to flooding and deposition of silt and debris. In recent years, at several of the plants, debris flows have affected various critical electrical facilities. This project will include site grading, addition of perimeter drainage channels to intercept offsite flows, upsizing of storm drain culverts and extension of patrol roads to access the new storm drain facilities for maintenance. Design was authorized by the Board in January 2016.

CRA Pumping Plant Storage Buildings

Between 1950 and 1955, several metal-sided buildings with timber frames were built at the CRA pumping plants to store equipment, spare parts, and maintenance supplies. Two of these buildings have been replaced at the Gene Pumping Plant; however, four original buildings still remain in service. These buildings have deteriorated after 65 years of service in the harsh desert environment and no longer seal properly to prevent rain and dust from entering the interiors. This project will replace the four remaining deteriorated storage buildings. As part of the design considerations, an assessment will be conducted to determine space requirements for storage of equipment and parts to support ongoing maintenance activities and upcoming capital rehabilitation work at the pumping plants. Preliminary design was authorized by the board in August 2016.

CRA Roadway Pavement Replacement

There is a total of approximately 15 acres of asphalt-paved roadways at all five pumping plants. These roadways have deteriorated due to the harsh desert conditions and after over 30 years of service. In addition, portions of the asphalt-paved roadways will require extensive cutting and trenching to replace the water distribution and sewer systems which are being completed under separate projects. This project will remove and replace asphalt-paved roadways throughout the pumping plants and villages that include the water distribution and sewer systems. Preliminary design was authorized by the board in December 2017.

Whitewater Tunnel No. 2 Seismic Upgrades

The CRA is a 242-mile-long conveyance system which consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons, and reservoirs. One of the tunnels, CRA Whitewater Tunnel No. 2, is a 1.5-mile long; 16-foot high by 16-foot wide horseshoe-shaped tunnel that parallels closely to the southern San Andreas Fault and crosses a splay of the fault approximately one-third mile from its west portal. A recent seismic risk assessment of the CRA identified that this tunnel is vulnerable to major damage from a strong earthquake on the southern San Andreas Fault. This project will perform near-term upgrades to strengthen vulnerable tunnel sections at the east and west portals of this tunnel and will improve access at the west portal. Furthermore, in order to expedite post-earthquake repairs of damaged tunnel sections, the design of a new bypass tunnel will be prepared in advance, steel sets will be procured and stockpiled, and tunnel repair contractors will be prequalified so that specialized equipment and crews may mobilize rapidly. Preliminary design was authorized by the board in December 2017.

Planned Projects

CRA Pump Plants 2.3kV and 480V Switch Rack Rehabilitation

All five CRA Pumping Plants have a 2.3kV and 480 V switch racks that are the central power distribution for the 2.3kV, 480V and 120V that feed multiple medium and low voltage critical equipment within the pumping plants. These switch racks have been in service since the original construction of the CRA. The equipment is old, obsolete and replacement parts are difficult to obtain. This project will rehabilitate the 2.3kV and the 480V switch racks at all five CRA pumping plants to ensure the equipment meets the current safety and electrical codes and provides a reliable power supply to the plants.

Desert Pump Plant Reservoir Spillway Auto Rejection - Iron Mountain and Eagle Mountain

The Iron Mountain and Eagle Mountain Reservoirs are located on the upstream side of the Iron Mountain and Eagle Mountain pumping plants, respectively. The reservoirs dampen fluctuations in flow between the five pumping plants. Each reservoir contains a spillway which allows discharge of water to the desert in the event of a power outage of the main pumps. The two spillways were designed in the 1930s to safely reject up to approximately 1,200 cubic feet per second (cfs). The pumping plants were expanded in the 1950s and the aqueduct can now operate up to approximately 1,750 cfs. Rejection of flows greater than 1,200 cfs would cause uncontrolled release of water at these two reservoirs, which could damage nearby facilities and public roads or property. This project will modify the reservoir spillways to allow safe rejection of up to 1,750 cfs of water in the event of a power outage of the main pumps.

Electrical Upgrades to the Station Power Systems

At each of the CRA pumping plants, most of the incoming electrical power is used to operate the main pumps. However, a portion provides power to the cooling water pumps, lubrication oil pumps, control systems, water treatment equipment, and general lighting. Sufficient power for the treatment systems is available at each pumping plant. However, a new connection from each 2.3 kV switchyard will be necessary to power the new water treatment equipment. The electrical upgrades will include a new transformer, distribution panels, and ductbanks at each pumping plant to support the domestic water treatment system replacement.

Gene & Intake Pumping Plant Outlet Structure Gates Re-coating

Each of the five CRA pumping plants has nine main pumps that lift water from the pump house through a series of converging delivery lines that convey water from the pump house to a headgate structure located at the top of a hill. These structures then convey water to the downstream portion of the aqueduct. Flow from each headgate structure is regulated by three nine-foot square steel gates. Recent inspections at the Intake and Gene pumping plants have revealed that the protective coatings on various components of the gates have begun to crack and peel. This project will recoat the six headgate structure outlet gates at the Intake and Gene pumping plants in order to prevent metal loss due to corrosion.

CRA - Reliability for FY2018/19 Through FY2023/24

18901

Total Appropriation Estimate: \$58,462,000 Biennial Estimate: \$3,957,175

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To ensure the reliability and operational efficiency of the Colorado River Aqueduct and related facilities and equipment.

Scope

This appropriation will be established to implement multiple projects throughout the Colorado River Aqueduct 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- None, this appropriation will be initiated in FY 2018/19.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA Region Security Improvements	3,900,000	2020	Begin design
Hinds Pumping Plant Discharge Valve Pit Platform Replacement	5,830,000	2020	Begin design

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

CRA 230kV Transmission Line Improvements

The CRA has an extensive 230 kV transmission system that supplies power to all five pumping plants that originates from Hoover Dam. This 305 mile long transmission system was installed in the 1930s and consists of approximately 75-foot-high steel towers with concrete and wood footings, aluminum and copper conductors and supports to attach the conductors and insulators to the towers. Spans between the towers average 1,200 feet with varying ground elevations. Vertical clearances between the lowest conductor and the ground in a span can vary with temperature, wind speeds, and power loads. Over the years, operating under maximum power loads and extreme desert temperatures has led to insufficient vertical clearances as required by the current electrical standards. This project will assess ground clearances of the conductor spans and increase clearances, as needed, by raising the heights of existing towers and/or adding new towers between spans; thus, increasing not only the reliability of the transmission lines but also the vertical clearances.

CRA 230 kV Transmission System Regulatory and Operational Flexibility Upgrades

The CRA has an extensive 230 kV transmission system that includes approximately 305 miles of North American Electric Reliability Corporation (NERC) regulated transmission lines that supply power to all five pumping plants. Two parallel lines span from the Mead Substation near Hoover Dam to Metropolitan's Camino Switching Station. From the Camino Switching Station, one line, the Camino West Line extends to Iron Mountain, Eagle Mountain, and Hinds pumping plants. A second line, the Camino East Line extends to the Gene Pumping Plant. The Camino West Line does not conform to current NERC standards which require stability in US transmissions systems in the event of a fault. This project will upgrade the West Line to not only meet current regulatory requirements but also to provide operational reliability and flexibility to the transmission system. Additionally, as part of this project Metropolitan will purchase some existing electrical equipment from Southern California Edison that is located within Metropolitan's 230kV switchyards at Eagle Mountain and Gene Pumping Plants.

CRA Flowmeter Access and Safety Improvements

All five CRA pumping plants have flow meters installed on the 10-foot-diameter delivery lines that continuously measure each plant's water output into the aqueduct. Flow rates are used to determine adjustments which then control the pumping rates and balance flows throughout the CRA system. The delivery lines are located in steep, rocky, ungraded pathways. The flowmeter transducers, which are located high on the delivery lines, can only be accessed by a ladder, are difficult to maintain. Maintenance occurs during hot summer when temperatures can rise to up to 120 degrees. This project will provide safe, permanent and code-compliant access to the flowmeter transducers located along the delivery lines at all five pumping plants.

CRA Pumping Plant Delivery Line Rehabilitation

Each of the nine main pumps at the five CRA pumping plants discharges the water into individual six-foot diameter discharge lines. The nine discharge lines then merge and transition into three 10-foot diameter pipelines, Delivery Lines No. 1, 2 and 3, that convey flow to the top of the lift and then discharge into a headgate structure which empties the water into the next section of the aqueduct. These delivery lines vary in length from 500 feet to 1,400 feet up steep and rocky slopes. The five Delivery Line No. 1s were constructed in the 1930s and were lined with coal tar enamel to protect the interior of the pipe from corrosion. After 80 years of service, the existing coal tar enamel lining on Delivery Line No. 1 at each plant is cracking, flaking, and the steel is starting to corrode. The mortar linings for Delivery Line Nos. 2 and 3 are still in good condition and do not require repair. Additionally, depending on the length of each delivery line there are a total of three or four expansion joints located along the line. These expansion joints are deteriorated and showing signs of corrosion. This project provides a comprehensive rehabilitation of the delivery lines at each of the five CRA pumping plants including replacement of the coal tar enamel with a cement mortar lining, expansion joints, and minor coating repairs.

CRA Region Security Improvements

CRA facilities are critical components of Metropolitan’s water delivery system. These facilities include five pumping plants and the El Camino Electrical Substation. These facilities have inadequate perimeter fencing. Over the past six years, there have been approximately 37 reported incidents of trespassers or security threats. This project will install physical security improvements such as fencing, cameras, motion detectors, remote speakers, card readers, and lighting at Metropolitan’s CRA pumping plants and at the El Camino Electrical Substation.

CRA Tunnels - Seismic Resilience Upgrades

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews in Riverside County, including 124 miles of tunnels which were constructed in the late 1930s and was placed into service in 1941. While the CRA was constructed in accordance with current seismic codes of that time, recent seismic risk assessments of the CRA identified that some tunnels are vulnerable to damage from a strong earthquake on the southern San Andreas Fault. The scope of this project includes detailed seismic evaluations and completion of upgrades to strengthen vulnerable tunnel sections.

Eagle Lift & Eagle West Siphons Seismic Improvements

The CRA is a 242-mile-long water conveyance system that was placed into service in 1941. As the aqueduct traverses the desert, it must cross numerous drainage channels, ravines, and other natural depressions. At each crossing, the aqueduct’s open channel transitions into a buried conduit (an inverted siphon) which drops below ground and passes beneath the natural surface feature. At the downstream end of the siphon, water re-emerges into the open aqueduct. Typically, siphons are cast-in-place reinforced concrete conduits, which vary in length from 150 feet to 5 miles. An initial assessment of the Eagle Lift and Eagle West Siphons identified potential slope failure of the soil covering the siphons as a result of a strong seismic event. This project will perform a detailed slope stability analysis and implement mitigation options.

Hinds Pumping Plant Discharge Valve Pit Platform Replacement

At each of the CRA pumping plants water is pumped from the plants’ intake manifold, through the main pumps and out of the discharge valves. From the discharge valves, water travels through the delivery lines and into the aqueduct. The discharge valves are located in small concrete pits below the pump plant floor room. At the Hinds Pumping Plant, the concrete pit is equipped with a raised platform due to the deep pit. The platform is necessary to maintain the discharge valve’s ancillary equipment. After over 75 years of service in a humid environment created mainly from the pump cooling water discharge, the metal platform has corroded significantly and needs to be replaced. This project will replace the discharge valve platform and relocate cooling water discharge piping in all nine discharge pits at the Hinds Pumping Plant.

Intake Pump Plant Road Improvements

The 1.75 mile long asphalt access road into the Intake Pumping Plant travels between a large hill and Lake Havasu. At approximately the midpoint of the access road, it crosses a culvert that drains storm runoff from the hillside into the lake. This culvert is undersized, has partially collapsed, and fills with debris from an unlined wash during rain events. After rain events, Metropolitan staff must clear debris from the culvert in order to prevent rain water from overtopping the culvert and eroding the access road. This project will replace the existing culvert with a new culvert and deteriorated portions of the asphalt road.

Iron Mountain Maintenance Vehicle Canopy

The Iron Mountain Pumping Plant serves as the primary headquarters for storage of equipment for the CRA system. Items stored at the plant include cranes, excavators, road graders, heavy utility trucks and backhoes. These vehicles are required to support CRA maintenance activities and capital projects. This equipment is stored in direct sunlight, which results in accelerated deterioration. This project will install a metal canopy, approximately 40-feet wide by 300-foot long, on a concrete foundation to provide shade to protect the equipment.

Iron Mountain Pumping Plant Hazardous Waste Containment

Hazardous wastes such as chemicals, oil, paint, paint thinners and antifreeze are generated through routine operations at the Iron Mountain Pumping Plant. Hazardous wastes are collected and placed into either metal or plastic drums ranging in size from five to 55 gallons. The existing hazardous wastes are then stored in a fenced temporary storage area. This project will replace the existing hazardous waste storage facility with a prefabricated, code-compliant, hazardous waste storage container.

Dam Rehabilitation & Safety Improvements 15419

Total Appropriation Estimate: \$31,724,000 Biennial Estimate: \$11,075,672
 Appropriated Amount 9/30/2017: \$7,450,000 Cost Through 9/30/2017: \$4,899,229

Purpose

To implement multiple projects that will facilitate monitoring, and assess stability, risks, and capacities of Metropolitan's dams and reservoirs.

Scope

This appropriation was established to review the adequacy of Metropolitan's dams, evaluate risks, and identify alternative solutions to minimize risks. Under this appropriation, the seismic adequacy of dams and their appurtenant structures are being assessed, and the hydraulic adequacy of dams' spillway and hydraulic structures under up-to-date hydrologic conditions are being evaluated.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Dam Monitoring System Upgrades at Lake Mathews and Lake Skinner
- Assessment of Dam Structures at Lake Mathews and Lake Skinner

Major Milestones Achieved Last Period:

- DVL Dam Monitoring System Upgrade - Began construction of Stage 1
- Dam Monitoring System Upgrades at Lake Mathews and Lake Skinner - Started design
- Assessment of Dam Structures at Lake Mathews and Lake Skinner - Started assessments

Projects Completed To Date:

- Three projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Dam Monitoring System Upgrades at Lake Mathews and Lake Skinner	17,000,000	2020	Complete design
Diamond Valley Lake Dam Monitoring System Upgrade - Stage 2	2,700,000	2018	Complete construction
Diamond Valley Lake Dam Monitoring System Upgrade - Stage 3	4,000,000	2019	Start design
Upgrades to Dam Structures at Lake Mathews and Lake Skinner	2,000,000	2018	Complete assessments

Authorized Projects

Dam Monitoring System Upgrades at Lake Mathews and Lake Skinner

Metropolitan relies on extensive instrumentation and regular inspections as a cornerstone of its dam monitoring program. The instrumentation provides warning signs of dam distress and provides real-time monitoring of the embankments and foundations. Extensive monitoring equipment has been installed at Lake Skinner and Lake Mathews over the last 44 years and 79 years, respectively. Recent inspections have noted that several of the piezometers and weirs at these facilities no longer function reliably and require rehabilitation or replacement.

Field surveys and condition assessments will be conducted at both dams to develop a staged replacement schedule. Based on the results of the assessments, installation of automated dam monitoring systems at each dam may be required. Design was authorized by the Board in December 2017.

Diamond Valley Lake Dam Monitoring System Upgrade - Stages 2 & 3

The three rock-fill dams which form Diamond Valley Lake (DVL) are monitored continuously by the facility's geodetic deformation monitoring system, which transmits real-time displacement data to Metropolitan's Headquarters at Union Station and to the Operations Control Center at Eagle Rock. This data is collected to provide early indication of a potential problem within the dam embankments or foundations, and to prepare mandatory reports on the dams' performance for submission to DSOD. After 17 years of continuous operation, the existing monitoring equipment has deteriorated and needs to be replaced. The planned upgrades will maintain the capability to continuously monitor dam performance in compliance with the DSOD operating permit.

Upgrades to the dam monitoring network at DVL will be accomplished in three stages. Stage 1 includes preparation of procurement documents for the geodetic deformation monitoring system and the facility-wide automated data acquisition system. Stage 1 was authorized by the Board in July 2016 and is complete. Stage 2 includes the geodetic deformation monitoring system procurement and installation. Stage 2 was authorized by the Board in September 2017 and is underway. Stage 3 will include the facility-wide automated data acquisition system procurement and installation.

Upgrades to Dam Structures at Lake Mathews and Lake Skinner

Following the recent incidents at Oroville Dam, the California Division of Safety of Dams (DSOD) is now requiring that dam owners in California assess the condition of dam spillways to confirm that they meet minimum safety standards. In July 2017, DSOD issued an initial list of 93 dams requiring comprehensive spillway assessments to evaluate hydraulic capacity, geotechnical stability, structural integrity, and potential erosion from dam releases. Of the 20 Metropolitan facilities that are permitted by DSOD, two have been directed to undergo the comprehensive assessments: Lake Mathews and Lake Skinner.

Metropolitan submitted the required work plans for re-evaluation of the spillways at Lake Mathews and Lake Skinner, and received approval of those plans in September 2017. For each dam, a comprehensive spillway assessment report will be prepared and submitted to DSOD for review. As part of these comprehensive assessments, re-evaluation of the outlet tower and conduit at Lake Skinner is recommended to identify potential risks and vulnerabilities of lowering the reservoir pool after a major seismic event. Due to its integral role in withdrawing water from the reservoir, the spillway work plan will be expanded to include the Lake Skinner outlet tower and conduit. The assessments were authorized by the Board in December 2017.

Planned Projects

No additional projects are planned.

Delta Wetlands Properties (Delta Islands)

15494

Total Appropriation Estimate: \$196,000,000 Biennial Estimate: \$2,015,733

Appropriated Amount 9/30/2017: \$196,000,000 Cost Through 9/30/2017: \$176,501,868

Purpose

To support water supply reliability, emergency response, climate change and ecosystem activities associated with our northern California supply via the SWP.

Scope

Purchase real property owned by Delta Wetlands Properties in Contra Costa, San Joaquin, and Solano Counties. Performance of ongoing title due diligence activities such as preparation and review of chains of title; conducting environmental site assessments; levee assessments, preliminary water rights analyses; and other investigations of Property. Resolution of title issues, levees, Delta Wetlands settlement agreements, and legal challenges that might arise after closing of escrow. Future land use studies, planning, and interim property management.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Delta Wetlands Properties (Delta Islands) - Acquired property

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Delta Wetlands Properties (Delta Islands)	179,500,000	2020	Aerial survey and mapping; title reports, clear title and restrictive encumbrances, habitat restoration, and levee assessments

Authorized Projects

Delta Wetlands Properties (Delta Islands)

Purchase of certain property from Delta Wetlands Properties in Contra Costa, San Joaquin, and Solano Counties. Also, authorized ongoing title due diligence, land studies, and legal defense allocation after close of escrow.

Planned Projects

Delta Islands Infrastructure Improvements - Regulatory Compliance

Recent legislation (SB 88) requires monitoring and reporting of certain diversions within the Delta. Metropolitan's Delta properties will need to comply. This project will investigate existing diversion points, identify permanent meter locations, coordinate with the Delta Watermaster, and install approximately 40 meters.

Demonstration-Scale Recycled Water Treatment Plant 15493

Total Appropriation Estimate: \$17,000,000 Biennial Estimate: \$4,192,261

Appropriated Amount 9/30/2017: \$17,000,000 Cost Through 9/30/2017: \$1,624,050

Purpose

To enhance water supply reliability by providing a new resource that would help maintain groundwater recharge and storage for Metropolitan's service area.

Scope

This appropriation was established to plan and implement a demonstration-scale recycled water treatment plant and to establish the framework of terms and conditions for development of a regional recycled water program.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Water Purification Demonstration Project

Major Milestones Achieved Last Period:

- Water Purification Demonstration Project - Completed design and started construction

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Water Purification Demonstration Project	17,000,000	2020	Complete construction and demonstration testing

Authorized Projects

Water Purification Demonstration Project

The Regional Recycled Water Advanced Purification Center will be located at the County of Los Angeles Sanitation Districts' Joint Water Pollution Control Plant in Carson. The 0.5 mgd demonstration plant will test the effectiveness of various advanced water treatment processes for approximately one year to gather the required technical data for regulatory approval of the RRWP. The demonstration plant will also establish design criteria and confirm treatment costs for a full-scale facility, and will support the program's public outreach effort. Construction of the demonstration plant was authorized by the Board in July 2017.

Planned Projects

No additional projects are planned at this time.

Diemer Water Treatment Plant - Improvements

15380

Total Appropriation Estimate: \$241,468,000 Biennial Estimate: \$6,991,310

Appropriated Amount 9/30/2017: \$159,996,600 Cost Through 9/30/2017: \$151,293,019

Purpose

To maintain reliability and ensure regulatory compliance of the Diemer plant.

Scope

This appropriation was established to plan and implement multiple projects at the Diemer Plant. 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:

- No projects were initiated during the last biennium

Major Milestones Achieved Last Period:

- Diemer Basin Rehabilitation - Completed construction of the east basins and design of the west basins
- Diemer Filter Outlet Conduit Seismic Upgrades - Completed design
- Diemer Electrical Improvements Stage 2 - Completed construction

Projects Completed To Date:

- 16 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Diemer Basin Rehabilitation	63,500,000	2021	Begin construction of the west basins
Diemer Filter Outlet Conduit Seismic Upgrades	7,833,000	2020	Complete construction
Diemer Washwater Reclamation Facilities Reliability Improvement	48,386,000	2024	Complete design

Authorized Projects

Diemer Basin Rehabilitation

The mechanical, structural, and electrical components of the basins at the Diemer plant have deteriorated from over 50 years of continuous use. They need to be rehabilitated in order to maintain reliable treated water deliveries. Key components to be upgraded include basin inlet gates; flocculator drives and shafting; baffle boards and supports; turntable assemblies, rakes, and catwalks; launders; and structural supports for the equipment. The electrical systems also need to be modified for compliance with current code. In addition, the flexible joint sealant and its adjacent concrete within the basins will be removed and replaced to comply with federal Toxic Substances Control Act (CSCA) regulations. The work will be completed in two phases in order to minimize operational impacts on the plant. Final design was authorized by the Board in February 2013; construction of the east basin rehabilitation was authorized by the Board in July 2015 and has been completed.

Diemer Filter Outlet Conduit Seismic Upgrades

A section of the Diemer plant's filter outlet conduit passes along the north side of Basin No. 4, where it crosses a zone of fill material. Detailed structural and geotechnical analyses have concluded that during a major earthquake, the soil which supports this 10-foot-diameter pipeline could slide down the plant's north slope, potentially rupturing the line. The most cost-effective solution to strengthen the slope within the zone of fill material is to construct a concrete-caisson retaining wall to restrain the soil that supports the pipeline. Other components of the work include: relocation of water lines, temporary shoring, re-vegetation, and final paving. Construction was authorized by the Board in December 2017.

Diemer Washwater Reclamation Facilities Reliability Improvement

Approximately 40 percent of Diemer plant's existing Washwater Reclamation Plant (WWRP) is constructed on long slender piles and earthen fill, which form a level surface at the top of a slope. Seismic rehabilitation is required to ensure reliability of the WWRP facility. In addition, submerged WWRP equipment is continually subjected to abrasive and corrosive operating conditions caused by the solids in the used filter backwash water. The WWRP's two identical treatment trains share a common influent channel and both will have to be removed from service during maintenance. This project will install seismic stabilization facilities and retrofit the WWRP with reliability improvements, including new coal grit removal facility and new headwork's to allow independent shut-down of each individual process trains. The project also includes modifications to the existing chemical feed system, sludge line, and utilities at the west slope. Final design was authorized by the Board in May 2006.

Diemer Electrical Improvements Stage 2

Upgrades to the existing electrical system at the Diemer plant were needed because the electrical equipment had gradually deteriorated over 50 years of continuous use, was difficult to maintain and repair, and required improvements in backup capability. The project installed new electrical conduits, duct banks, unit power centers and motor control centers, redistributed power feeds, upgraded the grounding system, and replaced obsolete standby generator. Construction was authorized by the Board in August 2013 and has been completed. Production of record drawings is in progress.

Planned Projects

No additional projects are planned.

Diemer Water Treatment Plant - Improvements for FY2006/07 through FY2011/12

15436

Total Appropriation Estimate: \$86,401,000 Biennial Estimate: \$8,843,577

Appropriated Amount 9/30/2017: \$61,939,000 Cost Through 9/30/2017: \$46,905,242

Purpose

To maintain reliability and ensure regulatory compliance of the Diemer plant.

Scope

This appropriation was established to plan and implement multiple projects at the Diemer plant. The common driver for many projects in the appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Diemer Filter Building Seismic Upgrades - Completed construction of seismic upgrades for the east filter building and design of the west filter building
- Diemer Filter Valve Replacement - Completed construction of valve replacement for the east filters and design of the west filters
- Diemer Water Sampling System Improvements - Completed design

Projects Completed To Date:

- 15 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Diemer Chemical Feed System Improvements	6,608,000	2021	Begin construction
Diemer Filter Building Seismic Upgrades	32,500,000	2021	Begin construction of west filter building
Diemer Filter Valve Replacement	13,400,000	2021	Begin construction of west filters
Diemer Water Sampling System Improvements	3,450,000	2020	Begin construction

Authorized Projects

Diemer Chemical Feed System Improvements

The chemical feed equipment for ammonia, alum/ferric chloride, sodium hydroxide, liquid polymer, and dry polymer at the Diemer plant has aged and its reliability has deteriorated over the years. Most equipment is over 20 years old and has experienced various and repeated failures resulting in unscheduled shutdowns and costly maintenance. Some of the repair parts are no longer manufactured and are difficult to obtain. Loss of chemical feed or inadequate feeding capacity would disrupt plant operations. In addition, design criteria for some of the chemicals have changed and the existing equipment is unable to cover the required range for chemical feed. This project will replace the worn-out feed equipment and optimize the system design to improve system reliability and to protect treated water quality. Design was authorized by the Board in March 2011.

Diemer Filter Building Seismic Upgrades

Structural evaluations of the two filter buildings at the Diemer plant concluded that the filter buildings are seismically vulnerable and should be upgraded to reduce the risk of damage from a major seismic event. This project will upgrade the Diemer plant's Filter Buildings to provide operational reliability. This project will reinforce concrete columns in each filter control building, reinforce each clerestory at the roof line, and add new concrete piers within the sump area below the filters. As part of the filter upgrades, some existing mechanical and electrical equipment in the filter control buildings will be relocated. Construction of the east filter upgrades was authorized by the Board in February 2015, and has been completed. Construction of the west filter upgrades will start in late 2018.

Diemer Filter Valve Replacement

The original filter valves at the Diemer plant have deteriorated from over 50 years of continuous operation. The valve bodies exhibit corrosion and the rubber seats are worn. This project will replace the obsolete filter valves in the west and east modules of the plant with new valves that conform to American Water Works Association (AWWA) standards. In addition, the existing valve actuators in the west filters will be replaced. The actuators removed from the west filter valves will be refurbished and re-installed on the recently replaced east filter valves. Procurement of the valve actuators was authorized by the Board in September 2017. Installation of the west filter valves will start in late 2018.

Diemer Water Sampling System Improvements

The existing sample lines at the Diemer plant do not meet the 10-minute turnover rate requirement from sample point to laboratory sample taps due to long sample lines and pressure limit for the existing polypropylene tubing used to transport the samples. This project will upgrade the existing sample lines and all sample pumps to allow higher operational pressure to shorten the transport time. In addition, new chlorine analyzers, turbidimeters, and pH analyzers will be installed closer to the sample locations to eliminate variable analytical results caused by algae growth, solids deposition, temperature variation, and excessive detention time in the sample lines. These local analyzers will reduce distances from sample point to analyzer to better represent actual conditions in the process stream. Design was authorized by the Board in August 2011.

Diemer Administration Building Seismic Upgrades

Seismic analyses of the Diemer plant's Administration Building identified that the building was vulnerable and should be upgraded to reduce the risk of damage from a major earthquake. In addition, the building was not equipped with a fire detection and occupant notification system. This project will provide seismic and fire safety upgrades to the building in order to enhance safety and reduce the risk of damage or disruption to plant operations in the event of a major earthquake or fire. Construction was authorized by the Board in November 2016 and is underway.

Planned Projects

No additional projects are planned.

Diemer Water Treatment Plant - Improvements for FY2012/13 through FY2017/18 **15478**

Total Appropriation Estimate: \$13,281,000 Biennial Estimate: \$409,877

Appropriated Amount 9/30/2017: \$375,000 Cost Through 9/30/2017: \$370,610

Purpose

To maintain reliability and ensure regulatory compliance of the Diemer plant.

Scope

This appropriation was established to plan and implement multiple projects at the Diemer plant. The common driver for many projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects initiated during the last biennium.

Major Milestones Achieved Last Period:

- Diemer Caustic and Fluoride Tank Farm Improvements - Continued preliminary design

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Diemer Slope Erosion Rehabilitation	3,760,000	2021	Begin design

Authorized Projects

Diemer Caustic and Fluoride Tank Farm Improvements

A canopy over the caustic soda tank farm and a new fluoride tank farm are needed to improve operations at the Diemer plant. Heat tracing around caustic feed lines is required to feed 50% caustic soda during the winter months. However, rainwater trapped within the chemical containment area could submerge the heat tracing wires. A canopy will minimize rainwater accumulation within the containment area and eliminate electrical hazards. The plant's fluoride tanks have reached the end of their service life and lack access for inspection and maintenance. This project will install a canopy over the existing caustic soda feed equipment; and replace the two fluoride storage tanks, associated feed equipment, and the roof over the fluoride tank farm. Preliminary design was authorized by the Board in August 2012.

Planned Projects

Diemer Slope Erosion Rehabilitation

The Diemer plant is located on the top of a hill in the city of Yorba Linda and consists of numerous fill slopes. Due to the large water-bearing structures at the Diemer plant, some of these slopes are within the State of California Department of Water Resources Division of Safety of Dams (DSOD) jurisdiction. Some slopes within the Diemer plant have eroded and are in need of rehabilitation. This project will provide site improvements for grading, drainage, and erosion/sediment control to erosion-damaged slopes at the plant site.

Diemer Water Treatment Plant - Improvements for FY2018/19 through FY2023/24

18903

Total Appropriation Estimate: \$4,876,000 Biennial Estimate: \$1,366,688

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain reliability and ensure regulatory compliance of the Diemer plant.

Scope

This appropriation will be established to plan and implement multiple projects at the Diemer plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- None, this appropriation will be initiated in FY 2018/19.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Diemer Emergency Ozone Backup Disinfection	1,843,000	2021	Complete design & begin construction

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Alternative Water Source for Ozone Generator Open Loop Cooling Water

Diemer plant's ozone generator cooling water process is made up of two systems: open loop and closed loop. The current source for the open loop cooling water is raw water taken from the plant inlet. This water source is under the influence of returned washwater, water treatment chemicals, and other impurities. As a result, open loop cooling water equipment experiences frequent plugging. This project will identify an alternate water source and replace the existing supply for the open-loop cooling water system.

Diemer Administration Building HVAC Replacement

The existing HVAC system in the Diemer plant's Administration Building consists of two 20-ton, chilled and hot water coiled air-handling units, which maintain multi-zone work-space environments on both floors. The 55-year-old units are beyond their expected operating life and have caused issues with regular maintenance activities. This project will replace the existing 20-ton HVAC units with new energy efficient units and upgrade the temperature control system for the building. Seismic anchorage will be incorporated to meet the current building code.

Diemer Electrical Upgrades - Panels and Loads

There are 53 existing power and distribution panels that were installed during the original Diemer plant construction, making the equipment more than 50 years old. These panels, circuit breakers, and feeder conductors (wires that feed the panels) have exceeded their normal life span and have deteriorated beyond a safe and reliable operating condition. This project will upgrade the aged electrical equipment to meet the current electrical code and enhance the plant's reliability. The improvements will allow the electrical equipment to be taken out of service for preventive maintenance, replacement, and testing in a safe working condition.

Diemer Emergency Ozone Backup Disinfection

The Diemer plant's existing ozone backup disinfection system was designed to use a low concentration sodium hypochlorite solution to be injected at the plant inlet in the event of an unplanned ozone system shutdown. However, the existing sodium hypochlorite storage is only sufficient to provide three hours of back-up disinfection. Manually switching to the liquid chlorine feed system is required after the three hours to meet the disinfection requirement. The sodium hypochlorite system has also proven susceptible to vapor locking. This project will modify the existing plant chlorine system to be used as backup disinfection system in the event of an ozone system shutdown.

Diemer Water Treatment Plant - Oxidation Retrofit 15389

Total Appropriation Estimate: \$370,192,400 Biennial Estimate: \$1,849,584

Appropriated Amount 9/30/2017: \$370,192,400 Cost Through 9/30/2017: \$365,654,143

Purpose

To reduce the level of disinfection by-products in the treated water supplied by the Diemer plant in order to meet state and federal standards and provide consistent and equitable high quality treated water to all of Metropolitan’s member agencies.

Scope

This appropriation was established to design and construct all systems and facilities that are required to provide ozone disinfection capability and to integrate those systems and facilities into the existing plant operations at the Diemer plant.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Diemer Oxidation Retrofit Program (ORP), Construction of Ozonation Facilities - Completed construction

Projects Completed To Date:

- Eight projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Diemer Oxidation Retrofit Program, Completion Activities	4,400,000	2019	Complete construction

Authorized Projects

Diemer ORP, Completion Activities

To enable the ozonation facilities to commence operation, a series of key integration activities between the new and existing facilities at the Diemer plant are needed. These activities are performed by Metropolitan forces, which is more cost-effective than the use of a construction contract due to the greater flexibility in scheduling of construction activities around plant operations, and reduced risk of contractor impacts or delays. These activities include modification of life safety systems; integration of plant control, communication, and chemical systems; calibration and testing of ozone process instruments; and preparation of operational schematics for use by plant staff. Construction was authorized by the Board in March 2015.

Diemer ORP, Construction of Ozonation Facilities

The addition of ozone at each of Metropolitan's treatment plants removes blend restrictions and substantially lowers disinfection by-product levels for compliance with both Stage 1 and Stage 2 of the U.S. Environmental Protection Agency's Disinfectants/Disinfection By-Products Rule. Use of ozone also enhances Metropolitan's ability to treat water with variable source-water quality, and provides critical operational flexibility to meet varying treatment challenges resulting from periodic occurrences such as drought and SWP pumping limitations. Furthermore, ozonation provides the capability to control taste-and-odor causing compounds that may be present from time to time. The project consists of constructing the Ozone Generation Building, ozone contactors, contactor inlet and outlet conduits, contactor rejection tunnel, LOX storage and feed system, Phase 2 of the chemical feed facilities, the plant electrical switchgear and emergency generator buildings, large-diameter yard piping and conduits; installing flow meters; replacing used washwater pumps; adding and modifying plant utilities and controls; performing demolition, grading, and paving; completing tie-ins to existing facilities; placing the landscaping; and installing and commissioning the ozone equipment furnished by Metropolitan. Construction was authorized by the Board in July 2008 and has been completed. Production of record drawings is in progress.

Planned Projects

No additional projects are planned.

DVL Recreation Facilities

15334

Total Appropriation Estimate:	\$92,800,000	Biennial Estimate:	\$799,999
Appropriated Amount 9/30/2017:	\$92,800,000	Cost Through 9/30/2017:	\$63,454,710

Purpose

To implement the Metropolitan’s Board directives on recreation and associated development at Diamond Valley Lake (DVL).

Scope

This appropriation was established to enhance the Diamond Valley Lake property which will serve to extract value from the property while ensuring that Metropolitan’s core business is protected.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- DVL East Marina Sanitation Facility
- DVL East Marina Utilities Study

Major Milestones Achieved Last Period:

- Memorandum of Intent (MOI) executed with Metropolitan, Valley Wide Park & Recreation District, Eastern Municipal Water District, City of Hemet, and Riverside County Regional Park & Open Space District. The MOI is a uniform vision for implementing a series of self-sustaining private and/or public sector recreational improvements in the DVL East Recreational Area and is a tool for planning and coordination purposes.
- Completed DVL to Lake Skinner Trails Study
- Completed DVL East Marina Sanitation Facility

Projects Completed To Date:

- 18 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
DVL East Marina Utilities	11,000,000	2021	Begin design
DVL Visitor Experience Improvements	4,000,000	2021	Begin design

Authorized Projects

No projects are currently authorized.

Planned Projects

DVL East Marina Utilities

DVL offers recreational opportunities to the region including boating, fishing, hiking, and biking. The facility supports 4,500 acres of on-water activity, 28 miles of trails, and 13,500 acres of protected open space. This project will extend the existing water, sewer, gas, and communication facilities from the intersection of Searl Parkway and Angler Avenue to the DVL East Marina to support existing operations and future development. The construction of the new infrastructure will replace existing failing tanks which are filled with trucked-in water to service the Marina store, enhance utility service reliability, and serve to comply with flows and pressures required to develop the Marina into a self-sustainable recreational facility.

DVL East Marina Wave Attenuator

The existing floating wave attenuator (FWA) has been operational since 2006 as part of a two phase approach. Phase 1 was completed by installing one 800 foot FWA. Phase 2 was to provide an additional attenuation system but was not implemented. Water levels at Diamond Valley Lake have fluctuated with severity and frequency for the last several years due to draw-down activities during drought conditions, then rebounding during the rainy seasons. Due to age and changing conditions, the concrete sections of the FWA have significantly degraded and the reinforcing bars are exposed to the elements which have accelerated corrosion of the existing FWA system.

DVL Visitor Experience Improvements

This project will enhance the visitor experience at DVL by updating existing educational facilities and designing future outreach opportunities within DVL. Multiple projects will be studied, planned and implemented to expand recreational and educational outreach enhancing Metropolitan's resource protection and conservation message. An initial study on the recreation and educational opportunities at the DVL properties will be used to document and prioritize the various investment options. There are various outreach opportunities to be evaluated including updated signage at the lake and trails; outdoor classrooms; augmented reality kiosks to introduce watersheds and protected open space; and facility and exhibit improvements to the DVL Visitor Center, formerly known as "The Center for Water Education."

Trails Connecting DVL and Lake Skinner

This project will create a regional network of trails connecting DVL and Lake Skinner as identified in the DVL MOI. The Lakeview Trail and North Hills Trail at DVL and certain trails at Lake Skinner already exist. Metropolitan jointly funded a trails study with Riverside County Regional Park and Open-Space District to investigate trail alignments connection feasibility through a Consultant agreement. The proposed trail alignments minimize impacts to the Southwestern Riverside County Multi-Species Reserve and link DVL and Lake Skinner using existing roads to the greatest extent possible. Trail uses under consideration include hiking, biking, bicycling, and horseback riding.

Enhanced Bromate Control

15472

Total Appropriation Estimate: \$11,050,000 Biennial Estimate: \$116,680

Appropriated Amount 9/30/2017: \$10,240,000 Cost Through 9/30/2017: \$7,206,312

Purpose

To control the formation of bromate, which is a regulated disinfection by-product, during the ozonation process, and reduce chemical costs.

Scope

This appropriation was established to determine the feasibility, study, preliminary design, and construct necessary facilities for the ammonia-chlorine bromate control process at the Diemer, Jensen, Mills, Skinner, and Weymouth plants.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Weymouth Bromate Control Facilities - Continued construction

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Weymouth Enhanced Bromate Control Facilities	8,747,000	2018	Complete construction

Authorized Projects

Mills Enhanced Bromate Control Facilities

The Mills plant is currently using a temporary system built from salvaged parts for bromate reduction. This system has been running successfully and has proven the effective use of chloramines in bromate control and the reduced operational costs over a wider range of influent water quality conditions. This project will replace the temporary feed, metering, monitoring, and injection (chlorine and ammonia) system with a permanent system which will incorporate new piping, double wall containment, new chlorinators, and new analyzers. The project also includes replacement of two existing chlorinators with new units for lower chlorine dosage control flexibility. Final design was authorized by the Board in February 2013.

Weymouth Enhanced Bromate Control Facilities

Upgrades to the sodium hypochlorite and the ammonia feed systems are required to support Weymouth plant's new ozone disinfection process. The use of chloramines has proven to be the most cost-effective strategy to control bromate formation. This project will install new bromate control facilities, including five chemical storage tanks, chemical feed pumps, covered containment areas, an unloading facility, and instrumentation and controls. Construction was authorized by the Board in August 2015.

Planned Projects

No additional projects are planned.

Enterprise Content Management

15500

Total Appropriation Estimate:	\$9,988,000	Biennial Estimate:	\$2,379,997
Appropriated Amount 9/30/2017:	\$1,900,000	Cost Through 9/30/2017:	\$0

Purpose

To ensure reliability, efficiency and effectiveness of Metropolitan’s enterprise content management system.

Scope

This appropriation was established to assess and implement projects ensuring customer service, efficiency/productivity, and reliability of Metropolitan’s enterprise content management initiative. This effort is to lead Metropolitan to a paperless environment starting with optimizing network files share, developing a new file structure, updating the record retention schedule, and implementing a system to manage all electronic files, in compliance with policy.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Enterprise Content Management Phase I

Major Milestones Achieved Last Period:

- No major milestones have been achieved in the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Enterprise Content Management Phase I	1,900,000	2019	Complete deployment
Enterprise Content Management Phase II	2,480,000	2020	Begin design

Authorized Projects

Enterprise Content Management Phase I

The Enterprise Content Management (ECM) application will classify and manage electronic documents and other media to allow for easy retrieval, review, and destruction of information in accordance with Metropolitan's records retention schedule. In addition, the new ECM application will allow Metropolitan to more effectively and efficiently manage its digital asset needs for business needs to respond to requests under the California Public Records Act (CPRA), and for eDiscovery purposes, and will automate compliance with records retention policies. This project includes designing a taxonomy for storing unstructured data and the development of a thesaurus to support the implementation of Metropolitan's ECM application. Phase I was authorized by the Board in July 2017.

Planned Projects

Enterprise Content Management Phase II

This project delivers the initial deployment of the enterprise content management software into the Metropolitan environment. The system will allow for the organization, collaborations and automated enforcement of records retentions policies to non-structured electronic media.

Enterprise Content Management Phase III

This project delivers the balance of the deployment of the enterprise content management software throughout Metropolitan.

Enterprise Data Analytics

18910

Total Appropriation Estimate:	\$3,294,000	Biennial Estimate:	\$2,766,791
Appropriated Amount 9/30/2017:	\$0	Cost Through 9/30/2017:	\$0

Purpose

To ensure reliability, efficiency and effectiveness of Metropolitan’s enterprise data analytics system.

Scope

This appropriation will be established to assess and implement projects ensuring customer service, efficiency/productivity, risk management and reliability of Metropolitan’s enterprise data analytics applications.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- None, this appropriation will be initiated in FY 2018-19.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Enterprise Data Analytics	3,690,000	2020	Complete deployment

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Enterprise Data Analytics

Building an Enterprise Data Warehouse & Analytics to answer both operational and strategic questions facing Metropolitan. The Data Warehouse will be built of individual data marts modeling a specific business area providing integrated reporting through Extract/Transform/Load (ETL) procedures and common dimensions. This Enterprise Data Warehouse will contain both business and operational data. It will be designed to combine these two data types in order to provide a financial dimension to operational data. By linking data like EBS (Financial), SCADA, GIS and Water Supply/Demand, Staff can model different scenarios to answer questions and to discover trends and anomalies previously not visible due to isolated reporting.

Hayfield and Lake Perris Groundwater Recovery

15402

Total Appropriation Estimate:	\$32,310,000	Biennial Estimate:	\$1,767,342
Appropriated Amount 9/30/2017:	\$29,215,000	Cost Through 9/30/2017:	\$15,590,781

Purpose

To store and extract Colorado River Aqueduct (CRA) water into and from the Hayfield groundwater basin and to convey Lake Perris' SWP leakage water from State Department of Water Resources (DWR) groundwater extraction facilities to the CRA.

Scope

Design and construction of facilities that enable both the storage and retrieval of CRA water in the Hayfield groundwater basin and the conveyance of SWP leakage water from DWR facilities in the vicinity of Lake Perris to the CRA.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Lake Perris Seepage Water Conveyance Pipeline

Major Milestones Achieved Last Period:

- Lake Perris Seepage Water Conveyance Pipeline - Started preliminary design

Projects Completed To Date:

- Four projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Lake Perris Seepage Water Conveyance Pipeline	6,500,000	2018	Continue design

Authorized Projects

Hayfield Groundwater Extraction Project

The Hayfield groundwater basin is located south of the Julian Hinds Pumping Plant, adjacent to the CRA. In 2000, Metropolitan's Board authorized a feasibility study for storing surplus CRA water in the Hayfield basin for future extraction. The Hayfield Groundwater Extraction Project includes geotechnical investigations and construction of extraction wells.

Lake Perris Seepage Water Conveyance Pipeline

Metropolitan and DWR have partnered to design and construct facilities to capture and convey Lake Perris leakage water to the CRA. DWR will design and construct a seepage collection wellfield near the foot of the Lake Perris Dam, and this project will design and construct a conveyance pipeline extending from the DWR wellfield to the CRA. Metropolitan's Board authorized preliminary design in April 2017.

Planned Projects

No additional projects are planned.

Hydroelectric Power Plant Improvements

15458

Total Appropriation Estimate:	\$55,425,000	Biennial Estimate:	\$3,719,641
Appropriated Amount 9/30/2017:	\$8,797,000	Cost Through 9/30/2017:	\$6,671,028

Purpose

To ensure reliability of Metropolitan's hydroelectric power plants.

Scope

This appropriation was established to implement a comprehensive rehabilitation plan that will enhance infrastructure reliability, ensure compliance with regulatory requirements, improve plant efficiency, and reduce maintenance on all hydroelectric power plants.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Valley View Hydroelectric Plant Generator Refurbishment

Major Milestones Achieved Last Period:

- Etiwanda Hydroelectric Plant Rehabilitation - Construction completed

Projects Completed To Date:

- Two projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Etiwanda Hydroelectric Plant Rehabilitation	2,954,000	2018	Complete construction
Valley View Hydroelectric Plant Generator Refurbishment	1,724,000	2020	Complete construction

Authorized Projects

Etiwanda Hydroelectric Plant Rehabilitation

The Etiwanda Hydroelectric Plant (HEP) was constructed in 1994, and is located in Rancho Cucamonga. The plant is exhibiting signs of wear and tear and replacement parts have become difficult to obtain, have long lead times for delivery, and commercially available parts require modifications. This project will rebuild the needle valves, rehabilitate the hydraulic control units, install on-line data acquisition and monitoring instrumentation, and refurbish or replace other deficient equipment. Construction was authorized by the Board in July 2014.

Foothill Hydroelectric Plant Rehabilitation

The Foothill Hydroelectric Plant was constructed in 1981. The electrical and mechanical systems are exhibiting signs of normal wear and tear after 30 years of service. The scope of work is to refurbish electrical protection relays, control relays, mechanical piping for the generator cooling water systems, and add a Programmable Logic Controller. This project will install on-line data acquisition and monitoring instrumentation, and refurbish or replace other deficient equipment. Design was authorized by the Board in March 2012.

Foothill Hydroelectric Plant Seismic Upgrade

The Foothill Hydroelectric Plant was constructed in 1981. An assessment has identified that the facility is seismically vulnerable and should be upgraded. The scope of work is to complete reinforcing the roof, replacing a cracked beam, and install connectors and seismic restraints to the roof, columns, and walls. Retrofit work will also include upgrades for non-structural components such as equipment anchors, pipe/conduit supports, and crane rail bracing. This project will install on-line data acquisition and monitoring instrumentation, and refurbish or replace other deficient equipment. Design was authorized by the Board in December 2014.

San Dimas Hydroelectric Plant Rehabilitation

The San Dimas Hydroelectric Plant was constructed in 1981, and the electrical and mechanical systems are exhibiting signs of normal wear and tear after 30 years of service. The scope of work is to refurbish electrical protection relays, control relays, mechanical piping for the generator cooling water systems, and add a Programmable Logic Controller. This project will install on-line data acquisition and monitoring instrumentation, and refurbish or replace other deficient equipment. Design was authorized by the Board in March 2013.

Sepulveda Canyon Control Facility Electrical and Mechanical Rehabilitation

The Sepulveda Canyon Hydroelectric Plant was constructed in 1982, and the electrical and mechanical systems are exhibiting signs of normal wear and tear after 30 years of service. The scope of work is to refurbish electrical protection relays, control relays, mechanical piping for the generator cooling water systems, and add a Programmable Logic Controller. This project will install on-line data acquisition and monitoring instrumentation, and refurbish or replace other deficient equipment. Design was authorized by the Board in March 2013.

Sepulveda Canyon Control Facility Seismic Assessment

The Sepulveda Canyon Facility consists of a pressure control structure, hydroelectric plant, and two water storage tanks. The pressure control structure was constructed in the early 1970s to reduce pressure in the 9-foot-diameter Sepulveda Feeder as it conveys treated water from the Jensen Plant. The two water tanks have a combined capacity of 18 million gallons of water and are used to regulate flows through the pipeline. The hydroelectric plant, which was constructed in 1982, takes advantage of excess pressure in the Sepulveda Feeder to generate up to 8.6 megawatts of electricity with its single turbine. The facility is located on top of a large pad that was constructed by filling a steeply sloped V-shaped ravine. The pad is approximately 120 feet above the toe of the slope. The site is located within one mile of the Santa Monica Fault, which is capable of generating a 6.8 magnitude earthquake. Preliminary slope analyses indicate that the fill could slide down the slope during a major earthquake, causing significant damage to the pressure control structure, the water tanks, and the hydroelectric plant. This project will consolidate all seismic upgrade efforts for the entire Sepulveda Canyon Control Facility and seismically upgrade the facility. Design was authorized by the Board in March 2013.

Valley View Hydroelectric Plant Generator Refurbishment

The Valley View Hydroelectric Plant was constructed in 1985, and can produce up to 4.1 megawatts of power with its single turbine. In October 2016, the plant was taken out of service due to a failure on the generator rotor assembly. Repairs to the generator are required before the plant can return to operation. The scope of the project includes refurbishment by contractor services of the following equipment: 1) generator components, including the rotor assembly and keyway sections; 2) bearings; and 3) the overhead bridge crane to allow safe disassembly, removal, and reassembly of plant components. Additionally, Metropolitan forces construction will: 1) disassemble the generator and needle valves; 2) refurbish the two needle valves including replace the worn or damaged components, replace the seals and rubber gaskets, sandblast and recoat the valve bodies, and recoat the plunger, spring, actuator shaft, and deflector plate; 3) replace the grout on the baseplates; 4) reassemble the generator's rotor assembly and needle valves; and 5) test and recommission the plant. The Board authorized final design and construction in January 2018.

Valley View Hydroelectric Plant Rehabilitation

This project addresses long-term improvements needed for auxiliary systems at the Valley View Hydroelectric Plant. A detailed assessment was performed that identified the need for a full rehabilitation of the unit to prevent further damage and ensure reliable operation for the long-term. The scope of the project includes replacement or rehabilitation of auxiliary mechanical and electrical systems including: 1) the electrical protection and control relays; 2) the generator transformer; 3) the cooling water system, including the copper piping which supplies cooling water to the generator enclosure; 4) isolation and control valves; and 5) the generator and turbine brake systems. Specific improvements to extend the service life and improve reliability of the plant will be identified during site investigations in the preliminary design phase. Preliminary design was authorized by the Board in January 2018.

Venice Hydroelectric Plant Rehabilitation

The Venice Hydroelectric Plant (HEP) was constructed in 1982, and the electrical and mechanical systems are exhibiting signs of normal wear and tear after 30 years of service. The scope of work is to refurbish electrical protection relays, control relays, mechanical piping for the generator cooling water systems, and add a Programmable Logic Controller. This project will install on-line data acquisition and monitoring instrumentation, and refurbish or replace other deficient equipment. Design was authorized by the Board in March 2013.

Planned Projects

Hydroelectric Plant Rehabilitation

Metropolitan owns and operates 15 hydroelectric power plants with a total installed capacity of 130 megawatts. Approximately 10% of Metropolitan's income is derived from these power plants. The first plant to be commissioned was the Greg Avenue Power Plant in 1979, and the last was the Wadsworth Hydroelectric Power Plant in 2002. Many of these plants have been in operation over 35 years and have not undergone refurbishment or upgrade. Several plants are beginning to show signs of deterioration. A comprehensive approach to rehabilitation of the hydroelectric plants is needed to protect Metropolitan assets and fortify infrastructure reliability.

This project will assess and evaluate Metropolitan's hydroelectric plants, determine the rehabilitation requirements for each plant, identify needed pilot efforts, prioritize the needed rehabilitation, and develop a multi-phase plan to complete the rehabilitation. For each hydroelectric plant, the assessment will evaluate the following equipment and systems: turbine, generator, power equipment and switchyard, control system, protection system, auxiliary systems such as lube oil and cooling water, and the overall facility.

Red Mountain Hydroelectric Generator Refurbishment

The Red Mountain Hydroelectric Plant was constructed in 1986, and can produce up to 5.9 MW with its single turbine. In 2016, the Hydroelectric Plant underwent routine maintenance, testing, and inspection. Inspection results discovered worn bearings. In addition, high machine vibration was experienced during startup. The scope of work includes turbine and generator refurbishment which includes bearing refurbishment and retrofit with high lift thrust system, balancing, alignment, stator cleaning, refurbishment of wicket gates and bushings, cooling water upgrades, and upgrade of field devices.

Yorba Linda Power Plant Reliability Upgrades

The Yorba Linda Power Plant is located on the Yorba Linda Feeder at the inlet to the Diemer plant and can generate up to 5 megawatts. Installation of a new turbine generator was authorized in November 2013. This project will provide for needed equipment features and enhancements not included in the scope of original generator replacement project. The features will increase the plant's reliability and longevity, and address future maintenance and repair aspects of the Yorba Linda Power Plant. The scope of work includes design and construction of the following improvements: Enclosure modifications to protect the generator unit and equipment from water intrusion; emergency shutdown, alarm, and public address system improvements; upgrades to the Human Machine Interface (HMI) panel; and procurement of critical spare parts.

Information Technology System - Business, Finance and HR 15411

Total Appropriation Estimate: \$22,468,230 Biennial Estimate: \$893,136

Appropriated Amount 9/30/2017: \$22,468,230 Cost Through 9/30/2017: \$21,000,250

Purpose

To ensure reliability, efficiency, and effectiveness of Business, Finance, and HR applications. To ensure reliability, efficiency, and effectiveness of Business, Finance, and HR applications.

Scope

This program was established to assess and implement multiple projects to ensure the regulatory adherence, customer service, cost efficiency/productivity, risk management and reliability of Metropolitan's Business, Finance and Human Resources applications. Numerous projects have been incorporated into this program and completed including Integrated Budget Management System, Water Billing System, and Fleet Management.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Digital Asset Optimization Project

Major Milestones Achieved Last Period:

- Digital Asset Optimization - Awarded consultant contract

Projects Completed To Date:

- 13 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Digital Asset Optimization	1,610,000	2019	Complete deployment

Authorized Projects

Digital Asset Optimization

The Digital Asset Optimization project will remove redundant, obsolete and trivial (ROT) information from files on Metropolitan's network files shares (NFS). This work is being performed to allow for more effective and efficient searching and collection of information as it pertains to public requests, legal requests and other Metropolitan needs for information. Additionally, the data will be categorized and metadata captured for easier retrieval capabilities.

Planned Projects

No additional projects are planned.

Information Technology System - Infrastructure

15376

Total Appropriation Estimate: \$50,041,000 Biennial Estimate: \$12,857

Appropriated Amount 9/30/2017: \$50,041,000 Cost Through 9/30/2017: \$42,563,336

Purpose

To ensure reliability of IT infrastructure for critical business applications.

Scope

This appropriation was established to implement multiple projects to ensure the reliability and efficiency of the Information Technology Infrastructure in support of Metropolitan's operational and business applications.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Standby Generator Relocation at Six WAN Sites

Major Milestones Achieved Last Period:

- Communication Infrastructure Reliability Upgrade - Completed deployment at Headquarters, Soto Street, Weymouth, Eagle Rock, Sunset Garage, Chemical Unloading Facility, Sacramento, Etiwanda, Live Oak and San Dimas.
- Lake Mathews Disaster Recovery Facility - Completed Preliminary Design Report

Projects Completed To Date:

- 18 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Communication Infrastructure Reliability Upgrade	7,991,000	2018	Complete deployment at field sites
Standby Generator Relocation at Six WAN Sites	1,250,000	2018	Complete construction

Authorized Projects

Communication Infrastructure Reliability Upgrade

This project addresses the need to replace Metropolitan's Siemens/Rolm 9751PBX-based telephone system. The current telephone switches are over 18 years old and are at the end of service life.

The scope of this project is to develop a request for proposals, select the VoIP vendor, complete the technical design, work side-by-side with the telephone technicians while installing the new equipment, test the new system, and perform project management; a professional services agreement for consulting services to design and build the new telephone system; upgraded equipment and software for the new system and related IT unified communications components; training and incidental costs. The Board approved this project in February 2008.

Lake Mathews IT Disaster Recovery Facility (DRF) Environmental Upgrade

The Lake Mathews DRF was expanded as part of the Business Systems Data Recovery project funded by the Board in April 2004. The original DRF structure was a communications room that was not designed to be an IT data center.

The scope includes equipping the IT Lake Mathews Disaster Recovery Facility (DRF) with needed data center environmental system upgrades such as Air Conditioning (HVAC), uninterruptible electrical power supplies (UPS), fire suppression system, emergency generator, and remote monitoring capabilities. Also, seismic upgrades will be conducted due to recently identified seismic deficiencies. The last Board Action for this project was in December 2016.

Standby Generator Relocation at Six WAN Sites

Metropolitan's Wide Area Network (WAN) provides a critical communication and data link between facilities across the distribution system. The Standby generators at six WAN sites must be relocated for consistency with the current fire codes and to enhance safety. These generators are needed to provide backup power in the event of loss of primary power. The planned improvements will reduce the risk of damage to communication equipment and the buildings in the event of a fuel leak.

Metropolitan forces will relocate the standby generators at six WAN sites to reduce the risk of fire damage to Metropolitan's communication systems. The standby generators will be moved to new locations in separate outdoor enclosures, consistent with current fire codes. Relocation was authorized by the Board in August 2016.

Planned Projects

No additional projects are planned.

Information Technology System – Security

15378

Total Appropriation Estimate: \$8,846,000 Biennial Estimate: \$2,988,473

Appropriated Amount 9/30/2017: \$7,446,000 Cost Through 9/30/2017: \$5,348,074

Purpose

To implement technologies that provide most cost-effective and threat reducing benefits to Metropolitan with public safety and security represented at all levels.

Scope

This appropriation was established to enhance and upgrade the functionality, reliability, security and to protect against cyber threats of Metropolitan’s business and SCADA systems.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- MWD Cyber Security Upgrades

Major Milestones Achieved Last Period:

- MWD Cyber Security - Completed Define Phase

Projects Completed To Date:

- Eight projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Cyber Security II	4,900,000	2020	Begin Define Phase
MWD Cyber Security Upgrade	1,465,000	2018	Begin Deployment Phase

Authorized Projects

Cyber Security II

This capital project will assess and remediate exposures and cyber threats throughout Metropolitan with special emphasis on the business and SCADA networks. Cyber security remains a high priority and is a key part of the Information Technology Strategic Plan. Cyber criminals, including cyber terrorists from rogue nations, are launching increasingly sophisticated threats targeting critical infrastructure agencies such as water utilities. Maintaining a secure computing infrastructure requires application of ongoing cyber countermeasures to protect against new cyber threats that are identified on a continual basis.

The scope of this project will include engaging an outside security consultant(s) to perform independent assessments of different aspects of MWD's IT infrastructure and environment to identify potential vulnerabilities and make recommendations for strengthening our cyber security

MWD Cyber Security Upgrade

Cyber security remains a high priority at Metropolitan and is a key part of the Information Technology Strategic Plan. Maintaining a secure computing environment requires regular enhancements and upgrades to Metropolitan's IT information security infrastructure to ensure protection against continually evolving cyber threats. This project will implement Information Technology Cyber Security Upgrades to reduce information security risk to Metropolitan's business computer systems and SCADA systems by implementing additional countermeasures to help protect against unauthorized access. Implementation was authorized by the Board in December 2016.

Planned Projects

No additional projects are planned.

Infrastructure Reliability Information System

15501

Total Appropriation Estimate:	\$11,036,000	Biennial Estimate:	\$2,836,982
Appropriated Amount 9/30/2017:	\$840,000	Cost Through 9/30/2017:	\$5,727

Purpose

To maintain reliability of information systems supporting Metropolitan’s operations and engineering applications by incorporating improved data and information flow and processing, and providing decision making tools related to Metropolitan’s major Infrastructure Reliability and Asset Maintenance initiatives.

Scope

This appropriation is established to update and integrate equipment maintenance reporting tools to enhance management and tracking of assets, improve maintenance and engineering work planning, and track equipment performance data by integrating data from several information systems to support condition-based equipment maintenance and improved selection of replacement equipment.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Maximo Upgrade project

Major Milestones Achieved Last Period:

- No major milestones have been achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Asset Monitoring and Management System	523,000	2019	Complete deployment
Fuel Management System Upgrade	1,490,000	2019	Complete deployment
Maximo Mobile Computing Upgrade	630,000	2019	Complete deployment
Maximo Upgrade	762,000	2019	Complete deployment

Authorized Projects

Maximo Upgrade

This project will upgrade the Maximo system, Metropolitan’s enterprise-wide asset management program that is used for planning, scheduling, and reporting required maintenance of equipment deployed throughout the treatment plants and conveyance & distribution system. This project includes software upgrades and new hardware to accommodate this upgrade. This project was authorized by the Board in July 2017.

Planned Projects

Asset Monitoring and Management System

This project will establish the foundation for leveraging data already maintained by Metropolitan (under multiple different software platforms) into a common framework in order to efficiently conduct future infrastructure reliability projects and assessments across Metropolitan. This project is needed to support a common condition monitoring framework across Engineering Services (ESG) and Water System Operations (WSO) groups, as well as to support condition-based maintenance initiatives as part of General Manager's initiatives and WSO's business plan.

This project includes building software tools to access and aggregate ESG, WSO, and other asset-related data, such as data from finance, to facilitate infrastructure reliability investigations on one class of assets such as emergency generators. The project will leverage ongoing efforts on developing a common condition monitoring framework. Eventually, the software tools developed as a part of this project will be used for future condition assessments in ESG and WSO.

Energy Management System Upgrade

This project will upgrade the Energy Management System (EMS) which was implemented in 2007 and has reached the end of life. The current EMS system is used for power scheduling and energy reconciliation for Metropolitan's Hydroelectric Power Recovery Plants and the Colorado River Aqueduct Pumping Operation accounting for nearly \$50 million per year in Metropolitan's energy sales and purchases. The current EMS system is built on no-longer-supported software. This project will replace obsolete software with newer, supportable, and more flexible tools to address changing business requirements.

Engineering Information System Upgrade

The goal of this project is to upgrade ProjectWise (Engineering's Information System) to the latest version, install and configure additional ProjectWise modules, and integrate ProjectWise with other Metropolitan systems such as Geographic Information System (GIS), Outlook, SharePoint, and Deliverables Management to implement additional functionalities in ProjectWise. The intent is to streamline the workflow in Engineering design and improve access to information and documents in ProjectWise.

Enterprise GIS Disaster Recovery

This project will add the Enterprise GIS (EGIS) infrastructure to the Metropolitan IT Disaster Recovery Facility (DRF) in Riverside County. This includes the purchase, installation, and configuration of new hardware and software to meet Business Impact Analysis (BIA) study requirements for the EGIS infrastructure. The current recovery time for EGIS infrastructure is estimated at greater than a week. The BIA Recovery Time Objective (RTO) for the EGIS infrastructure is less than 72 hours, meaning that the EGIS infrastructure should be functional within 72 hours after an outage. This project will reduce the RTO for the EGIS infrastructure from 72 hours to 1 hour, so that EGIS data could potentially be used to assist in emergency operations.

Enterprise GIS Infrastructure Upgrade

This project will upgrade the EGIS infrastructure to accommodate increasing demand for big data services. Big data services include the real time display of time series data (e.g., from the SCADA system), three-dimensional "point cloud" data, and self-service online map-making that include large amounts of Metropolitan data. This project includes procuring, installing, and configuring improved infrastructure which will allow data intensive GIS applications to run seamlessly on mobile devices. These components will vastly increase the performance and improve the reliability of our EGIS technologies and are required for end-users to take full advantage of increasing three-dimensional and time series data.

Flow Scheduler

Metropolitan's Operations Control Center team operates and manages Metropolitan's distribution and conveyance systems; this includes making real time control decisions to meet member agency demands. As a part of this responsibility, the operators must respond to member agencies' requests for flow changes. This project includes the development of a software tool which would allow member agencies to submit flow change requests via a web page. This new software system would deliver the request to Metropolitan operators electronically, and would document the interaction with the member agency representative. The system would also automatically update operational logs, and document that a flow change has been successfully implemented.

Fuel Management System Upgrade

This project's objective is to upgrade the ten-year-old Fuel Management System (FMS), which is no longer supported by manufacturer. The FMS provides essential management controls over fuel inventories, dispensing, and security. It identifies and authorizes the dispensing of fuel and records fuel transactions and fuel tank data in a centralized database. This project will replace the necessary hardware and software to upgrade the FMS and to integrate it with Maximo.

Hydraulic Modeling Analysis Toolkit and Water Quality Calibration

Metropolitan's Engineering Services Group completed development of a system-wide hydraulic model in January 2017 after a multi-year development effort. Even while model development was still underway, many uses for the hydraulic model were identified. This project includes developing tools to support hydraulic model analysis to increase efficiency and enhance productivity while using the hydraulic model for analysis. The project also includes development and calibration of water quality modeling capabilities, specifically adding the chlorine residual prediction to the hydraulic model.

Maximo Mobile Computing Upgrade

The goal of this project is to replace existing mobile devices used in WSO with latest tablet technology and deploy additional devices to Engineering. The project will enable the use of capabilities of the existing mobile software system that are not available on the existing hardware devices.

The project includes an initial pilot evaluation with a purchase of 30 units to evaluate different models and test features. The overall goal will be to purchase 290 devices following the completion of the pilot evaluation. The new devices will eliminate or reduce the need for desktop computers at field sites and vastly increase the functionality of the existing Maximo mobile devices.

Water Quality Monitoring and Planning System (WQ MaPS)

Existing distribution system online water quality analyzers, installed in 2002-03, are obsolete and in need of replacement. Instrumentation measures total chlorine, conductivity, pH, turbidity, ultraviolet absorption, and total ammonia. Data from analyzers is monitored by the Operations Control Center through the SCADA system and by Water Quality through a contaminant warning system. The WQ MaPS project will enable Metropolitan's continued use of online data to quickly identify water quality anomalies resulting from normal operations or emergency situations to minimize risk of water quality issues and potential compliance violations. This project will implement the action items identified in the WQ MaPS action plan to improve data reliability and increase customer access to data. This project will upgrade obsolete water quality analyzers at 21 locations and install analyzers at 14 additional locations, incorporate output from the existing water quality event detection system into an innovative GIS dashboard, integrate output from the ESG's hydraulic model into the GIS dashboard, and provide a self-service portal for internal and external customers to access approved water quality data.

IT Infrastructure Reliability

15487

Total Appropriation Estimate:	\$39,351,000	Biennial Estimate:	\$13,855,363
Appropriated Amount 9/30/2017:	\$11,240,000	Cost Through 9/30/2017:	\$10,320,019

Purpose

To ensure reliability of IT infrastructure for critical business applications.

Scope

This appropriation is established to implement multiple projects to ensure the reliability and efficiency of the Information Technology Infrastructure in support of Metropolitan's operational and business applications.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- HQ Data Center SAN Upgrade Phase I

Major Milestones Achieved Last Period:

- HQ Data Center SAN Upgrade Phase I - Completed deployment phase
- IT Network Reliability Upgrades - Complete sub-projects 1 and 2

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Data Center Modernization Upgrade Phase 2	8,350,000	2021	Begin design
Desert Microwave Tower Site Upgrades	3,910,000	2020	Begin design
Headquarters WiFi Upgrade	3,800,000	2020	Begin design
Information Technology Disaster Recovery Upgrades	3,400,000	2019	Begin design
MWD HQ Boardroom Technology Upgrade	5,400,000	2019	Begin design

Authorized Projects

HQ Data Center SAN Upgrades - Phase I

This project is to replace and upgrade EMC Cor. Data storage devices at Headquarters' data center installed in 2006. About three-quarters of the current equipment will reach the end of service life in December 2016. This replacement is the first phase of a two-phased project with the overall goal of assessing, redesigning, and upgrading the data center to provide sufficient computing power and modernize the data center to meet current and future needs. The Board authorized storage system upgrades in December 2016.

Information Technology Disaster Recovery Upgrades

Upgrade the Disaster Recovery Facility with additional servers, storage, Oracle database licenses, and needed equipment to meet, or exceed, the 2017 Business Impact Analysis (BIA) business system recovery requirements. Upgrade compatible DBMS applications for a high availability 24x7 infrastructure for identified mission critical applications. The Board authorized the upgrades in December 2017.

Network Reliability Upgrades

Metropolitan's communication network hardware is aging, which has led to increased maintenance. Based on the rise in failure rates of older equipment, staff has determined that existing network hardware and associated network room support systems need to be upgraded to support ongoing projects, maintain reliability, and meet future needs. The Board authorized final design of electrical, cooling, and backup power system upgrades for network rooms located on each floor of Metropolitan's Headquarters Building. It also authorized preliminary design and field assessments of network equipment. The Board authorized a contract to upgrade the network rooms at Headquarters in August 2015.

Planned Projects

Data Center Modernization Upgrade Phase 2

The purpose of this project is to assess, redesign, and upgrade the MWD Headquarters and Lake Mathews data centers to provide sufficient computing power and modernize the data centers to meet current and future capacity and reliability needs.

This project will conduct a detail assessment, final design, and funding estimate to relocate the HQ and Lake Mathews data centers to improve their long-term reliability from Tier-1 to Tier-3.

Desert Microwave Tower Site Upgrades

This two-phase project will improve the reliability, performance, and capacity of Metropolitan's microwave radio wide-area-networks (WANs). Phase 1 involves \$3.91M out of the \$12M total project budget to address the most critical components that need to be replaced or upgraded in the Desert Region microwave tower sites.

Phase 1 will upgrade the most critical Desert sites and Phase 2 will upgrade LA Basin sites, plus remaining Desert sites. Lessons learned from the Diamond Valley Lake (DVL) microwave proof-of-concept, scheduled to be completed in third-quarter 2017, will be used in this project. The microwave network uses wireless transmission over radio frequency energy in the 6-18 Giga Hertz range.

Enterprise IT Emergency Power Upgrade

This project will implement power, grounding, and HVAC upgrades to computer rooms and communications facilities to ensure that critical IT, WSO and business systems remain operational for required emergency durations in the event of a temporary electrical power outage.

This project will assess and upgrade the electrical resiliency of enterprise systems based on their criticality, power, and runtime requirements. Phase 1 will identify, prioritize, and remediate those conditions for the most critical 20 of the estimated 70 sites where IT equipment is housed.

Headquarters Cellular Upgrade

Metropolitan's directors, member agencies, contractors, consultants, and staff are located throughout Southern California. In today's business environment, cellular devices are one of the primary means in which business is conducted. Users have noted very poor reception in certain areas inside the building and almost no reception inside the elevators, P1, P2, and some areas, creating risk that important calls could get dropped in the middle of business conversations. Therefore, by improving cellular communications in the Headquarters building, Metropolitan will be enhancing its ability to conduct business and improve customer service. The objective is to provide reliable cellular coverage at Metropolitan's Headquarters building by enhancing the cellular signal for the major carriers.

The scope of this project will include installing outdoor antennas, infrastructure cabling to support both internal and external antennas, mounting internal antennas for all high rise floors, wing floors, P1 and P2. This includes installing bi-directional amplifiers (BDA) for all major carriers such as AT&T, Verizon, Sprint, T-Mobile, and acquiring carrier approval for the amplifiers. Also included are power injectors for longer cable runs, server rack space, conduit runs, and aesthetics of antennae placements.

Headquarters WiFi Upgrade

This WiFi Upgrade project will improve the reliability, performance, and capacity to Metropolitan's wireless access point (WAP) local-area-networks (LANs) at Headquarters and various field facilities. It will also provide a secure, reliable and robust WiFi System to support increasing business demands and reliance on Metropolitan's wireless infrastructure.

The scope for this project includes (1) migration and implementation design plan, (2) removal of obsolete access points and controllers, (3) installation of cable in building ceiling for access points, (4) installation of new access points, and (5) configuration and installation of new controllers.

Information Technology Service Management System

Metropolitan's Information Technology Group (ITG) currently uses several different systems for managing Information Technology incidents (e.g., a computer not turning on) and work requests (e.g., new software needing to be installed). While this approach works well in meeting each team's specific needs, one of the major disadvantages is that gathering metrics for management is a tedious process involving coordination with multiple teams, learning multiple software packages, and manual correlation and data gathering. This project will implement a service management system to track and manage service requests and incidents. As an added benefit, this will allow the expedited future implementation of self-service capabilities for several of the more common ITG service requests (e.g., automatic software installs for commonly used software packages) and provide future integration capability with various monitoring tools currently in use.

MWD HQ Boardroom Technology Upgrade

The existing equipment in the board and committee rooms is over nine years old and several components are reaching the end of useful life. The Board of Directors and external organizations use the board and committee rooms on a regular basis and the technology supporting these meetings must be reliable and the sound and video must be of high quality.

This project will upgrade audio visual (AV) and information technology-related equipment in the main Board room and committee rooms in Metropolitan's headquarters building at Union Station.

Jensen Water Treatment Plant - Improvements

15371

Total Appropriation Estimate: \$77,677,000 Biennial Estimate: \$5,979,987

Appropriated Amount 9/30/2017: \$47,352,000 Cost Through 9/30/2017: \$46,474,945

Purpose

To maintain reliability and ensure regulatory compliance of the Jensen plant.

Scope

This appropriation was established to plan and implement multiple projects at the Jensen plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Jensen Module No. 1 Filter Valve Replacement - Completed construction
- Jensen Solids Transfer System - Completed construction

Projects Completed To Date:

- 13 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Jensen Caustic Tank Farm Containment Upgrades	19,717,000	2022	Complete design

Authorized Projects

Jensen Caustic Tank Farm Containment Upgrades

This project will provide modifications to the Jensen plant's caustic containment area to enhance compliance with California's safety and environmental regulations for spill control and secondary containment for hazardous material liquids. This project includes replacement of existing asphalt pavement with cast-in-place concrete pavement sloped to a new sump; replacement of unreinforced block walls with taller reinforced concrete walls and an improved foundation; application of chemical-resistant seal coating within the tank farm; disposal of contaminated soil; removal of the existing industrial waste neutralizing tank and installation of two containment tanks; and replacement of the existing spill containment tank liner. Final design was authorized by the Board in August 2012.

Jensen Entrance Security Improvements

Both main Jensen plant gates at San Fernando and Balboa entrances need to be redesigned to improve security and traffic flow consistent with Metropolitan's other Treatment Plants. This project will enhance security of the Jensen plant's entrances. Project scope includes replacement of security gates; installation of traffic control devices to improve security at the entrance points of the Jensen plant; and installation of fire resistant plants and irrigation along the west side of the plant. Final design was authorized by the Board in December 2006.

Jensen Module No. 1 Filter Valve Replacement

This project replaced 78 deteriorated filter valves within Module No. 1 at the Jensen plant, with new Metropolitan-furnished AWWA-standard valves. Construction was authorized by the Board in January 2015 and has been completed. Production of record drawings is in progress.

Jensen Module No. 1 Traveling Bridge Repairs

The traveling bridges in Jensen Module No. 1 remove residual solids from the settling basins and were installed as part of the original plant construction in 1971. This equipment has exceeded its expected operating life and has experienced many failures of the mechanical drive system components and the electrical power systems. This project will modify the configuration of the four bridges by replacing the existing 10-pump system with a 3-pump system similar to Module Nos. 2 and 3, and will replace deteriorated components including electrical power rack bars, drive gears, and chain drive parts. These improvements are intended to reduce future outages and provide corrective repairs. This project will also upgrade the control systems on all four traveling bridges and will enhance the level of automation. Preliminary design was authorized by the Board in August 2001.

Jensen Module Nos. 2 and 3 Traveling Bridge Repairs

Jensen Module Nos. 2 and 3 traveling bridges have been in operation since the plant was expanded in the early 1990s. This project will address the frequent misalignment issues associated with Jensen Module Nos. 2 and 3 traveling bridges in order to improve solids removal efficiency and reduce maintenance costs. Misalignment of the traveling bridge wheels will be corrected by removing the current end trucks and replacing them with pre-aligned "plug-and-play" end trucks. These "plug-and-play" end trucks will be a common design for each of the eight bridges, and will require minor modifications to the existing bridge truss and drive system design. Preliminary design was authorized by the Board in March 2014.

Jensen Solids Transfer System

This project added a new solids transfer system to convey the Jensen solids to four existing LADWP lagoons at their LAAFP to support 500-mgd Jensen plant operation. Construction was authorized by the Board in July 2014 and has been completed. Production of record drawings is in progress.

Jensen Washwater Return Pump Modifications

Constructed in 1991, the washwater return pumping station receives used filter backwash water that has been treated in the Washwater Reclamation Plants (WWRPs) Nos. 1 and 2, and discharges the reclaimed water back to the inlet of the Jensen plant. The station has five fixed-speed pumps with a combined capacity of 33 mgd. For certain plant flow conditions, the output from a single fixed-speed pump is too high for the station's small collection sump. This project will replace the existing fixed-speed motor drives with variable frequency motor drives (VFDs), allowing the existing pumps to operate over a larger range of fluctuating flow conditions within the confines of the existing small sump. VFDs on the existing pumps will reduce the number of times that the motors are started, prolonging motor life and ensuring efficient and continued operation of the station. Design and construction were authorized by the Board in November 2001. Construction will be completed as part of the Stage 2 Jensen Electrical Upgrades project.

Planned Projects

No additional projects are planned.

Jensen Water Treatment Plant - Improvements for FY2006/07 through FY2011/12

15442

Total Appropriation Estimate:	\$104,673,000	Biennial Estimate:	\$2,003,971
Appropriated Amount 9/30/2017:	\$53,476,000	Cost Through 9/30/2017:	\$42,987,092

Purpose

To maintain reliability and ensure regulatory compliance of the Jensen plant.

Scope

This appropriation was established to plan and implement multiple projects at the Jensen plant. 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:

No projects were initiated during the last biennium

Major Milestones Achieved Last Period:

- Jensen Electrical Upgrades Stage 1 - Continued construction

Projects Completed To Date:

- Three projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Jensen Electrical Upgrades	69,616,000	2026	Complete Stage 1 and begin Stage 2 construction
Jensen Modules 2 and 3 Flocculator Rehabilitation	7,907,000	2020	Begin construction

Authorized Projects

Jensen Electrical Upgrades

The Jensen plant's electrical system was designed to meet then-current electrical codes when the plant was constructed over 40 years ago. The aging electrical equipment has deteriorated through long-term continuous use, lacks redundancy, and is difficult to maintain and repair. Much of the equipment is underrated by current standards and does not have adequate short-circuit interrupting capability, which results in an elevated risk of unplanned outages and equipment damage. This project will replace aging equipment, and provide needed redundancy for critical components of the plant's electrical system. To expedite completion of the most critical electrical upgrades while minimizing impacts to plant operations, the upgrade work has been prioritized and staged. The Stage 1 work will improve the medium voltage switchgear on the western portion of the plant and provide electrical infrastructure for the Jensen Solar Power Plant. Stage 2 improvements will upgrade UPC-7, UPC-9, and their associated motor control centers to support critical process equipment such as the washwater pumps, service water pumps, washwater return pumps, filters, thickeners, sludge pumps, and ammonia facilities. Stage 3 improvements will upgrade the remaining components of the electrical system on the eastern portion of the plant. Construction of Stage 1 was authorized by the Board in December 2015 and is underway.

Jensen Filters Nos. 1-20 Surface Wash Upgrades

This project replaced the Jensen Module No. 1 surface wash system with a new fixed nozzle system, and the plant's service water pumps. Construction was authorized by the Board in January 2013 and has been completed. Production of record drawings is in progress.

Jensen Module Nos. 2 and 3 Flocculator Rehabilitation

Module Nos. 2 and 3 flocculators have been in continuous service since their original installation in the early 1990s. The shafts have become misaligned and the metallic components have gradually deteriorated due to corrosion. This project will rehabilitate the flocculators in Jensen Module Nos. 2 and 3 by refurbishing the intermediate shafts, paddle arms, and paddle wheel hubs; replacing existing stub shafts and through shafts with stainless steel shafts; and replacing the basin pillow block housings and bushings. Improvements also include new FRP paddle blades, new stainless steel lock collars, new couplings, and new stuffing box assemblies. The dry well bearing housing will also be refurbished and new bronze bushings will be provided in kind. Final design was authorized by the Board in March 2014.

Planned Projects

No additional projects are planned.

Jensen Water Treatment Plant - Improvements for FY2012/13 through FY2017/18 15486

Total Appropriation Estimate: \$7,376,000 Biennial Estimate: \$1,299,694

Appropriated Amount 9/30/2017: \$3,549,000 Cost Through 9/30/2017: \$1,220,098

Purpose

To maintain reliability and ensure regulatory compliance of the Jensen plant.

Scope

This appropriation was established to plan and implement multiple projects at the Jensen plant. 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:

- Jensen Chemical Tank Replacement
- Jensen Ozone System PLC Control & Communication Equipment Upgrade Project

Major Milestones Achieved Last Period:

- Jensen Filter Backwash Biological Control System - Finished design
- Jensen Inlet Water Quality Instrumentation Upgrades - Finished design

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Jensen Caustic Metering and Control Facilities	1,126,000	2022	Complete design
Jensen Filter Backwash Biological Control System	943,000	2018	Complete construction
Jensen Fluoride Tank Replacement	1,313,000	2018	Complete construction
Jensen Inlet Water Quality Instrumentation Upgrades	2,250,000	2019	Complete construction
Jensen Liquid Polymer Containment Upgrades	1,662,000	2022	Complete design
Jensen Ozone System PLC Control & Communication Equipment Upgrade Project	1,395,000	2018	Complete construction

Authorized Projects

Jensen Caustic Metering and Control Facilities

The current caustic metering and control facility is located within the tank farm containment area. The building is a 40-year old uninsulated sheet metal building housing the caustic pumps, flow control modules, instrumentation, HVAC equipment, remote control equipment, and electrical supply equipment. With the completion of the caustic containment area upgrades project, these metering and pumping facilities will be located within the tank farm's containment walls and will be submerged in the event of a chemical leak. This project will replace the existing sheet metal caustic pump house building located within the caustic tank farm with a pre-fabricated metal enclosure. The enclosure will be located above the new containment wall elevation and will house new electrical and control equipment for the caustic feed system. New caustic feed pumps will be installed on top of a raised platform, and a new electrical duct bank will be installed to power the relocated caustic feed system. Final design was authorized by the Board in August 2014.

Jensen Filter Backwash Biological Control System

The Jensen filters are currently operated as biologically active filters. Their biomass is controlled by backwashing with chlorinated water, which is accomplished by injecting sodium hypochlorite into the backwash water. The delivery system consisted of two storage tanks, three pumps, metering valves, and flow control for each filter module. Several chemical leaks have been detected during the last five years. Planned upgrades include replacing the existing piping with new double contained piping; adding an eductor system in lieu of the metering pumps system; and replacing the 3,000-gallon fiberglass reinforced plastic (FRP) tanks for the storage of sodium hypochlorite. Design was authorized by the Board in April 2017.

Jensen Fluoride Tank Replacement

The Jensen plant relies on two 9,000-gallon cross-linked high-density polyethylene (HDPE) tanks for the storage of fluorosilicic acid. Internal inspections have identified cracks in the two fluorosilicic acid tanks. This project will replace the fluoride tanks with tanks of the same capacity and improved mechanical properties to provide an expected service life of 20 years. Design was authorized by the Board in April 2017.

Jensen Inlet Water Quality Instrumentation Upgrades

The Jensen plant's inlet flow meter, water quality analyzers, and flow meter for service connection LA-35 are used to control the chemical addition and to balance water flows throughout the plant. Both of the flow meters need to be replaced. The existing models are obsolete, the manufacturer no longer supports the flow meter consoles, and spare parts are difficult to obtain. Furthermore, the water quality analyzers and plant inlet flow meter consoles are wall-mounted on the exterior of the plant inlet structure, where they are exposed to harsh ambient conditions, resulting in accelerated wear. The flow meter console for service connection LA-35 is located in a deep, confined vault. Two trained personnel with safety equipment are required to perform any maintenance within the vault. The environmentally-controlled enclosure will house the water quality instrumentation, the plant inlet flow meter console, the service connection LA-35 flow meter console, and related electrical equipment including a motor control center, power panel, and communication cabinet. Design was authorized by the Board in August 2014.

Jensen Liquid Polymer Containment Upgrades

The Liquid Polymer Building at the Jensen plant is over 40 years old and has deteriorated. Furthermore, the adjacent unloading facility for liquid polymer does not have a permanent spill containment system. The liquid polymer storage facilities are located adjacent to both the caustic soda and chlorine containment facilities. Since caustic soda is used in the chlorine containment scrubber, the chlorine containment facility includes a caustic soda unloading containment pad. The location of this pad and the adjacent ferric chloride facilities significantly restrict routine access for chemical truck-trailers and emergency access for fire department vehicles. This project will provide a permanent single concrete unloading facility for both chlorine neutralizing caustic soda and liquid polymer chemicals, equipped with a new sump and discharge piping to provide secondary containment. In addition, the ferric chloride handling facility and the Liquid Polymer Building will be removed. These improvements will enhance access for response to unplanned releases of caustic soda and liquid polymer. Final design was authorized by the Board in May 2013.

Jensen Ozone System PLC Control & Communication Equipment Upgrade Project

The Jensen plant ozonation equipment utilizes a type of Programmable Logic Controller (PLC) that was introduced to the commercial market in 1988. Computer hardware from that era is now outdated, and the PLC manufacturer has announced that it will no longer produce or support this equipment. In addition, inventories of spare parts will no longer be maintained once exhausted. Failure of a PLC and/or its communication module could cause a disruption in the ozone control system. This project will replace the equipment and modify the software to operate with the new equipment for the Jensen ozone control system. The upgraded system will feature Metropolitan-standardized PLC's in an open-architecture approach that staff will be able to maintain and upgrade in the future. Construction was authorized by the Board in December 2016.

Planned Projects

No additional projects are planned.

Jensen Water Treatment Plant - Improvements for FY2018/19 through FY2023/24

18904

Total Appropriation Estimate: \$19,701,000 Biennial Estimate: \$4,268,073

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain reliability and ensure regulatory compliance of the Jensen plant.

Scope

This appropriation will be established to plan and implement multiple projects at the Jensen plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- None, this appropriation will be initiated in FY 2018/19.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Jensen Ozone PSU and Critical Component Upgrades	3,590,000	2021	Complete construction
Jensen Site Security Upgrade	1,800,000	2020	Complete construction
Jensen Solids Lagoon Nos. 9 and 10	8,600,000	2022	Complete design and EIR

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Jensen Bull Creek Repair

The Bull Creek channel located on the east side of the Jensen plant has suffered significant erosion from continued stormwater flow during the past wet seasons. Large voids have developed under the concrete banks causing failure of multiple sections of the bank. Future slope failures due to continued erosion would likely impact the LADWP property on the eastern side of the Bull Creek, and eroded material and debris would likely be transported downstream to the neighboring LADWP site. This project will rehabilitate approximately 800 feet of the Bull Creek channel to prevent erosion. The work includes installation of rip rap and slurry backfill along the channel; repairing damaged concrete liner on the channel sides, and restoration of the broken apron next to the railroad bridge. In addition, a catch basin will be constructed along the San Fernando service road to the Jensen plant, to mitigate excessive erosion on the north bank of the Bull Creek.

Jensen Ozone PSU and Critical Component Upgrades

The winter storms of 2016-2017 resulted in an abundance of water from the California State Water Project and in response the Jensen plant operated at higher flow capacities. However, the critical systems associated with ozone generation have deteriorated or have become obsolete after 12 years of operation and need to be upgraded. This project will upgrade the units that provide power to the Jensen plant's ozone generators, and will replace outdated components of other critical systems associated with the plant's ozone generation, which have reached the end of their service life, and are no longer supported by the original equipment manufacturer. The systems to be upgraded include the following areas: (1) power supply unit; (2) nitrogen supply system; (3) ozone destruct units; (4) dissolved ozone; (5) cooling water loop; and (6) Ozone Generator No. 1.

Jensen Site Security Upgrade

The outdated Jensen plant's security system needs an upgrade to minimize risk of an intrusion. The existing camera system is undersized, aged, and does not provide adequate resolution when zoomed based on today's design standards. Planned upgrade includes installation of additional card readers in sensitive areas; upgrade to existing aging security cameras with high resolution cameras; addition of new cameras to monitor the perimeter of the plant; replacement of security signage to meet current code; security upgrades of first floor windows; addition of horizontal structural support (beam/angle iron) to strengthen the existing gates; and addition of a new defensive barrier plants and trees to screen the west side of the Jensen plant.

Jensen Solid Handling System Upgrades

Efficient recovery of water from residual solids is critical for the operation and efficiency of the Jensen plant. The solids thickeners play a key role in the recovery of water from the residual solids. During thickener operation, operators rotate valves to divert flow of residual solids to different thickeners. Access to the valves in Solids Pump Station No. 2 and the solids splitter vault, required on a daily basis, needs to be improved to enhance process and safety. In addition, Thickeners Nos. 1 and 2 are currently out of service due to aging and corrosion. This project will reconfigure Solids Pump Station No. 2 to allow better access to the valves; upgrade the solids splitter vault to facilitate remote operation, and rehabilitate Thickeners Nos. 1 and 2 and return them to service.

Jensen Solids Lagoon Nos. 9 and 10

Metropolitan has an ongoing lagoon use agreement with Los Angeles Department of Water and Power (LADWP), which allows for Metropolitan's use of four of the lagoons located at the Los Angeles Aqueduct Filtration Plant (LAAFP) to process solids generated and conveyed from the Jensen plant. Under this agreement, two of the lagoons can be used until October 1, 2062, and the other two until October 1, 2022. To reliably support the Jensen plant operation and provide operational flexibility during unfavorable source-water quality or higher water demand, two new lagoons need to be constructed to replace the two existing lagoons that have to be returned to LADWP for its use in 2022. This project will design and construct two new lagoons, consisting of an earthen floor with rip-rap banks and reinforced concrete access ramps. The project will include piezometers with data loggers to monitor groundwater under the lagoons, manholes with pumps to convey overflow, decant, and underdrain water to the lagoon inlet distribution system, and electrical & control systems. Lagoon Nos. 9 & 10 will be located on the LAAFP site.

La Verne Shop Facilities Upgrade

15395

Total Appropriation Estimate: \$50,959,000 Biennial Estimate: \$7,754,967

Appropriated Amount 9/30/2017: \$40,750,000 Cost Through 9/30/2017: \$40,448,234

Purpose

To modernize the machine, coatings, and fabrication shops so that they can continue to provide emergency response service, support routine maintenance throughout Metropolitan, and perform fee-for-service work for member agencies and the California Department of Water Resources (DWR).

Scope

This appropriation was established to modernize the Maintenance Support Unit facilities at La Verne and will evaluate, recommend, design and build new or remodel shop building facilities, and upgrade through refurbishment or replacement aging shop equipment.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated in the last biennium.

Major Milestones Achieved Last Period:

- La Verne Machine, Fabrication and Coating Shop Equipment Design and Procurement

Projects Completed To Date:

- 12 projects have been completed

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
La Verne Machine, Fabrication and Coating Shop Equipment Design and Procurement	4,200,000	2021	Begin installation
La Verne Shops - Stage 4 Building Completion and Equipment Procurement	8,000,000	2021	Begin construction

Authorized Projects

La Verne Machine, Fabrication, and Coating Shop Equipment Design and Procurement

As part of the shop modernization program that started in 2002, which included the building expansions and upgrades, the shop equipment was evaluated to determine if the equipment needed replacement or refurbishment. Most of the shop equipment was found to be 25 to 35 years old, with a few pieces close to 45 years old. A 20-year-plan to replace and refurbish the shop equipment was developed. This project focuses on design and procurement of shop equipment which will be installed under the Stage 4 Building completion contract. This equipment includes a hydraulic shear, hydraulic press brake, waterjet cutting system, and vertical milling. In January 2018, the Board awarded procurement contracts for three of these machines. Procurement of a vertical milling center will be the subject of a future board action.

La Verne Shops - Stage 4 Building Completion and Equipment Procurement

The La Verne Shops are located on the grounds of the F. E. Weymouth Water Treatment Plant and have been in service since 1941. The shops were expanded in the 1960s, and were expanded again in the 1980s to support a major rehabilitation of the pumps along the Colorado River Aqueduct (CRA). This project completes the second shop's expansion portion of the new shop modernization program that started in 2002, which included expanding the existing shop buildings, upgrading portions of the existing buildings, and replacing and refurbishing shop equipment. The Stage 4 building completion scope of work includes water line extensions, a new electrical circuit and unit power center, an air compressor and air lines, shop heaters, and safety enhancements including walkways and roof access ladders. In addition to the building work, the scope includes procurement and installation of a horizontal and vertical band saw, plasma cutter, and floor mill and blast booth refurbishment. The Board authorized design in December 2015.

Planned Projects

La Verne Machine Shop Equipment Replacement Project

Five additional pieces of shop equipment need to be replaced and refurbished to maintain Metropolitan's ability to respond to emergencies and perform planned maintenance. This is the final project to complete a 20-year shop modernization program. The following equipment has been identified for replacement or refurbishment: One medium and one large lathe to replace two existing lathes one new medium sized floor mill to replace a non-functioning floor mill, a new very large floor mill to work on Metropolitan's largest hydraulic machinery, like the pumps on the CRA system, and refurbishment of the large existing floor mill.

Metropolitan Security System Enhancements 15499

Total Appropriation Estimate:	\$9,731,000	Biennial Estimate:	\$6,429,823
Appropriated Amount 9/30/2017:	\$2,000,000	Cost Through 9/30/2017:	\$530

Purpose

To mitigate security threats and improve the security of Metropolitan personnel and property.

Scope

This appropriation was established to upgrade Metropolitan’s physical security control measures to defend its facilities from intrusion. Projects within this appropriation will address electronic and physical security measures.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Security System Upgrade

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Security System Upgrade	1,959,000	2018	Complete upgrades
Headquarters Security Upgrades	7,331,000	2019	Complete design

Authorized Projects

Security System Upgrade

The electronic security system is the backbone of Metropolitan’s physical security system. Studies indicate that replacement of the 15-year-old system is not yet required; however, incremental upgrades are needed to extend the life of the system. Work includes hardware and software upgrades to network controllers, computer servers, card readers, and the video management system. Design and installation was authorized by the Board in May 2017.

Planned Projects

Headquarters Security Upgrades

Security assessments have identified several recommended security upgrades to reduce security risk for Metropolitan’s Headquarters facility at Union Station and to ensure protection of people and assets. This project will perform comprehensive security upgrades at the headquarters building.

Mills Water Treatment Plant - Improvements

15381

Total Appropriation Estimate:	\$12,430,000	Biennial Estimate:	\$0
Appropriated Amount 9/30/2017:	\$5,695,000	Cost Through 9/30/2017:	\$5,317,540

Purpose

To maintain reliability and ensure regulatory compliance of the Mills plant.

Scope

This appropriation was established to plan and implement multiple projects at the Mills plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- Eight projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Mills Basin Solids Removal Improvements	6,980,000	2021	Deferred to continue after this biennium

Authorized Projects

Mills Basin Solids Removal Improvements

Currently, the Mills plant removes solids from each sedimentation basin using a bridge-mounted siphon system, and discharges the solids to the retention basins. However, the siphon flow cannot be adequately controlled. As a result, excessive amounts of water are often siphoned to the retention basins, causing increased solids drying time and reduced retention basin capacity. This project will upgrade the traveling bridges' solids removal equipment and controls to improve the solids removal process at the Mills plant's Modules Nos. 3 and 4. The new equipment and controls will allow the plant to optimize its solids removal process by simultaneously reducing the amount of water removed from the basin and reducing excessive solids build-up in the basins. Preliminary design was authorized by the Board in June 2005.

Planned Projects

No additional projects are planned.

Mills Water Treatment Plant - Improvements for FY2006/07 through FY2011/12 15452

Total Appropriation Estimate: \$33,654,000 Biennial Estimate: \$3,025,715

Appropriated Amount 9/30/2017: \$20,599,000 Cost Through 9/30/2017: \$14,044,490

Purpose

To maintain reliability and ensure regulatory compliance of the Mills plant.

Scope

This appropriation was established to plan and implement multiple projects at the Mills Water plant. 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:

- No projects were initiated in the last biennium.

Major Milestones Achieved Last Period:

- Mills Electrical Upgrades Stage 1 - Completed design
- Mills Industrial Wastewater Handling Facilities Improvements - Completed construction

Projects Completed To Date:

- Three projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Mills Electrical Upgrades Stage 1	19,700,000	2020	Complete construction
Mills Modules 3 & 4 Flash Mix Chemical Containment Upgrades	1,750,000	2020	Complete construction

Authorized Projects

Mills Electrical Upgrades

The electrical system at the Mills plant has deteriorated through long-term use, is difficult to maintain and repair, and needs improved backup capability. Failure of a single electrical device could impact the treatment process. The electrical upgrades at the Mills plant will be completed in three stages. Stage 1 upgrades will address the highest priority work, including replacement of obsolete circuit breakers and improvement of power reliability for key process equipment. Stage 2 upgrades will add a second incoming 12 kV service from Riverside Public Utilities, and upgrade the plant's main switchgear and standby generator switchgear. Stage 3 upgrades will modify electrical manholes, replace digital metering modules for all motor control centers, and add fiber optic cabling. Construction of Stage 1 project was authorized by the Board in August 2017.

Mills Modules 3 & 4 Flash Mix Chemical Containment Upgrades

The existing flash mix areas at Mills Plant Modules 3 & 4 contain chemical feed equipment for ammonia, polymer, caustic, alum, sodium hypochlorite and chlorine. The equipment is contained within a low concrete curb. To reduce the risk of chemical releases, improved containment is needed. This project will replace the chemical piping in the area with double-walled piping with a leak detection system, replace flow meters and valves, relocate control panels, and install flow meter display units in a weatherproof enclosure outside of the containment areas. Final design was authorized by the Board in October 2016.

Planned Projects

No additional projects are planned.

Mills Water Treatment Plant - Improvements for FY2012/13 through FY2017/18 15479

Total Appropriation Estimate:	\$6,697,000	Biennial Estimate:	\$3,242,340
Appropriated Amount 9/30/2017:	\$3,200,000	Cost Through 9/30/2017:	\$2,305,629

Purpose

To maintain reliability and ensure regulatory compliance of the Mills plant.

Scope

This appropriation was established to plan and implement multiple projects at the Mills plant. 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:

- Mills Chemical Tank Replacement
- Mills Plant Perimeter Security and Erosion Control Improvements

Major Milestones Achieved Last Period:

- Mills Chemical Tank Replacement - Continued final design

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Mills Chemical Tank Replacement	1,600,000	2020	Complete construction
Mills Plant Perimeter Security and Erosion Control Improvements	2,600,000	2021	Complete design and start construction

Authorized Projects

Mills Chemical Tank Replacement

The Mills plant relies on two 6,250-gallon cross-linked high-density polyethylene (HDPE) tanks for the storage of fluorosilicic acid. These tanks have a recommended service life of 10 years, and have been in service since 2007. Recent inspections have identified leakage at the bolted connections of both tanks. This project will replace the fluorosilicic acid storage tanks with tanks of the same capacity and improved mechanical properties to provide an expected service life of 20 years. Design was authorized by the Board in April 2017.

Mills Plant Perimeter Security and Erosion Control Improvements

The Mills plant has approximately 14,500 linear feet of perimeter fencing that is primarily a chain link with a height of six to eight feet. The fencing and several of the entry gates are deteriorating and may be vulnerable to security breaches. In addition, stormwater runoff has eroded an area on the southern boundary of the plant. This project will replace 7,700 feet of the existing fence with eight-foot-tall security fencing along the plant's southern, northern and western boundaries, and replace three existing gates with taller security gates with surveillance cameras. Grading and erosion control improvements, such as installation of v-ditches and flow re-direction, will also be performed to prevent sediment from leaving the site. All improvements will be consistent with Mills plant's architectural design guidelines, and with Metropolitan's approach to facility security. Preliminary design was authorized by the Board in October 2017.

Planned Projects

No additional projects are planned.

Mills Water Treatment Plant - Improvements for FY2018/19 through FY2023/24 18905

Total Appropriation Estimate: \$1,559,000 Biennial Estimate: \$1,417,000

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain reliability and ensure regulatory compliance of the Mills plant.

Scope

This appropriation will be established to plan and implement multiple projects at the Mills plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Mills Ozone PLC Control and Communication Equipment Upgrade	1,630,000	2019	Complete construction

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Mills Ozone PLC Control and Communication Equipment Upgrade

The Mills plant ozonation equipment utilizes a type of Programmable Logic Controller (PLC) that was introduced to the commercial market in 1988. Computer hardware from that era is now outdated, and the PLC manufacturer has announced that it will no longer produce or support this equipment. In addition, inventories of spare parts will no longer be maintained once exhausted. Failure of a PLC and/or its communication module could cause a disruption in the ozone control system. This project will replace the equipment and modify the software to operate with the new equipment for the Mills ozone control system. The upgraded system will feature Metropolitan-standardized PLCs in an open-architecture approach that staff will be able to maintain and upgrade in the future.

Operations Support Facilities Improvement

15495

Total Appropriation Estimate:	\$64,945,000	Biennial Estimate:	\$8,933,357
Appropriated Amount 9/30/2017:	\$11,820,000	Cost Through 9/30/2017:	\$2,669,575

Purpose

To replace or expand support facilities to meet current and future operations and maintenance needs.

Scope

This appropriation was established to plan and construct facilities used to support Metropolitan's operations. Work includes site improvements at Lake Mathews, housing facilities at the Colorado River Aqueduct (CRA) pumping plants, and seismic upgrades to operations support buildings at Metropolitan's La Verne facility.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- CRA Housing Improvements - Renovation of Houses
- CRA Housing Improvements - Renovation of Short-Term Accommodations at Eagle Mtn and Iron Mtn Pumping Plants
- Lake Mathews Wastewater System Replacement

Major Milestones Achieved Last Period:

- CRA Housing Improvement - Addition of Ten New Houses - Started construction
- CRA Housing Improvements - Renovation of Houses - Started design and construction
- CRA Housing Improvements - Renovation of Short-Term Accommodations at Eagle Mtn and Iron Mtn Pumping Plants - Started final design
- La Verne Water Quality Laboratory and Field Engineering Building Seismic Upgrades and Building Improvements - Completed preliminary design
- Lake Mathews Wastewater System Replacement - Started preliminary design

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA Housing Improvements - Addition of Ten New Houses	7,621,000	2018	Complete construction
CRA Housing Improvements - Renovation of Houses	5,440,000	2019	Complete pilot project
CRA Housing Improvements - Renovation of Short-Term Accommodations at Eagle Mtn and Iron Mtn Pumping Plants	4,524,000	2020	Complete design and begin construction
Eagle Rock Facility Improvements	755,000	2020	Begin design
Eagle Rock Security	937,000	2020	Begin preliminary design
Lake Mathews Wastewater System Replacement	3,412,000	2020	Complete design

Authorized Projects

CRA Housing Improvements - Addition of Ten New Houses

This project will construct ten new manufactured houses. These houses will be used as temporary residences for employees while existing Metropolitan-owned staff housing is rehabilitated and be made permanent residences after the rest of the staff housing has been rehabilitated. These ten new houses will be located as follows: two at Gene Pumping Plant, four at Iron Mountain Pumping Plant, two at Eagle Mountain Pumping Plant, and two at Hinds Pumping Plant. Construction of eight new houses was authorized by the Board in May 2017, and construction of two additional houses was authorized by the Board in July 2017.

CRA Housing Improvements - Renovation of Houses

Metropolitan owns and rents 89 houses throughout the five CRA pumping plants to employees involved in operation and maintenance of the CRA. Due to the remoteness of the CRA facilities, on-site housing is provided to staff to ensure an appropriate response time in the event of an emergency that could jeopardize aqueduct flows, damage equipment, or present a safety risk to employees or the general public. The aging houses are deteriorated and in need of repairs and renovations. The planned renovations for the 89 desert houses may include: upgrading electrical and plumbing systems; installing new doors and windows; installing new cabinetry and countertops for kitchens and bathrooms; replacing roofs and HVAC units; repairing structural components such as roof joists and floor foundations; replacing and upgrading flooring; interior and exterior painting; and abatement of hazardous materials, as needed. The extent of renovations will depend on the condition and needs of each house. Renovation of up to 89 houses was authorized by the Board in May 2017.

CRA Housing Improvements - Renovation of Short-Term Accommodations at Eagle Mtn and Iron Mtn Pumping Plants

Eagle Mountain and Iron Mountain Pumping Plants have kitchens and guest lodges that are used by staff during shutdowns and construction projects, and during extended periods of condition assessments and design of rehabilitation work. These facilities will be used frequently over the next decade as the planned rehabilitation of the 45 main CRA pumps moves forward.

The kitchen at Iron Mountain Pumping Plant has been in service for decades and while still functioning, its equipment is deteriorated and obsolete. The kitchen at Eagle Mountain Pumping Plant does not currently meet San Bernardino County Health Services' requirements for large-scale food storage, refrigeration, or handling. As a result, it has been removed from service. The 10-room guest lodge at Eagle Mountain Pumping Plant and the 16-room guest lodge at Iron Mountain Pumping Plant have both deteriorated after more than 40 years of service, and require frequent short-term repairs. The planned kitchen renovations include replacement and refurbishment of existing floor and wall coverings, shelving, plumbing, electrical components, sinks, ranges, freezers, and walk-in refrigerators. At the guest lodges, the needed improvements include electrical, plumbing, and HVAC improvements and roof replacement. Design was authorized by the Board in May 2017.

La Verne Water Quality Laboratory and Field Engineering Building Seismic Upgrades and Building Improvements

This project addresses seismic upgrades and other building improvements for the Field Engineering Building and Water Quality Laboratory at Metropolitan's La Verne facility. Both buildings were constructed in accordance with the building codes at the time of construction. However, industry knowledge of earthquakes and seismic design has greatly improved over the years, leading to the development of more stringent, modern seismic codes. To minimize the risk of damage to these key facilities during a major earthquake, seismic upgrades are needed.

The Water Quality Laboratory seismic retrofit includes the replacement of existing diagonal steel bracing with new buckling-restrained braces and associated steel frame and foundation upgrades. Seismic anchorage and bracing of key non-structural elements are also included. Other building improvements include fire protection upgrades and replacement of the building's roof; drywall repairs throughout the older portions of the laboratory; and accessibility improvements to meet current building code requirements.

The Field Engineering Building seismic retrofit includes the addition of exterior steel-braced frames supported on drilled pile foundations, strengthening of the roof diaphragm, and horizontal steel bracing at the interior mezzanine level. Other building improvements include hazardous materials abatement of lead and asbestos; security improvements; lighting improvements; accessibility improvements to meet current building code requirements; and heating, ventilation, and air conditioning improvements.

Final design of seismic upgrades and building improvements for the Water Quality Laboratory and Field Engineering Building was authorized by the Board in January 2018.

Lake Mathews Wastewater System Replacement

The existing wastewater system at Lake Mathews has been in operation for over 50 years and is showing signs of failure. There have been repeated instances of slow-draining toilets, broken and clogged pipes, septic tank backups, and clogged leach fields. The leach fields are at the end of service life. This project will replace the existing leach field system with a new sewer system piped directly to the local municipal sewer system. Preliminary design was authorized by the Board in May 2017.

Planned Projects

Eagle Rock Facility Improvements

The Eagle Rock Operations Control Center and Emergency Operations Center are the hub for the operation of Metropolitan's water distribution system, as well as a central location for meetings with member agencies. The roads serving these facilities are over 70 years old and are exhibiting distress including severe cracking and potholing of the asphalt surface, and damage to the road base. These facilities are adjacent to vegetated canyons in a high fire danger area, but may not have adequate fire suppression systems. Potable water lines are corroded and in need of replacement. An existing timber retaining wall has deteriorated and is in need of replacement. This project will reconstruct the Eagle Rock facilities roadways, replace corroded water piping, and replace a deteriorated retaining wall.

Eagle Rock Security

The Eagle Rock Operations Control Center and Emergency Operations Center are the hub for the operation of Metropolitan's water distribution system, as well as a central location for meetings with member agencies. This site is susceptible to intrusion by trespassers due to the lack of adequate property-line security. This project will provide new security fencing and lighting, a new vehicular access gate, and a new security camera and intercom for the access gate.

Etiwanda Test Facility

Metropolitan needs a facility to test valves, meters, coatings, instrumentation, and other water treatment and distribution devices to ensure the equipment meets specifications, to verify their performance, and to develop specifications for new equipment. Outside test facilities cannot reproduce the operating conditions experienced in Metropolitan's system.

This project will construct an equipment test facility at the Etiwanda Reservoir. This test facility will utilize water from the Etiwanda Feeder and discharge the test water into the Etiwanda Reservoir bypass channel. The test facility will consist of inlet piping, valves and flow meters; test piping, isolation valves, fittings, and control equipment in three diameters (8, 12 and 24 inches) for mounting test equipment and meters; energy dissipation and collection tanks; electrical equipment and control equipment; and a storage building to house computers, instrumentation readouts, instruments, and tools. The new test facility will be used to evaluate water treatment and distribution system equipment, train staff in the use of that equipment, and potentially provide services to member agencies or outside agencies such as the California Department of Water Resources.

New La Verne Warehouse

The Central Stores Warehouse at La Verne is Metropolitan's main warehouse for storing materials, supplies, and equipment for use by field personnel to support District operations. The warehouse is no longer adequate to support Metropolitan's assets management plan and future infrastructure rehabilitation needs. Due to the nature of its structural deficiencies, the Central Stores Warehouse building will be replaced in its entirety. The new warehouse at La Verne will support Metropolitan's Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program, existing operations and maintenance, and future infrastructure upgrades. It will provide a controlled space to protect Metropolitan's existing assets and future investments, increase operational efficiency, and reduce overall expenditure on rental facilities and assets refurbishment. The new facility will also ensure that field personnel are able to quickly and efficiently obtain equipment and supplies that are in optimal condition to support District infrastructure and operations. This project will provide a new centralized warehouse facility at La Verne to address site-wide storage needs.

PCCP Rehabilitation and Replacement

15471

Total Appropriation Estimate:	\$62,000,000	Biennial Estimate:	\$3,896,673
Appropriated Amount 9/30/2017:	\$24,943,350	Cost Through 9/30/2017:	\$17,329,502

Purpose

To identify pipelines whose age, location and condition warrant refurbishment/replacement to insure long-term reliability of Metropolitan's Prestressed Concrete Cylinder Pipe (PCCP) lines water delivery.

Scope

This appropriation was established to plan and implement reliability projects throughout the Conveyance and Distribution System which will include structural engineering evaluation of all 163 miles of PCCP, conduct pilot testing installation of fiber optic acoustic monitoring system, prepare programmatic CEQA documents to cover PCCP Rehabilitation and to initiate refurbishment and replacement projects for at-risk pipelines.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Electromagnetic Inspections of PCCP Lines - Completed electromagnetic inspections on 9 PCCP feeders
- Program CEQA - Certification of the Final Programmatic Environmental Impact Report (Final PEIR)

Projects Completed To Date:

- Eight projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Electromagnetic Inspections of PCCP Lines	26,014,000	2037	Continue study
Foothill Feeder Acoustic Fiber Optic PCCP Monitoring	3,117,000	2020	Complete construction
PCCP Rehabilitation - Program Management	16,081,000	2037	Continue study
Sepulveda Feeder Stray Current Drain Stations	227,000	2020	Complete construction

Authorized Projects

Electromagnetic Inspections

All PCCP lines within the distribution system are inspected every three to seven years. The frequency is based on the condition and history of repairs for each feeder. Three cycles of electromagnetic testing have been completed to date on Metropolitan's PCCP feeders. This project will perform the fourth cycle of inspections over the next five years. Planned activities for the inspections include: scheduling and coordination of shutdowns; conducting the electromagnetic inspections; conducting internal visual inspections; shutting down and dewatering the feeders, and returning them to service; analyzing the inspection results; and preparing comprehensive inspection reports.

PCCP Rehabilitation - Program Management

This project will develop a comprehensive, long-term plan for managing the risk of deteriorating PCCP lines in the distribution system.

Planned Projects

Foothill Feeder Acoustic Fiber Optic PCCP Monitoring

The proposed acoustic fiber optic system would provide continuous monitoring for wire breaks for at least 10 years, eliminating the need to dewater for PCCP inspections and significantly reducing the likelihood of pipeline rupture. The scope of this project includes design, installation, and start-up an acoustic fiber optic (AFO) prestressed concrete cylinder pipe (PCCP) monitoring system for the Foothill Feeder, including ten years of monitoring services.

Sepulveda Feeder Stray Current Drain Stations

This project is intended to prevent the corrosion, deterioration, and potential rupture of the Sepulveda Feeder. PCCP ruptures invariably cause significant disruption to day-to-day Operations. A rupture at any of the subject locations would necessitate an extended pipeline shutdown to facilitate repairs. In addition, a rupture would result in significant flooding and third-party impacts. The scope of this project includes design, installation, and start-up three stray current mitigation drain stations on the Sepulveda Feeder.

Perris Valley Pipeline

15425

Total Appropriation Estimate:	\$151,000,000	Biennial Estimate:	\$318,998
Appropriated Amount 9/30/2017:	\$129,100,000	Cost Through 9/30/2017:	\$124,897,135

Purpose

Expand service to Eastern Municipal Water District (EMWD) and Western Municipal Water District (WMWD). and optimize operations of the Mills and Skinner plants.

Scope

This appropriation was established to design and construct a 6.5-mile, 96-inch diameter pipeline from the Mills plant to EMWD’s boundary, southeast of the Mills plant. This pipeline will have four new service connections. The project will be undertaken as a cooperative effort between Metropolitan, EMWD, and WMWD.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Perris Valley Pipeline Interstate 215 Crossing - Completed preliminary design

Projects Completed To Date:

- Six projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Perris Valley Pipeline Interstate 215 Crossing	24,375,000	2020	Complete design

Authorized Projects

Perris Valley Pipeline Interstate 215 Crossing

The objective of the Perris Valley Pipeline is to supply additional water deliveries from Mills plant to EMWD and WMWD per their request. Construction of this 6.5-mile-long pipeline was initiated in 2007, to be implemented under two contracts: the North Reach consisting of 2.7 miles of pipeline and two service connections (WR-24 and EM-23), and the South Reach consisting of 3.8 miles of pipeline and two additional service connections (WR-35 and EM-24). In 2009, the North Reach was completed and placed in service. In 2010, 3.3 miles of the South Reach were completed. The Perris Valley Pipeline Interstate 215 Crossing project will complete a remaining half-mile-long section of pipeline approximately midway along the South Reach and enable placing the South Reach in service. This project includes an approximately 700-foot-long tunnel beneath Interstate 215, in the vicinity of the Van Buren Boulevard Interchange. Design of this portion of the Perris Valley Pipeline was authorized by the Board in 2006.

Planned Projects

No additional projects are planned.

Pipeline Rehabilitation and Replacement

15482

Total Appropriation Estimate:	\$2,178,000	Biennial Estimate:	\$0
Appropriated Amount 9/30/2017:	\$0	Cost Through 9/30/2017:	\$0

Purpose

To identify pipelines whose age, location, and condition warrant rehabilitation or replacement to enhance long-term water delivery reliability.

Scope

This appropriation is established to plan and implement multiple projects throughout the Conveyance and Distribution System for all non-prestressed concrete cylinder pipe (PCCP) lines. The projects will rehabilitate and replace at-risk pipelines, and update the appropriation estimate annually based on rehabilitation and replacement options. The common driver for all projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Field Survey & Assessment for Metallic and Concrete Pipelines: Phase 1 for Select High Priority Feeders	1,980,000	2021	Deferred to start after this biennium

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Field Survey & Assessment for Metallic and Concrete Pipelines: Phase 1 for Select High Priority Feeders

Metropolitan’s water delivery system consists of 830 miles of pipelines, of which 670 miles are comprised of reinforced concrete, welded steel, and cast iron pipe. The majority of Metropolitan’s non-PCCP lines were installed over 50 years ago. Experience has shown that degradation from corrosion of reinforced concrete and metallic pipelines can often develop undetected. Some of these pipelines are also showing signs of deterioration, as evidenced by several recent lining and joint repair projects (e.g., Etiwanda Pipeline, Orange County Feeder, and Lakeview Pipeline).

Phase 1 for high priority pipelines, including Santa Monica Feeder, Upper Feeder, Lower Feeder, and Middle Feeder, will include a complete risk assessment and prioritization of pipeline inspections, condition assessment of these high priority pipelines using prequalified inspection technologies, and recommendations for inspection technologies to be used for future condition assessments.

Power Reliability and Energy Conservation 15391

Total Appropriation Estimate: \$54,892,050 Biennial Estimate: \$24,406

Appropriated Amount 9/30/2017: \$54,892,050 Cost Through 9/30/2017: \$51,437,729

Purpose

To reduce purchased electrical energy and costs, provide sufficient and reliable power, and reduce carbon-based emissions.

Scope

This appropriation was established to implement multiple power and energy related projects throughout Metropolitan’s system. Since its inception, several projects have been incorporated into this appropriation and completed, including the OC-88 Energy Savings Modifications Project which modified the pump station to reduce the energy required for pumping and provides significant energy savings, and the one-megawatt Skinner Solar Power Facility project.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Jensen Solar Power Plant - Completed construction
- La Verne Solar Power Plant - Completed construction

Projects Completed To Date:

- Eight projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
La Verne Solar Power Plant	12,833,000	2022	Continue required monitoring and reporting

Authorized Projects

La Verne Solar Power Plant

This project added a three megawatt solar photovoltaic system at the Weymouth Water Treatment Plant. Construction was authorized by the Board in June 2015 and had been completed.

Jensen Solar Power Plant

This project added a one-megawatt solar power plant on the grounds of the Jensen plant. Construction was authorized by the Board in August 2016 and had been completed. Production of record drawings is underway.

Planned Projects

No additional projects are planned.

Project Controls and Reporting System 15490

Total Appropriation Estimate:	\$6,440,000	Biennial Estimate:	\$2,319,035
Appropriated Amount 9/30/2017:	\$1,330,000	Cost Through 9/30/2017:	\$1,136,774

Purpose

To ensure the accuracy, efficiency, and effectiveness for enterprise-wide project controls, scheduling, budgeting, resource management, and management reporting.

Scope

This appropriation was established to replace outdated project reporting systems. Some of the tools in use today lack key fundamental capabilities, such as earned value and resource utilization reporting, and, due to the upgrades of other applications, have lost the former integration, impacting timely reporting. Currently, the primary deliverable of this appropriation is the implementation of an enterprise-wide Project Controls System to provide schedule and resource management and replace the Project Management Information System (PMIS).

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Project Controls and Reporting System - Completed design and initiated deployment

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Project Controls and Reporting System	6,125,000	2019	Complete deployment

Authorized Projects

Project Controls and Reporting System

The Project Controls and Reporting System (PCRS) will replace Metropolitan's existing project control system that is now functionally obsolete. The PCRS will integrate data from multiple components of Metropolitan's financial and CIP scheduling systems, and integrate this data in a new data warehouse. The PCRS will create standardized reports and dashboards, and produce forecasts and resource requirement reports. This data warehouse will be an enterprise-wide tool that will also support other future corporate reporting applications. Deployment of the PCRS was authorized by the Board in October 2017.

Planned Projects

No additional projects are planned.

Reservoir Cover Replacement

15417

Total Appropriation Estimate: \$148,495,000 Biennial Estimate: \$20,203,979

Appropriated Amount 9/30/2017: \$46,616,000 Cost Through 9/30/2017: \$26,465,688

Purpose

To replace reservoir covers and roofs that have exceeded their useful life or are increasingly difficult to repair.

Scope

This appropriation was established to perform studies, prepare construction documents, and coordinate with regulators for the replacement of reservoir covers at multiple locations. The scope for floating reservoir covers includes removing existing covers, repairing reservoir lining, modifying inlet and outlet structures, installing underdrain leakage collection systems, installing new geocomposite drainage course, installing new flexible membrane liners and floating covers, and upgrading reservoir electrical systems and surface drainage to accommodate new cover dewatering pumps. For rigid reservoir covers, the scope of work includes removal of existing roofing materials, concrete repair, seismic upgrades, and installation of new roofing materials.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Mills Finished Water Reservoir Rehabilitation
- Jensen Finished Water Reservoir No. 1 Cover Rehabilitation
- Jensen Finished Water Reservoir No. 2 Floating Cover Rehabilitation

Major Milestones Achieved Last Period:

- Palos Verdes Reservoir Rehabilitation - Continued construction
- Mills Finished Water Reservoir Rehabilitation - Started design
- Jensen Finished Water Reservoir No. 1 Cover Rehabilitation - Started design
- Jensen Finished Water Reservoir No. 2 Floating Cover Rehabilitation - Started design

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Garvey Reservoir Rehabilitation	55,886,000	2018	Begin design
Jensen Finished Water Reservoir No. 1 Cover Rehabilitation	1,392,000	2019	Complete construction
Jensen Finished Water Reservoir No. 2 Floating Cover Rehabilitation	5,323,000	2019	Complete design
Mills Finished Water Reservoir Rehabilitation	14,155,000	2020	Complete design
Palos Verdes Reservoir Rehabilitation	47,481,000	2019	Complete construction

Authorized Projects

Jensen Finished Water Reservoir No. 1 Cover Rehabilitation

The Jensen plant has two 50-MG finished water reservoirs. Reservoir No. 1 is a concrete structure with a concrete roof that was completed in 1972. The concrete roof of Reservoir No. 1 has a bituminous built-up roofing system and lightweight concrete cap made of perlite. Portions of the perlite cap have deteriorated over time due to weathering. Any further deterioration may result in ponded rainwater leaking into the reservoir, leading to the reservoir being removed from service in order to maintain treated water quality. The rehabilitation work will replace the damaged perlite with a thin concrete layer, which will extend the cover life for approximately 20 years. Design was authorized by the Board in April 2017.

Jensen Finished Water Reservoir No. 2 Floating Cover Rehabilitation

The Jensen plant has two 50-MG finished water reservoirs. Reservoir No. 2 has a polypropylene floating cover that was installed in 1997. The floating cover at Reservoir No. 2 is showing significant signs of wear and needs to be replaced. In addition, modifications to the Reservoir No. 2 inlet are needed, as turbulent flow at the inlet has torn holes in the floating cover on several occasions near the corners of the fixed metal air vents. The rehabilitation work will include installation of a new finished water reservoir liner and floating cover with a rainwater removal system and improvement of the existing inlet configuration. Design was authorized by the Board in April 2017.

Mills Finished Water Rehabilitation

The Mills plant relies on two finished water reservoirs with floating covers and geomembrane liners to provide storage for the downstream distribution system. Their capacity is approximately 25 million gallons (MG) each. The Hypalon cover on Reservoir No. 1 was installed in 1997, while the polypropylene cover on Reservoir No. 2 was installed in 1996. Over the past three years, an increasing number of rips and pinhole leaks in the covers were discovered and repaired. Due to their deterioration, the floating covers and geomembrane liners at both reservoirs need to be replaced. The rehabilitation work will include installation of new finished water reservoir liners and floating covers with a rain removal system, refurbishment or replacement of existing reservoir gates, installation of a new drop gate, and installation of enhanced security features. Design was authorized by the Board in April 2017.

Palos Verdes Reservoir Cover Replacement

Palos Verdes Reservoir was constructed in 1939 to provide operational storage and hydraulic flexibility within the distribution system. Metropolitan installed a geomembrane floating cover in 1988 to preserve water quality and reduce evaporative losses from the reservoir. Following a detailed inspection of that facility in 2011, the reservoir was removed from service because of damage to its floating cover. Due to its age and deteriorated condition, the synthetic rubber could not be repaired. The scope of the project includes removal of the reservoir's existing concrete lining; regrading of the clay sub-liner; modification of the existing spillway structure, inlet/outlet tower, and secondary inlet and outlet structures; installation of a new sub-drain system, asphalt concrete lining, geomembrane liner, and geomembrane floating cover; modification of the existing 480-volt electrical service, sodium hypochlorite feed system, rainwater removal system, and drainage piping; installation of a new valve and flowmeter upstream of the reservoir; and addition of a precast concrete instrumentation and water quality structure. Construction was authorized by the Board in November 2015.

Planned Projects

Garvey Reservoir Rehabilitation

Garvey Reservoir was placed into operation in 1954. It is located at the junction of the Middle Feeder and the Garvey-Ascot Cross Feeder in the city of Monterey Park. Garvey Reservoir provides hydraulic grade stabilization, pressure relief, and operational and emergency storage for the Central Pool portion of the distribution system. A flexible membrane liner and reservoir floating cover were installed in 1999. The service life of a reservoir floating cover is normally determined by the ability to effectively repair the material, and is approximately 20 years. The existing floating cover at Garvey Reservoir has become increasingly difficult to repair and is in need of replacement.

This project will replace the reservoir's aging floating cover and flexible membrane liner. In addition, the existing inlet/outlet tower will be removed; circulation piping will be modified; the inlet and outlet control valves will be replaced; and the on-site water quality laboratory will be refurbished.

Jensen Reservoir Nos. 1 and 2 Mixing Improvements

The Jensen plant has two finished water reservoirs with storage capacity of 50 million gallons each. Inadequate mixing within the reservoirs contributes to chloramine decay, which in turn increases the nitrite levels within the reservoirs and downstream distribution system. In accordance with the Water Quality Action Response Guidelines, elevated nitrite levels will require additional monitoring, as they may result in bacterial regrowth, and may require operational changes to mitigate chlorine decay. This project will conduct a study of the mixing characteristics of Reservoirs Nos. 1 and 2 and will test and implement solutions for mixing improvements, including installation of stationary mixers equipped with chlorine injection inside the reservoirs to enhance mixing and reduce the occurrence of nitrification within the reservoirs. The project will also include installation of new electrical panels to provide power to the new mixers, and modification to the Supervisory Control and Data Acquisition (SCADA) program to add operational control and status monitoring of the mixers.

Mills Finished Water Reservoir Mixing Improvements

The Mills plant relies on two finished water reservoirs with floating covers and geomembrane liners to provide storage for the downstream distribution system. Their capacity is approximately 25 million gallons (MG) each. These reservoirs are not baffled and this can result in short-circuiting, dead zones, and inadequate mixing. During low flow conditions, there is an increase in detention times and this can accelerate chloramine decay and nitrification. Nitrification is a biological process by which free ammonia is converted to nitrite and nitrate. Nitrification that occurs after the water leaves the plant can contribute to chloramine decay in the distribution system, increase bacterial growth, and operational changes to mitigate chlorine decay. Therefore, adequate mixing has been identified as the primary method to prevent chloramine decay in the reservoirs.

This project will perform computational fluid dynamics (CFD) model analyses to determine the current mixing characteristics of FWR 1 and 2. It will also perform CFD analyses on modified inlet and outlet designs for the reservoirs and determine mixing improvements. This project will make recommendations on modifications to the reservoirs' inlets and outlets in order to improve mixing characteristics.

Palos Verdes Reservoir Groundwater Management

This project will address long-term groundwater management at the Palos Verdes Reservoir. This project will evaluate monitoring and disposal options for groundwater seepage, install monitoring instrumentation, and develop a groundwater handling system, which may include a connection to the sewer system.

Weymouth Finished Water Reservoir Rehabilitation

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 million gallons per day (mgd), and was expanded twice to its current capacity of 520 mgd. The plant delivers a blend of waters from the Colorado River and SWP to Metropolitan's Central Pool portion of the distribution system, and to an exclusive service area. The plant's 50 million gallon finished water reservoir was built in 1964. Because the finished water reservoir's concrete roof was constructed with no expansion joints, numerous cracks in the roof slab continue to open and close with the expansion/contraction cycles caused by daily fluctuation in temperature. Repair is required to protect the concrete, to prevent corrosion of the exposed reinforcing steel, and to reduce the potential of cross connection.

This project will repair cracked and spalling concrete on the underside of the finished water reservoir roof slab, support beam connections, and entry staircase. The project will concurrently perform any needed seismic retrofit to meet the latest Division of Safety of Dams (DSOD) requirements.

Right of Way and Infrastructure Protection

15474

Total Appropriation Estimate:	\$109,381,000	Biennial Estimate:	\$12,386,260
Appropriated Amount 9/30/2017:	\$23,830,000	Cost Through 9/30/2017:	\$20,741,406

Purpose

To assess and resolve the known encroachments and rights-of-way gaps, develop best management practices, and install security measures.

Scope

The RWIP Program was created to address right-of-way issues; prepare environmental documentation and acquire permits to perform needed repairs and allow maintenance activities to proceed without delay; execute repairs; and identify and address security issues throughout Metropolitan’s distribution system.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- RWIPP Programmatic Environmental Documentation for the Orange County Operating Region - CEQA documentation certified
- Acquisition of right-of-way and real property in support of capital improvement projects in the Orange County Operating Region - Authorized by MWD Board in July 2017

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Detailed Reliability Improvements of the Los Angeles County Operating Region	9,548,000	2027	Complete Preliminary Design
Detailed Reliability Improvements of the Orange County Operating Region	24,059,000	2020	Complete Construction
Detailed Reliability Improvements of the Riverside & San Diego County Operating Region	33,211,000	2024	Complete Preliminary Design
Detailed Reliability Improvements of the Western San Bernardino County Operating Region	15,061,000	2022	Complete Final Design
ROWIPP Programmatic Environmental Documentation for the Los Angeles Operating Region	1,967,000	2025	Complete development
ROWIPP Programmatic Environmental Documentation for the Orange County Operating Region	3,424,000	2018	Obtain permits
ROWIPP Programmatic Environmental Documentation for the Riverside/San Diego Co. Operating Region	2,221,000	2021	Complete development
ROWIPP Programmatic Environmental Documentation for the Western San Bernardino County Operating Region	2,448,000	2019	Complete development

Authorized Projects

Detailed Reliability Improvements of the Los Angeles County Operating Region

This project identifies and addresses right-of-way and security issues; and identifies and executes needed repairs within the Los Angeles County Operating Region. Planned improvements under the RWIP Program are being executed in five stages. Stage 3 includes final design of planned improvements, including preparation of detailed drawings and specifications, and development of construction cost estimates. Stage 3 activities were authorized by the Board in August 2014.

Detailed Reliability Improvements of the Orange County Operating Region

This project identifies and addresses right-of-way and security issues; and identifies and executes needed repairs within the Orange County Operating Region. Planned improvements under the RWIP Program are being executed in five stages. Stage 3 includes final design of planned improvements, including preparation of detailed drawings and specifications, and development of construction cost estimates. Stage 3 activities were authorized by the Board in August 2014.

Detailed Reliability Improvements of the Riverside & San Diego County Operating Region

This project identifies and addresses right-of-way and security issues; and identifies and executes needed repairs within the Riverside/San Diego County Operating Region. Planned improvements under the RWIP Program are being executed in five stages. Stage 3 includes final design of planned improvements, including preparation of detailed drawings and specifications, and development of construction cost estimates. Stage 3 activities were authorized by the Board in August 2014.

Detailed Reliability Improvements of the Western San Bernardino County Operating Region

This project identifies and addresses right-of-way and security issues; and identifies and executes needed repairs within the Western San Bernardino Operating Region. Planned improvements under the RWIP Program are being executed in five stages. Stage 3 includes final design of planned improvements, including preparation of detailed drawings and specifications, and development of construction cost estimates. Stage 3 activities were authorized by the Board in August 2014.

Environmental Regulatory Agreements

Prepare and execute agreements with environmental regulatory agencies to assist in development, and review and approve environmental documentation, and issue applicable permits. These activities were authorized by the Board in April 2013.

Real Property Acquisitions for all Operations Regions

Procurement of right-of-way or property to support access, or needed repairs to pipelines and facilities.

Right of Way Survey and Mapping

Provide surveying and mapping services needed to identify right-of-way issues, prepare pre-appraisal documentation for acquisition of easements and right-of-way; conduct field surveys and topographic mapping; ordering and reviewing title reports and supporting recorded documents. Stage 2 activities include developing conceptual solutions, layout drawings, and final design criteria of needed improvements; preparing pre-appraisal documentation for acquisition of easements and right-of-way; conducting field surveys and topographic mapping; ordering and reviewing title reports and supporting recorded documents; initiating consultations with permitting agencies for required permits; preparing legal descriptions, exhibit maps, and other exhibits as needed for acquisition planning, permits, and real estate negotiations; completing right-of-way mapping and preparing Record of Survey maps to be filed with the county of origin; and setting monuments and witness posts. Stage 2 activities were authorized by the Board in August 2014.

ROWIPP Programmatic Environmental Documentation for the Los Angeles Co. Operating Region

Prepare environmental documentation and acquire regional programmatic environmental permits for the Los Angeles County Operating Region to enable needed repairs and maintenance activities to proceed without delay. Stage 2 includes preparing notices of preparation (NOPs) and programmatic EIRs; initiating consultations with permitting agencies for required permits; preparing legal descriptions, exhibit maps, and other exhibits as needed for acquisition planning, permits, and real estate negotiations; negotiating and obtaining entry permits necessary for engineering, environmental and appraisal purposes. Stage 2 activities were authorized by the Board in August 2014.

ROWIPP Programmatic Environmental Documentation for the Orange County Operating Region

Prepare environmental documentation and acquire regional programmatic environmental permits for the Orange County Operating Region to enable needed repairs and maintenance activities to proceed without delay. Stage 4 includes certification of programmatic EIRs and acquisition of environmental permits. In addition, needed right-of-way and local agency permits will be acquired. Stage 4 activities were authorized by the Board in April 2016.

ROWIPP Programmatic Environmental Documentation for the Riverside/San Diego Co. Operating Region

Prepare environmental documentation and acquire regional programmatic environmental permits for the Riverside/San Diego County Operating Region to enable needed repairs and maintenance activities to proceed without delay. Stage 2 includes preparing notices of preparation (NOPs) and programmatic EIRs; initiating consultations with permitting agencies for required permits; preparing legal descriptions, exhibit maps, and other exhibits as needed for acquisition planning, permits, and real estate negotiations; and negotiating and obtaining entry permits necessary for engineering, environmental and appraisal purposes. Stage 2 activities were authorized by the Board in August 2014.

ROWIPP Programmatic Environmental Documentation for the Western San Bernardino County Operating Region

Prepare environmental documentation and acquire regional programmatic environmental permits for the Western San Bernardino County Operating Region to enable needed repairs and maintenance activities to proceed without delay. Stage 2 includes preparing notices of preparation (NOPs) and programmatic EIRs; initiating consultations with permitting agencies for required permits; preparing legal descriptions, exhibit maps, and other exhibits as needed for acquisition planning, permits, and real estate negotiations; negotiating and obtaining entry permits necessary for engineering, environmental and appraisal purposes. Stage 2 activities were authorized by the Board in July 2013.

Planned Projects

No additional projects are planned.

Second Lower Feeder PCCP Rehab

15497

Total Appropriation Estimate: \$495,361,000 Biennial Estimate: \$77,608,010

Appropriated Amount 9/30/2017: \$98,486,650 Cost Through 9/30/2017: \$28,304,977

Purpose

To maintain the reliability of the Second Lower Feeder (SLF) through specific prestressed concrete cylinder pipe (PCCP) repair and rehabilitation projects.

Scope

This appropriation was established to plan and implement projects to rehabilitate PCCP portions of the Second Lower Feeder.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Second Lower Feeder PCCP 2016 Urgent Repairs - Completed
- Second Lower Feeder PCCP Rehabilitation Reach 1 - Began construction
- Second Lower Feeder PCCP Rehabilitation Reach 2 - Began design
- Second Lower Feeder PCCP Rehabilitation Reach 3 - Began design

Projects Completed To Date:

- Three projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Second Lower Feeder PCCP Rehabilitation - Preliminary design	7,373,000	2019	Complete preliminary design
Second Lower Feeder PCCP Rehabilitation - Reach 1	54,430,000	2018	Complete construction
Second Lower Feeder PCCP Rehabilitation - Reach 2	34,675,000	2020	Complete design
Second Lower Feeder PCCP Rehabilitation - Reach 3	47,332,000	2022	Complete design
Second Lower Feeder PCCP Rehabilitation - Reach 4	23,108,000	2023	Begin design
Second Lower Feeder PCCP Rehabilitation - Reach 5	28,115,000	2024	Begin design

Authorized Projects

Second Lower Feeder PCCP Rehabilitation - Preliminary Design

The scope of this project includes preliminary design to rehabilitate the PCCP portion of the SLF. The SLF is the initial PCCP line to be addressed due to that feeder's condition, its history of repairs, the presence of corrosive soils and third-party stray currents, and its high internal operating pressure. Construction will take place over an 8- to 10-year period to minimize water delivery impacts to Metropolitan's member agencies. This strategy will improve reliability of the pipeline incrementally with the completion of each reach. Preliminary design was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation - Reach 1

This project includes design, procurement of steel pipe, and rehabilitation of approximately 23,100 feet of existing PCCP between stations 1269+65 to 1475+25. The scope includes rehabilitation of appurtenances to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade air release/vacuum valve (AR/VV), and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). Construction was authorized by the Board in August 2017.

Second Lower Feeder PCCP Rehabilitation Reach 2

This project includes design and rehabilitation of approximately 23,800 feet of existing PCCP between stations 1589+40 to 1859+80. The scope includes rehabilitation of appurtenances to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade AR/VV, and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). Final design was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation Reach 3

This project includes design and rehabilitation of approximately 24,200 feet of existing PCCP between stations 1859+80 to 2116+84. The scope includes rehabilitation of appurtenances to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade AR/VV, and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). Final design was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation Reach 4

This project includes design and rehabilitation of approximately 10,049 feet of existing PCCP between stations 1859+80 to 1865+41 and 1174+77 to 1269+65. The scope includes rehabilitation of appurtenances to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade AR/VV, and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). Final design was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation Reach 5

This project includes design and rehabilitation of approximately 11,378 feet of existing PCCP between stations 1865+41 to 1902+95 and 2040+60 to 2116+84. The scope includes rehabilitation of appurtenances to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade AR/VV, and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). Final design was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation Reach 6

This project includes design and rehabilitation of approximately 13,765 feet of existing PCCP between stations 1902+95 to 2040+60. The scope includes rehabilitation of appurtenances to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade AR/VV, and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). Final design was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation Pipe Procurement

This project includes design, preparation of bid documents, advertising, and award of steel liner for PCCP rehabilitation of SLF's six procurement contracts. Design for pipe procurement was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation ROW Acquisition

This project includes acquiring permanent right of way for PCCP rehabilitation of the SLF. Property acquisition was authorized by the Board in January 2015.

Second Lower Feeder PCCP Rehabilitation Valve Procurement

This project includes design, advertising, award, and procurement of valves for PCCP rehabilitation of the SLF contracts. Design for valve procurement was authorized by the Board in January 2015.

Planned Projects**Second Lower Feeder PCCP Rehabilitation - Phase I: Reach 9**

The project includes design of a seismic resilient section of feeder to account for the challenges of crossing the Newport-Inglewood Fault and other entities such as a freeway, light rail line, ground water recharge basin, the Los Angeles River, and possible area of contaminated soil. The scope includes design, procurement of steel pipe, valve procurement, construction, and rehabilitation of approximately 3,400 linear feet of existing PCCP. Isolation zone will be from Stations 1475+25 to 1589+40.

Second Lower Feeder PCCP Rehabilitation - Phase I: Reach 11

The project includes the Oak Street and Carbon Creek Pressure Control Structures (PCS) which will be modified in order to assure that the Second Lower Feeder can be operated at its maximum potential. This will include replacing all the valves and possibly the type of valves within the existing structures and possible modification of the piping arrangement. The existing pressure vessels will be inspected to evaluate their condition.

Second Lower Feeder PCCP Rehabilitation - Phase II: Reaches 7, 8, & 10

The project includes restoring the SLF to "As Like New Conditions" as possible. This would include relocation of all AR/VV's that have not already been relocated above ground, replacing all valves; sectionalizing, service connection turnout, pumpwell, AR/VV, shutoff, blowoff, etc. In addition, all master meters will be evaluated and possibly replaced and sectionalizing and meter structures modified or replaced. Reaches 7, 8, and 10 include design, procurement of steel pipe, valve procurement, construction or modification of master meter structure, replacement of turnout valve for service connection, and rehabilitation of approximately 30,000 linear feet of existing PCCP.

Sepulveda Feeder PCCP Rehab

15496

Total Appropriation Estimate:	\$655,044,000	Biennial Estimate:	\$2,496,240
Appropriated Amount 9/30/2017:	\$16,830,000	Cost Through 9/30/2017:	\$15,198,633

Purpose

To maintain the reliability of the Sepulveda Feeder through specific PCCP repair and rehabilitation projects.

Scope

This appropriation was established to plan and implement projects to rehabilitate PCCP portions of the Sepulveda Feeder.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- Sepulveda Feeder PCCP Rehabilitation

Major Milestones Achieved Last Period:

- Sepulveda Feeder PCCP 2016 Urgent Repairs - Completed construction
- Sepulveda Feeder PCCP Rehabilitation - Started preliminary design

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Sepulveda Feeder PCCP Rehabilitation	581,678,000	2035	Complete preliminary design

Authorized Projects

Sepulveda Feeder PCCP Rehabilitation

The planned rehabilitation work involves lining the existing PCCP segments with steel liner pipe designed as a stand-alone pipeline which can accommodate full internal and external pressures on the line. The project includes restoring the Sepulveda Feeder to make the facility "like new" (i.e., modification of blowoff structures, relocation of below grade air release/vacuum valve (AR/VV), and replacement of existing isolation valves for AR/VV, blowoff, and pumpwell structures). In addition, all master meters will be evaluated and possibly replaced, and sectionalizing and meter structures modified or replaced. Preliminary design was authorized by the Board in January 2018.

Planned Projects

No additional projects are planned.

Skinner Water Treatment Plant - Improvements for FY2006/07 through FY2011/12

15435

Total Appropriation Estimate: \$3,860,000 Biennial Estimate: \$356,332

Appropriated Amount 9/30/2017: \$3,860,000 Cost Through 9/30/2017: \$1,609,354

Purpose

To maintain reliability and ensure regulatory compliance of the Skinner plant.

Scope

This appropriation was established to plan and implement multiple projects at the Skinner plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Skinner Water Treatment Plant - Replacement of Plant 1 Filter Gate Stems and Nuts - Continued construction.

Projects Completed To Date:

- Four projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Skinner WTP - Replacement of Plant 1 Filter Gate Stems and Nuts	823,000	2020	Complete construction

Authorized Projects

Skinner WTP - Replacement of Plant 1 Filter Gate Stems and Nuts

Skinner's Plant No. 1 has a total of 54 granular multi-media filters that were constructed in 1976 (Modules Nos. 1 and 2) and 1979 (Module No. 3). Each filter is equipped with a filter drain gate which allows filter backwash water to drain out into the filter backwash sump, and then to the washwater reclamation plants. Each drain gate has a vertical stainless steel stem connected to a valve actuator that rotates the stem to operate the gate. The threads on these gate stems are excessively worn. Incidences of replacement and repair of the stems have increased, resulting in unscheduled filter shutdowns. This project will replace 54 worn filter drain gate stems and nuts in Modules Nos. 1 to 3 (Plant 1) to enhance plant reliability. Construction was authorized by the Board in February 2007.

Planned Projects

No additional projects are planned.

Skinner Water Treatment Plant - Improvements for FY2018/19 through FY2023/24

18906

Total Appropriation Estimate: \$6,851,000 Biennial Estimate: \$2,710,999

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain reliability and ensure regulatory compliance of the Skinner plant.

Scope

This appropriation will be established to plan and implement multiple projects at the Skinner plant. The common driver for most of the projects in this appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Skinner Ozone PLC Hardware	2,378,500	2022	Complete design & construction

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Skinner Finished Water Reservoir Slide Gates Rehabilitation

The three operational slide gates (Inlet, Outlet, and Bypass) that control the inlet and outlet flows from the Skinner Finished Water Reservoir have been exposed to a corrosive and wet environment since 1991. Visual inspections identified leaking gates and continuing deterioration of the slide gates' exterior coatings. These gates have been in service for 26 years and have not been blasted or recoated. This project will rehabilitate the three Skinner Finished Water Reservoir slide gates. The gates will be removed from the gate frames, thoroughly inspected for carbon steel material loss, blasted and recoated to extend their service life.

Skinner Ozone Contactor Roof Elastomeric Coating

Leakage through cracks in Skinner plant's ozone roof deck was found in 2010. Cracks in the concrete roof deck can allow rain and nuisance water to be drawn down into the contactors which then mixes with the freshly ozonated water, creating a potential cross-connection. The water and air penetrating through the existing concrete roof decks exposes the rebar & structural steel in the decks, creating the potential of eventual structural failure to the roof decks. In addition, in order to keep the constant vacuum in the Contactors, the Ozone Destruct Units have to work excessively which consumes additional electricity and affects the Destruct Units reliability & long term life span. This project will abrasive blast, apply primer, and coat 61,000 square-feet of the Ozone Contactor Building concrete roof deck with an elastomeric coating to reduce potential structural damage and operational impact.

Skinner Ozone PLC Hardware

The Skinner plant ozonation equipment utilizes a type of Programmable Logic Controller (PLC) that was introduced to the commercial market in 1988. Computer hardware from that era is now outdated, and the PLC manufacturer has announced that it will no longer produce or support this equipment. In addition, inventories of spare parts will no longer be maintained once exhausted. Failure of a PLC and/or its communication module could cause a disruption in the ozone control system. This project will replace the equipment and modify the software to operate with the new equipment for the Skinner ozone control system. The upgraded system will feature Metropolitan-standardized PLC's in a new code format to enable future maintenance and modifications as may be operationally necessary.

Skinner Plant 1 - Concrete Joint Sealant Replacement

Concrete joint sealant throughout Skinner Plant 1 is cracked, delaminating, degraded, or missing as it has exceeded its service life. The degradation has allowed vegetation growth and moisture, sediment, and other outside contaminants to enter and penetrate into the concrete joints. This project will remove severely degraded concrete joint sealant throughout Plant 1, prepare and primer the existing joints, and replace with new concrete joint sealant.

Skinner Plant 1- Modules 1, 2, & 3 Filter Weir Rehabilitation

Filter weirs at the Skinner Plant 1 (Modules Nos. 1, 2, and 3) maintain water levels within the Module's filter weir forebays for appropriate backwash head pressure. Adjustment to the weirs heights is required as water temperatures change throughout the year and as the volume of water being treated changes. All 24 weirs in three modules are adjusted together to maintain a balanced flow from Plant 1. Weir heights need to be carefully adjusted to prevent frequent backwashes or loss of filter media. The current design only allows safe adjustment while the Module is at zero flow or is shut down for service. This project will rehabilitate Modules 1, 2, and 3 filter weirs (24 total) from stackable wooden 2x4s to mechanically operated weirs. The existing concrete weir openings will be modified to accept a stainless steel weir gate guide and a double panel weir gate. A double panel weir gate will be installed with one panel stationary and one panel adjustable that allows flow adjustments. The weir gate is to be mechanically operated by tandem pedestal lifts mounted above the gate on the existing concrete deck.

System-Wide Paving and Roof Replacements for FY2018/19 through FY2019/20 18909

Total Appropriation Estimate: \$11,700,000 Biennial Estimate: \$1,397,216

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain the asphalt concrete paving and roofing at Metropolitan's facilities.

Scope

This appropriation will be established to plan and implement multiple paving and roof replacement projects throughout Metropolitan's facilities. Projects under this appropriation will implement various paving and roof replacements to be authorized by the General Manager in a manner similar to the Minor Capital Projects Program. Construction contracts up to \$250,000 will be authorized under the General Manager's authority. Contracts greater than \$250,000 will require Board approval.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
CRA Pumping Plant Asphalt Replacement	2,950,000	2024	Begin design
Skinner Facility Area Paving	7,354,000	2022	Begin design
Various paving & roof replacement projects for FY2018/19 through FY2019/20	1,200,000	2023	Complete all projects within 3 years

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

CRA Pumping Plant Asphalt Replacement

The asphalt-paved surfaces and roadways at the pumping plants provide access between buildings and the villages for Metropolitan staff, residents, and visitors. There is a total of approximately 30 acres of asphalt-paved surfaces and roadways at all five pumping plants. Due to the harsh desert conditions and deterioration of the subgrade after over 30 years of service, potholes and cracks have developed throughout the villages. Portions of the asphalt-paved roadways will be replaced in conjunction with the potable water and sewer installation projects, which are underway under Appropriation No. 15483. This project will include repair and replacement of the damaged asphalt surfaces and drainage improvements throughout the CRA pumping plants and villages that are not impacted by the water distribution and sewer systems replacement projects.

Skinner Facility Area Paving

Following 40 years of service, the paved roads around and on top of Lake Skinner Dam have begun to deteriorate due to aging and surface wear. The roads are used to perform dam surveillance; monitor dam safety instrumentation such as seismic accelerometers, settlement monuments, seepage weirs, piezometers, and groundwater wells; and perform routine operation and maintenance activities such as collection of water quality samples. In addition, roads throughout the Skinner plant area have begun to deteriorate. The deteriorated pavement exhibits raveling caused by wear and tear under traffic loads; surface deterioration; and fatigue and edge cracking caused by saturated subgrades from poor drainage and standing water. This project includes repair and replacement of the damaged roadways and drainage improvements in and around Lakes Skinner Dam and the Skinner plant.

Various Paving and Roof Replacement Projects for FY2018/19 through FY2019/20

This appropriation is recommended to allow various paving and roof replacement projects throughout Metropolitan's facilities to be expeditiously executed under the General Manager's authority.

These projects often arise after preparation of the CIP budget and are relatively small and less complex than other infrastructure projects. Once this appropriation is approved by the Board, individual projects may be authorized by the General Manager without further Board action.

Union Station Headquarters Improvements

15473

Total Appropriation Estimate:	\$77,022,000	Biennial Estimate:	\$24,263,295
Appropriated Amount 9/30/2017:	\$16,920,000	Cost Through 9/30/2017:	\$8,322,233

Purpose

To implement seismic upgrades to Metropolitan's Headquarters Building which will enhance its ability to withstand a major earthquake.

Scope

This appropriation was established to implement seismic upgrades to Metropolitan's Headquarters Building at Union Station in Los Angeles. These upgrades will increase the level of seismic performance of the Headquarters Building in accordance with current earthquake projections and updated building codes.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Headquarters Improvements - Started design

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Headquarters Improvements	65,000,000	2022	Begin construction

Authorized Projects

Headquarters Improvements

Analysis has confirmed that the Headquarters Building does not meet current building code criteria for an Essential Facility. The building remains safe to occupy, but seismic strengthening to meet updated code levels are recommended in order for operations and business functions to continue following a major earthquake. This upgrade will increase the Headquarters Building's level of seismic performance and safety to that of an existing state-owned building, and will reduce the risk of significant damage and resulting business interruption due to a major earthquake.

Construction of the seismic upgrades will pose logistical challenges associated with the major retrofit of a high-rise building while the facility remains operational. During the anticipated three-year duration of construction, two to three floors of the high-rise tower will be vacated sequentially to allow a contractor to execute the repairs. Metropolitan staff will be relocated in stages to the five-story wing of the building.

Seismic upgrade work provides an opportunity to complete improvements to specific building systems in a cost-effective manner, while the floors are unoccupied and building finishes are removed. The Headquarters Building is almost 20 years old, and some of its features need to be upgraded or replaced. These features include the fire/life safety systems, some of the kitchen equipment and ceiling/wall finishes, and restroom facilities on several floors. Final design was authorized by the Board in August 2017.

Planned Projects

Headquarters Building Automation System Modernization

The building automation system controls all lighting, HVAC, and associated mechanical equipment in Metropolitan's Headquarters Building. The system is required to operate the building in an energy efficient manner, consistent with Title 24 energy efficiency standards. In the event of a building automation system failure, thermal control within the data center would be lost and garage exhaust fans within the parking garage would become inoperable, resulting in damage to critical facilities and unsafe conditions, respectively. The existing building automation system is obsolete, and is no longer supported by the manufacturer.

This project will replace the existing building automation system with a new nonproprietary system and will support integration of the new fire and smoke control systems that will be installed under the Headquarters improvements project.

Headquarters Fire Sprinkler Piping Replacement - Parking Garage P1 Level

The existing fire sprinkler piping at the parking garage provides water for the fire suppression system for the Headquarters Building from the fire hydrants around the building at the roadway through the parking garage, to the 12-story tower and 5-story wing. Full operation of the fire sprinkler system must be maintained to comply with the requirements of the City of Los Angeles Fire Department and Building and Safety Department. The pipes in the P1 level have experienced multiple failures due to corrosion resulting in pinhole leaks at various locations.

This project will replace all existing horizontal fire sprinkler piping, ancillary valves, and connections to existing fire hydrants at the parking garage.

Verbena Property Acquisition

15492

Total Appropriation Estimate: \$264,000,000 Biennial Estimate: \$3,442,698

Appropriated Amount 9/30/2017: \$264,000,000 Cost Through 9/30/2017: \$257,524,037

Purpose

To enhance supply reliability.

Scope

This appropriation was established to acquire various properties in Riverside and Imperial Counties.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- 10 Records of Survey have been recorded.

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Verbena Land Acquisition	159,921,000	2021	Survey and Property Recordation

Authorized Projects

Verbena Land Acquisition

Purchase real property from Verbena LLC in Riverside and Imperial Counties. Perform Records of Survey and Encumbrance Mapping. Acquisition was authorized by the Board in July 2015.

Planned Projects

No additional projects are planned.

Water Delivery System Improvements

15488

Total Appropriation Estimate:	\$96,080,000	Biennial Estimate:	\$1,587,963
Appropriated Amount 9/30/2017:	\$32,070,000	Cost Through 9/30/2017:	\$26,055,843

Purpose

To improve the reliability and flexibility of delivering Colorado River water during drought or other SWP delivery constraints.

Scope

This appropriation is established to provide flexibility to distribute Colorado River water portions of the service area that currently rely exclusively on deliveries from the SWP.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Greg Avenue Pump Station Rehabilitation - Continued design and started pump procurement
- Inland Feeder and Lakeview Pipeline Intertie - Completed valve procurement & design and started valve installation

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Greg Avenue Pump Station Rehabilitation	25,000,000	2020	Complete construction depending on SWP allocation
Inland Feeder and Lakeview Pipeline Intertie	26,376,000	2018	Complete valve installation

Authorized Projects

Greg Avenue Pump Station Rehabilitation

The Greg Avenue Pump Station was originally constructed in the early 1960's to pump treated Colorado River Aqueduct (CRA) water from the Weymouth plant into the West Valley area, and was then modified in the mid-1970s to include hydroelectric power generation capability to generate up to one megawatt by replacing one of the pumps with a pump/turbine. Since that time, the remaining original pump at this facility was operated intermittently during operational tests or when the Jensen plant was out of service. Over the past year, cracks have developed on the pump's mounting brackets and at the support gussets. These pumps need to be replaced, the inlet and outlet pipe manifolds need to be reconfigured, the electrical and control systems need upgrading, and the surge tanks need to be replaced.

In addition to the rehabilitating the mechanical, electrical, and control components of the pump station to improve reliability of the facility, this project includes construction of a new control building is proposed to replace the existing control building that houses mechanical and electrical equipment, and maintenance shop, which is seismically vulnerable. Design was authorized by the Board in May 2014 and pump procurement was authorized by the Board in March 2017.

Inland Feeder and Lakeview Pipeline Intertie

The Mills plant delivers treated water to Eastern Municipal Water District and Western Municipal Water District of Riverside County. Under normal conditions, the plant receives untreated deliveries exclusively from the East Branch of the SWP via the Devil Canyon Afterbay. During the critical drought conditions of 2014/15, which resulted in a low allocation of SWP deliveries, Metropolitan constructed an intertie between the Lakeview Pipeline and the Inland Feeder to provide a backup source of untreated water for the Mills plant. This intertie enabled water stored in Diamond Valley Lake (DVL) to be directed to the plant.

Construction of the piping portion of the intertie was completed in October 2014. To allow the intertie to commence operation quickly, three removable pipe spools were installed in advance of procurement of the shutoff and control valves. For efficient long-term operation, these valves need to be installed in order to isolate reaches of the piping for maintenance, and to control the flowrate. The three valves have been manufactured, and installation of the valves was authorized by the Board in August 2017.

Planned Projects

Sepulveda & Venice Pump Back Pump Stations

Metropolitan currently supplies the western Los Angeles (LA) service area from the Jensen plant, which supplies the Sepulveda Feeder, and from the Eagle Rock Control Structure (ERCS), which supplies the Santa Monica Feeder (SMF) and the East Valley Feeder (EVF).

For the West Valley area, which depends on raw water deliveries from the West Branch of the SWP, up to 50 cubic feet per second (cfs) of treated CRA water can be delivered via the Greg Avenue Pump Station. The secondary source of water to this area is critical during drought seasons. This project will provide up to 100 cfs of a secondary alternative source of water from the Central Pool to the West Valley area utilizing existing infrastructure as much as possible. This can be done by redistributing flows from Central Pool to the Venice Pressure Control Structure and construction of two new pump stations to increase supply to the Sepulveda Feeder at the EVF/WVF No. 1 Interconnection.

Water Operations Control

15467

Total Appropriation Estimate: \$155,447,000 Biennial Estimate: \$19,416,461

Appropriated Amount 9/30/2017: \$47,760,000 Cost Through 9/30/2017: \$12,873,438

Purpose

Maintain the reliability and integrity of Metropolitan's control system.

Scope

This appropriation is established to further coordinate the capabilities of Metropolitan's control system, SCADA with operational and business needs. The appropriation will focus on maintaining system reliability, system integration, and improving operational and business capabilities and efficiencies.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- SCADA RTU CPU & OS Replacement
- Control System Upgrade
- Wadsworth Pumping Plant Control & Protection Upgrade Installation

Major Milestones Achieved Last Period:

- Wadsworth Pumping Plant Control & Protection Upgrades Design - Completed prototype deployment

Projects Completed To Date:

- Three projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Control System Upgrade Phases 1 & 2 Preliminary Investigations and Conceptual Design	4,465,000	2019	Complete development
Control System Upgrade Phase 3 Prototype	1,550,000	2019	Complete testing
Control System Upgrade Phases 4 & 5 Preliminary Design and Selection	2,100,000	2020	Complete development
Control System Upgrade Phase 6 Design and Implementation (of one treatment plant)	12,388,000	2022	Begin design
RTU CPU and OS Replacement	3,755,000	2018	Complete deployment
Wadsworth Pumping Plant Control & Protection Upgrade Installation	22,540,000	2020	Complete deployment

Authorized Projects

Control System Upgrade Phases 1 & 2 Preliminary Investigations and Conceptual Design

Metropolitan's control system spans the Colorado River Aqueduct (CRA), Metropolitan's five water treatment plants, and the entire conveyance and distribution system. The system-wide control system upgrade is planned to be implemented in a phased approach through the following projects to upgrade hardware, software, and a communications network.

- Control System Upgrade Phases 1 & 2 Preliminary Investigations and Conceptual Design
- Control System Upgrade Phase 3 Prototype
- Control System Upgrade Phases 4 & 5 Preliminary Design and Selection
- Control System Upgrade Phase 6 Design and Implementation - One Water Treatment Plant
- Control System Upgrade Phase 7 Design and Implementation - Remaining Facilities

The Phases 1 & 2 project includes conducting a detailed inventory of the existing control system, development of functional requirements and new system architecture, planning for proof-of-concept testing of the proposed new architecture and technologies, and preparation of a system migration plan. Preliminary investigations were authorized by the Board in March 2017 and conceptual design was authorized by the Board in June 2017.

RTU CPU and OS Replacement

This project is upgrading over 330 SCADA Remote Terminal Unit (RTU) field computers with an updated operating system and hardware that will utilize solid state drive technology. This current replacement is intended to serve as a bridge until a full SCADA system upgrade is deployed. Procurement and installation were authorized by the Board in March 2017.

Wadsworth Pumping Plant Control & Protection Upgrade Installation

This project is the final phase of the Wadsworth Pumping Plant/DVL control system upgrade and includes replacement of the Wadsworth Pumping Plant control and electrical power protection system. This phase of the project was authorized by the Board in April 2017.

Planned Projects

AMR System RTUs and Radio Modem Upgrade Project

The Automatic Meter Reading (AMR) system is a critical component for transmitting meter information to allow for billing of member agency water deliveries and analysis of official meter instrumentation. The current system was mostly installed between 2008 and 2009. Portions of the AMR System must be updated because of equipment obsolescence and diminishing vendor support, as they are approaching their end of life. This project is planned to be completed in two phases. The first phase will consist of replacement of the radio modems and radio master stations, including procurement, configuration, installation, project management, and internal labor to support implementation. The second phase will consist of replacement of the AMR RTUs. It is anticipated that the Control System Upgrade Conceptual Design project will recommend that the technology used in the AMR system be made consistent with the technology used in the SCADA (Supervisory Control and Data Acquisition) system. Thus, the second phase (AMR RTUs) will be started after the Control System Upgrade Conceptual Design is completed. The second phase will consist of replacement of RTUs, operator interface terminals, digital displays, configuration laptops, battery chargers, networking equipment, along with associated configuration, installation, and implementation.

Control System Upgrade Phase 3 Prototype

This phase of the System-wide Control System Upgrade will consist of design and implementation of a control system prototype comprised of a small number of representative sites and/or unit processes that cover the full range of existing and new control system technology employed by Metropolitan. This is proposed to be done at multiple facilities within the distribution or conveyance system as well as at (a subset of) one of Metropolitan's treatment plants. Exact details of what will be tested will be determined during the conceptual design project; for instance, the prototype will also test the remote control and reporting capabilities of the control system. This may or may not be conducted with multiple vendors, depending on decisions made during the conceptual design project.

Control System Upgrade Phases 4 & 5 Preliminary Design and Selection

These phases of the System-wide Control System Upgrade, Preliminary Design and selection of provider, are intended to wrap up any remaining decisions or planning from the results of the previous phase (Phase 3). Based on preliminary planning, the overall control system upgrade will likely be separated into separate projects for implementation and design. For some projects, the control system upgrade is fairly straightforward and can move onto design and implementation directly (without the preliminary design phase). However, for more detailed projects, such as the water treatment plants, there will be some additional data gathering, equipment investigation, cost estimating, phasing, or cutover strategy development that will need to take place prior to final design of individual sites. Some of the tasks that will be included in this project are preparation of a RFP for selection of standardized Metropolitan equipment (if necessary), finalization of standardization on equipment for projects going forward (if necessary), planning for implementation of middleware (the software connecting various remote sites together), developing alternatives for any fatal flaws identified in the prototyping phase (if necessary), planning cutover/migration strategies for operating both control systems in later phases, detailed cost estimates of later phases, and any deferred tasks necessary for creating biddable packages.

Control System Upgrade Phase 6 Design and Implementation (of one treatment plant)

This phase of the control system upgrade project will consist of final design and installation efforts to upgrade an existing treatment plant control system. Contracting strategy for implementation of the project will be determined in Phases 2 through 5, and may impact whether this phase will consist of a single treatment plant or multiple sites. Implementation in a limited subset of the overall system (e.g., one treatment plant) is planned to reduce overall program risk; however, complete cutover strategy will be developed during Phase 4. This phase of the project will include design, preparation of a requisition for a new control system, including development of deliverables to support installation activities, installation of the hardware, and software configuration of the new control system.

Control System Upgrade Program (remaining phases)

These phases of the control system upgrade project will consist of final design and installation efforts to upgrade the control system in the remaining four treatment plants as well as sites within the conveyance and distribution systems. The grouping and schedule of these phases will be determined in Phase 4. The remaining phases will include design, preparation of a requisition for a new control system, including development of deliverables to support installation activities, installation of the hardware, and software configuration of the new control system.

Weymouth Water Treatment Plant - Improvements

15369

Total Appropriation Estimate: \$248,726,000 Biennial Estimate: \$13,010,134

Appropriated Amount 9/30/2017: \$178,039,802 Cost Through 9/30/2017: \$175,730,779

Purpose

To maintain reliability and ensure regulatory compliance of the Weymouth plant.

Scope

This appropriation was established to plan and implement multiple projects at the Weymouth plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Weymouth Washwater Tank Seismic Upgrades - Completed construction of the east tank
- Weymouth Filter Valve Replacement - Started procurement

Projects Completed To Date:

- 23 projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Weymouth Administration and Control Building Seismic Upgrades	13,838,000	2022	Complete design
Weymouth Filter Valve Replacement-Filter Bldg. No. 2	24,500,000	2022	Complete construction
Weymouth Washwater Tank Seismic Upgrades	6,238,000	2019	Complete construction
Wheeler Gates Security Improvements	3,006,000	2022	Begin design

Authorized Projects

Weymouth Administration and Control Building Seismic Upgrades

The Weymouth Administration Building has been in service since 1941 and houses the plant's control room and administrative staff. The building needs to be seismically upgraded to current standards since this building is over 75 years old and is a critical facility to the operation of the water treatment plant. The project includes reinforcement of the walls for the plant's filter outlet channel and abandoned inlet channel.

In conjunction with the seismic upgrades, the California Building Code (CBC) requires the installation of a fire sprinkler system and accessibility improvements. Electrical, mechanical, and plumbing components impacted by the upgrades will also be reconfigured. The Weymouth plant's water quality sampling laboratory and office space will also be updated and optimized where required. The existing laboratory has been in continuous service for nearly 30 years. The Board authorized final design of the building upgrades in January 2018.

Weymouth Basins 1 & 2 Rehabilitation

Basins Nos. 1 & 2 were built in 1939 as part of the original Weymouth plant construction. Each basin has a treatment capacity of 57.5 million gallons per day. These basins were originally designed to treat Colorado River Water (CRW). With the addition of State Project Water (SPW), the plant periodically requires higher coagulant dosages than CRW. As a result, the basins operated at a higher solids loading rate than the rate for which the basins were originally designed. This situation has dramatically increased run time on the basins' circular sludge rake, which removes sludge from the basins. As originally designed, the sludge rakes only operated 1 to 2 hours every 4-7 days. Under current conditions, the sludge rakes are operated 6 to 12 hrs each day which results in more frequent maintenance. These basins also have had issues with low solids-settling rates within the basins and high particle loading to the filters, or short-circuiting. The project includes the rehabilitation of the flocculation basins, settling basins, sludge collection equipment, baffling, and edge weirs. Study and preliminary design were authorized by the Board in September 2004.

The project includes the rehabilitation of the flocculation basins, settling basins, sludge collection equipment, baffling, and edge weirs. Study and preliminary design were authorized by the Board in September 2004.

Weymouth Filter Valve Replacement - Filter Bldg. No. 2

The original filter valves in Building No. 1 were installed in two stages in 1941 and 1949, and were replaced in the early 1970s with similar valves. These valves are not consistent with modern American Water Works Association (AWWA) standards. The filter valves in Building No. 2 were installed during the second plant expansion in 1962, and are similar in dimension to the valves in Building No. 1. The existing filter valve bodies exhibit corrosion, the rubber seats are worn, and many valves leak after 45 to 55 years of continuous operation. In addition, the frequency of repairs to the actuators is increasing, and spare parts are difficult to obtain. This project will replace all filter valves and actuators in both Filter Building Nos. 1 and 2, with Metropolitan furnished AWWA-standard valves and current industry-standard actuators. Award of the procurement contract was authorized by the Board in November 2017.

Weymouth Washwater Tank Seismic Upgrades

Seismic investigations of the washwater tanks at the Weymouth plant identified that they are seismically vulnerable, based on current seismic codes, and require upgrades to enable continued operation in the event of a significant earthquake. This project will provide structural upgrades for the tanks to improve their ability to withstand a significant seismic event. The upgrades will include adding a supplemental anchorage system and extending the existing footings; installing flexible couplings on each 42-inch diameter outlet pipe for each tank; replacement of the west tank roof; replacement of the 42-inch tank isolation valves and actuators; and recoating as needed. Construction of the east tank was completed in 2016, and construction of the west tank was authorized by the Board in February 2018.

Wheeler Gates Security Improvements

Construction vehicles and chemical delivery trucks access the Weymouth plant through the Wheeler entrance gate. This project will provide security improvements to the Weymouth plant's Wheeler gate, including construction of a new guard enclosure; and improved lighting and communication features. This project is the third phase of the Weymouth plant's perimeter improvements. Final design was authorized by the Board in November 2006. Phases 1 and 2 are complete.

Planned Projects

No additional projects are planned.

Weymouth Water Treatment Plant - Improvements for FY2006/07 through FY2011/12 15440

Total Appropriation Estimate: \$79,124,000 Biennial Estimate: \$1,664,479

Appropriated Amount 9/30/2017: \$17,438,000 Cost Through 9/30/2017: \$16,723,644

Purpose

To maintain reliability and ensure regulatory compliance of the Weymouth plant.

Scope

This appropriation was established to implement multiple projects at the Weymouth plant. 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:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Weymouth Basin 5-8 Refurbishment - Completed preliminary design
- Finished Water Reservoir Gate Replacement - Completed construction

Projects Completed To Date:

- Five projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Weymouth Basin 5-8 Refurbishment	48,512,000	2022	Complete design
Weymouth Dry Polymer System	10,828,000	2024	Restart design

Authorized Projects

Weymouth Basin 5-8 Refurbishment

The Weymouth Treatment Basins Nos. 5-8 consist of four 500-foot long by 100-foot wide basins, which are each divided into a 100-foot long flocculation section and a 400-foot long sedimentation section. Basins Nos. 5-8 were constructed in 1962 during the plant's second expansion and have shown signs of deterioration. Inspections have identified that the wooden baffle walls have deteriorated after repeated wet and dry cycles and have shown a propensity to support algae and microbial growth. In the sedimentation section, the scrapers do not reach the corners of the cells, allowing residual solids to accumulate on the floor along the wall.

The project includes repairing the steel guides; replacing the drive and paddle shaft assemblies; replacing the baffle boards, supports, and paddle wheel boards in the flocculation section. The project also includes filling the interior corners of each cell with sloping concrete fillets to direct residual solids into the path of the rotating scrapers; refurbishing the structural members of the catwalks; refurbishing the sedimentation Basins Nos. 5-8 sludge collectors; and replacing launders in the sedimentation section. Additionally, the coal tar-coated rotating steel sludge rakes will be replaced with stainless steel rakes. Basin inlet gates and inlet channel structural improvements are also part of this project. Preliminary design was authorized by the Board in February 2013.

Weymouth Dry Polymer System

Cationic polymers are used as a coagulant aid for the washwater reclamation plant, and nonionic polymers are needed to meet filter performance regulations when treating high State Project Water (SPW) blends. Depending on the quality of the source water, both dry polymers may need to be applied simultaneously. However, the current dry polymer system only has one mixing train available. Since these feed systems share a common polymer mixer, it is difficult to operate both systems at the same time. Additionally, the existing dry polymer mixer uses a type of batch mixer that can only make a single batch at a time and frequently clogs. The mixer is housed in a metal structure that does not meet current seismic codes.

The project includes installation of a dry polymer mixing system to allow simultaneous mixing and feeding of cationic and nonionic polymers, independently; construction of a new building designed to current seismic standards to house the dry polymer mixing system; and construction of a covered containment area to house feed equipment and new polymer storage tanks. Final design was authorized by the Board in September 2014.

Planned Projects

No additional projects are planned.

Weymouth Water Treatment Plant - Improvements for FY2012/13 through FY2017/18 15477

Total Appropriation Estimate: \$85,028,000 Biennial Estimate: \$11,627,405

Appropriated Amount 9/30/2017: \$53,566,950 Cost Through 9/30/2017: \$47,671,526

Purpose

To maintain reliability and ensure regulatory compliance of the Weymouth plant.

Scope

This appropriation was established to plan and implement multiple projects at the Weymouth plant. The common driver for many of the projects in the appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Weymouth East Washwater Tank Pumps Replacement - Completed construction
- Weymouth Filter Rehabilitation - Completed construction
- Weymouth Scrubber Platform - Completed construction

Projects Completed To Date:

- One project has been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Weymouth Chlorine System Upgrade	9,237,000	2020	Complete construction
Weymouth Domestic and Fire Water System Improvements	6,900,000	2020	Complete construction
Weymouth Water Quality Instrumentation Improvements	2,538,000	2020	Begin construction

Authorized Projects

Weymouth Basin Gates Improvements

Influent gates for the Weymouth plant's eight sedimentation basins are between 55 to 77 years old and at the end of their service lives. The existing coal tar coating on each gate has deteriorated resulting in corrosion and leaking. The inability to provide a water-tight seal when isolating basins requires the use of sandbags and pumping to keep nuisance water out of the basins in order to perform maintenance. Additionally, the local controls used for the basin gates make it time consuming to open or close the gates. This makes it difficult to respond to sudden changes in plant flow.

This project will replace the deteriorated inlet gates in Basins Nos. 1-4 with stainless steel slide gates, install new gate actuators capable of SCADA monitoring and control from the plant control room, and construct a new influent conduit to Basins 3 & 4. Preliminary design was authorized by the Board in July 2012.

Weymouth Chlorine System Upgrade

The chlorine feed system must be operational at all times to meet State Division of Drinking Water requirements. Chlorine is added downstream of the filters to form a chloramine residual and maintain disinfection in the distribution system. In addition, chlorine serves as the back-up primary disinfectant for the plant. There is insufficient chlorine capacity to meet these needs. In addition, maintenance of the feed equipment can only be performed during low-flow periods.

This project will upgrade the chlorine evaporator system at the Weymouth plant to enhance reliability, safety and meet water quality design criteria. The upgrade includes constructing six additional evaporators housed in a new structure adjacent to the existing chlorine containment building. The six new evaporators would serve as the second chlorine process train. Two additional chlorinators will also be installed to provide additional capacity redundancy and improve reliability. Final design was authorized by the Board in May 2016.

Weymouth Domestic and Fire Water System Improvements

The La Verne site does not have a complete domestic/firewater loop. On the north side of the site, the domestic/firewater is only supplied from the east side. Original construction included a 16" cast iron pipe with leaded joints along the west side of the Weymouth plant that provided filtered water to the plant at washwater tank pressure that has since been abandoned. This project would replace this abandoned portion with cement-mortar-lined steel pipeline. Additionally, three of the five existing domestic water pumps have experienced failures or required significant repairs. These three pumps are the original domestic water pumps that were installed with the finished water reservoir over 40 years ago. Having a full complement of domestic water pumps is critical to meeting plant potable water demands, meeting fire code requirements, and providing service water for chlorine injection.

This project will install a surge vessel and several vacuum air release valves to address issues with water hammer; install fire hydrants at several locations to address fire code requirements; install a utility water loop for the filters; install 16-inch cement mortar lined steel pipe to complete the domestic/firewater loop on the north and west sides of the plant; replace three domestic pumps along with their associated variable frequency drives motors and electrical equipment; install a new pre-fabricated metal electrical enclosure to protect the new equipment; and install earthquake resistant ductile iron pipe for evaluation and testing. Final design was authorized by the Board in October 2014.

Weymouth East Washwater Tank Pumps Replacement

The Weymouth plant has two washwater tanks that store filtered water for use in backwashing the plant's filters. Backwashing is an essential step in the filtration process to cleanse the filter media. The east washwater tank is filled by three washwater pumps that are over 50 years old and have deteriorated through continuous use. Construction to replace the three pumps was authorized by the Board in January 2016 and is in progress.

Weymouth Inlet Channel Structural Upgrades

The basin inlet channels deliver water to each of the Weymouth plant's eight flocculation/sedimentation basins. The inlet channel serving Basins Nos. 1-4 is a concrete box culvert constructed in 1940, while the inlet channel serving Basins Nos. 5-8 was constructed in 1962. A structural assessment of the basin inlet channels has found that they should be upgraded to reduce the risk of damage from a major seismic event. This project will strengthen a portion of 500-foot-long north-south inlet conduit to Basins Nos. 2 and 4, by providing 9-inch of additional concrete along with adequate horizontal and vertical reinforcing to the existing wall. The south wall of Basin Nos. 5-8 adjacent to the east-west inlet conduit, will be also strengthened with a 9-inch additional concrete layer and proper reinforcement. In addition, a new dividing wall may be added to the north-south inlet channel to provide independent rapid mix trains to each of the basin pairs. The basin influent channel would be reconfigured so that one rapid mix structure will feed Basins Nos. 1 and 2 and another rapid mix structure will feed Basins Nos. 3 and 4. Final design was authorized by the Board in September 2014.

Weymouth Oxidation Demonstration Plant Rehabilitation Project

The Oxidation Demonstration Plant (ODP) was put into service in 1992 and refurbishment and rehabilitation of the ODP is needed to maintain its long-term function of performing demonstration-scale studies to optimize full-scale plant operations and test alternative treatment technologies. Studies at ODP have resulted in significant cost-savings for Metropolitan (e.g., avoiding installation of GAC at the full-scale plants following ozone retrofits, and the testing of the ammonia-chlorine process for bromate control which already has resulted in significant chemical cost savings at the Mills plant). Future studies will include assessing treatability of compounds on USEPA's Contaminant Candidate List 3 (CCL 3) to ensure compliance at Metropolitan's full-scale plants with new and potentially more stringent regulations.

This project will support Metropolitan's continued use of ODP to develop cost-effective solutions to optimize operations, evaluate emerging constituents and alternative treatment technologies, and improve water quality to ensure 100 percent compliance with current and future drinking water regulations at the full-scale plants. Preliminary design was authorized by the Board in October 2014.

Weymouth Storm Water Pollution Prevention Improvements

The Weymouth plant must comply with stormwater quality requirements as part of the City of La Verne's MS4 stormwater discharge permit. This project will implement long term engineering best management practices (BMPs) to meet stormwater regulations and improve stormwater management at the Weymouth plant. A study was conducted to review existing storm water pollution prevention plans to meet current regulatory requirements and future mandated requirements. Recommended improvements include modification of Outfall 003 to reduce pollutant loads to the City's MS4 and downstream receiving waters. Preliminary design was authorized by the Board in March 2013.

Weymouth Washwater Pump Station Improvements

When ozone is used as the plant's primary disinfectant, the ozone generators will produce the amount of ozone needed based on flow into the plant. The plant inlet flow can experience fluctuations when the washwater return pumps that send flow back to the head of the plant, cycle on and off. Ideally, the flow to the ozone contactors would be consistent. However, the existing pump station has a small forebay as compared to the capacity of the washwater pumps. The forebay receives flow from both the Washwater Reclamation Plant and the Oxidation Demonstration Plant (ODP) clearwell. Significant changes in flow from these two facilities may increase fluctuation in ozone dose requirements.

This project will modify the ODP clearwell pumps with variable speed pumps; improve washwater pump station pump programming to moderate changes in pump speed; reconfigure the ODP clearwell pumps so that one pump is dedicated for backwash, one pump is dedicated for pumpback, and one pump as a spare for either of the two pumps; and relocate the ODP clearwell pump discharge point to a point downstream of the forebay. Preliminary design was authorized by the Board in May 2014.

Weymouth Water Quality Instrumentation Improvements

Existing instrumentation used for process control of Title 22 regulatory monitored constituents, including turbidity, fluoride, chlorine, ammonia, pH, conductivity, dissolved oxygen, and temperature is currently located in the basement of the Weymouth Administration Building. This location is subject to flooding in the event that existing sump pumps fail and is over 500 feet from the sampling locations, which can cause inaccurate water quality results and a delay in receiving accurate data. A new instrumentation enclosure will be constructed to provide redundancy and isolation for maintenance purposes, and will be in close proximity to the sample locations. Shorter sample lines to online analytical instrumentation would minimize the potential for interference of continuous measurements due to biological growth within the sample lines and provide more accurate results.

This project will construct a new water quality instrumentation enclosure closer to the sample points at the Finished Water Reservoir, purchase and install new sample pumps at the Reservoir Inlet, relocate the Reservoir Inlet sample points closer to the inlet gates to provide a more representative sample, and purchase and install new water quality monitoring instrumentation to provide reliable real time water quality monitoring of the Reservoir Inlet, Orange County Feeder, and the Upper Feeder. Final design was authorized by the Board in May 2014.

Planned Projects

Weymouth Filter Sump Sparger Rehabilitation

Build-up of coal and sand in filter sumps requires removal via vacuum trucks during planned plant outages. This operation is costly and labor intensive. The sludge, coal, and sand can accumulate for a significant period of time before the sump may be removed from service for cleaning. During this time, the accumulated sludge and filter media may transition to anaerobic conditions and negatively affect water quality.

This project will rehabilitate the sparger located in the Filter Building Nos. 1 and 2 sump wells. This will require installing a means of eliminating the build-up of coal and sand that collects in the sump. In-filling the corners and building sloped concrete "angle of repose" structures as well as rehabilitating sparger piping will be evaluated to prevent sludge build-up in the corners and facilitate the transfer of media to the coal removal structure.

Weymouth Water Treatment Plant - Improvements for FY2018/19 through FY2023/24 **18907**

Total Appropriation Estimate: \$10,578,000 Biennial Estimate: \$323,171

Appropriated Amount 9/30/2017: \$0 Cost Through 9/30/2017: \$0

Purpose

To maintain reliability and ensure regulatory compliance of the Weymouth plant.

Scope

This appropriation will be established to plan and implement multiple projects at the Weymouth plant. The common driver for many of the projects in the appropriation is infrastructure reliability.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- No major milestones were achieved during the last biennium.

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Weymouth Hazardous Waste Staging and Containment	812,000	2021	Complete design

Authorized Projects

None, this appropriation will be initiated in FY 2018/19.

Planned Projects

Weymouth Filter Outlet Mixing Improvements

At the Weymouth plant, the combined filter outlet splits into two concrete channels upstream of the finished water reservoir. One channel, which is 140 inches wide, and continues to the east, the other channel, which is 120 inches wide, continues south. Proper mixing of caustic soda, ammonia, and chlorine occurs only when all of the plant's filter outlet flow is directed either to the 140-inch or the 120-inch channel. However, when the plant flow exceeds 300 million gallons per day (MGD), flow is divided between the two channels which results in poor mixing due to the proximity of the chemical injection points to the intersection of the 140-inch and 120-inch channels.

This project will evaluate mixing in the filter outlet channel, perform hydraulic studies, and assess options to improve mixing in the channels. These options may include operational changes, rehabilitation or replacement of valves and gates, structural modifications, and relocation of chemical injection points.

Weymouth Hazardous Waste Staging and Containment

The existing hazardous waste storage area requires a number of upgrades to enhance compliance with current codes and to provide enhanced safety measures, such as providing spill containment, eyewashes and safety shower, a canopy, leak detection, and sump. These utilities are all available at the existing sulfuric acid tank farm, which is no longer utilized. As the existing hazardous waste storage area does not provide containment to capture spills or leaks there is potential for hazardous waste to runoff to the storm drain system as well as exposure to plant personnel.

This project will relocate the existing Hazardous Waste Staging and Containment Facility to the existing sulfuric acid tank farm in order to account for deficiencies at the existing facility. The existing sulfuric acid tank farm, located approximately 100 feet from the existing hazardous waste area, is a 30' x 30' containment area with a roof, sump, SCADA controls, eyewash station, power, and potable water that can be cost effectively utilized to relocate the hazardous waste facility.

Weymouth Solids Handling Rehabilitation

Residual solids generated during the water treatment process are sent to the gravity thickeners to separate water from the solids before being sent to belt presses in the solids handling facility for further dewatering. Dewatered solids are then pumped to elevated hoppers for storage prior to offsite disposal. Mechanical equipment at the solids handling facility has experienced frequent failures, and the facility itself requires full-time staffing to operate. Regular failures occur with the system's bridge breakers, which break apart dewatered solids so that they can be pumped to the hoppers. The facility also experiences frequent issues with the hoppers. After the belt presses dewater the solids, polymer solution is added to the discharge side of the cake pumps to facilitate pumping. This produces a cake-like material that often sticks to the hoppers' mechanical components and impedes opening and closing of the hopper gates. Rehabilitation of the solids handling facility is necessary to maintain its long-term function, reduce maintenance and operational labor costs, and reduce chemical costs.

This project will identify and implement the most feasible rehabilitation of the facility and to evaluate the capacity of the facility's decant lines. Options for rehabilitation include: 1) eliminating the existing cake pumps and installing a conveyor belt system to transfer the dewatered solids to the hopper system without the addition of liquid polymer; and 2) transferring solids via a conveyor belt to stockpile where the solids are held prior to being hauled offsite. This project will also evaluate modifications within the building that would facilitate future equipment repairs and replacement.

Weymouth Temporary Solids Storage

Currently, dewatered solids generated from the treatment process can be disposed of in three different ways: 1) dewatered solids from belt presses can be pumped to an upper level of the solids handling facility by cake pumps and conveyed to hoppers that empty to trucks at ground level for offsite disposal; 2) thickened solids from the gravity thickeners can be conveyed via pipeline to a Los Angeles County sewer connection; and 3) thickened solids are conveyed to a detention basin located south of the ozone generation facility for temporary storage prior to offsite disposal. However, the detention basin's primary purpose is to manage the emergency overflow for the ozone contactors in the event of a plant upset. If the basin receives the emergency overflow while thickened solids are in the basin, there is potential for this material to be discharged into Marshall Creek.

This project will design and construct a separate concrete storage area where dewatered solids from the belt presses can be conveyed and stored prior to offsite disposal.

Weymouth Water Treatment Plant - Oxidation Retrofit 15392

Total Appropriation Estimate: \$251,482,000 Biennial Estimate: \$1,325,311

Appropriated Amount 9/30/2017: \$251,482,000 Cost Through 9/30/2017: \$242,943,914

Purpose

To reduce the level of disinfection by-products in the treated water supplied by the Weymouth plant in order to meet state and federal standards and provide consistent and equitable high quality treated water to all of Metropolitan’s member agencies.

Scope

This appropriation was established to design and construct all systems and facilities that are required to provide ozone disinfection capability and to integrate those systems and facilities into the existing plant operations at the Weymouth plant.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Weymouth Oxidation Retrofit Program (ORP) - Ozone Equipment Procurement - Completed construction.
- Weymouth Ozonation Facilities - Completed construction, start-up & commissioning

Projects Completed To Date:

- Two projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Weymouth Hypochlorite Feed Facilities	14,000,000	2018	Complete construction
Weymouth Ozonation Facilities and Completion Activities	162,700,000	2018	Complete project

Authorized Projects

Weymouth Hypochlorite Feed Facilities

At the Weymouth plant, chlorine is currently added upstream of the filters to provide disinfection. Once ozone is employed as the primary disinfectant, chlorine will instead be added downstream of the filters, allowing the filters to become biologically active. Chlorination of the filter backwash water will be needed to control filter biomass build-up and to prevent excessive pressure drop through the filters. To accomplish this, a new sodium hypochlorite facility located near the washwater storage tanks is required. This approach represents the most cost-effective means to control filter biomass build-up at the plant.

The scope of the project includes installation of storage tanks, chemical feed pumps, and instrumentation and controls; construction of covered containment areas and unloading facilities; and relocation of chemical piping and electrical panels. The project also includes installation of sodium hypochlorite piping in the plant's filter galleries, Supervisory Control and Data Acquisition (SCADA) system integration, and testing and start-up of the new systems. Construction contract was authorized by the Board in August 2015.

Weymouth ORP Inlet Conduit

The Weymouth plant was constructed in 1941 and its original inlet conduit passed directly below the Administration Building. The inlet conduit was relocated in order to meet current seismic codes and to enable the addition of the ozone contactors within the plant's existing hydraulic conditions. Construction was authorized by the Board in August 2009 and has been completed. Production of record drawings is in progress.

Weymouth Ozonation Facilities and Completion Activities

The addition of ozone as the primary disinfectant at each of Metropolitan's treatment plants substantially reduces the formation of disinfection by-products for compliance with the U.S. Environmental Protection Agency's Disinfectants/Disinfection By-Products Rule (DBPs). The use of ozone also enhances Metropolitan's ability to treat water with varying source-water quality, and provides critical operational flexibility to meet treatment challenges resulting from periodic water supply events such as drought or other source-water limitations. Furthermore, ozonation is effective in controlling taste-and-odor causing compounds which may be present from time to time, as well as some pharmaceuticals/personal care products, endocrine disruptors, and algal toxins. In addition to these overall water quality benefits, the use of ozone provides important operational advantages, allowing Metropolitan to eliminate blend restrictions of SWP and Colorado River Aqueduct (CRA) source waters. The Weymouth plant is Metropolitan's final facility to receive the ozone disinfection process.

The scope of the project includes the systems, facilities, and site work that are required to provide ozone disinfection capabilities. The project also includes the addition of a liquid oxygen storage facility; ozone generation building; ozone contactors; ozone off-gas destruct system; hydrogen peroxide storage and feed facilities; ancillary systems; and general site improvements. The ozonation facilities will be rated for the plant's design capacity of 520 MGD. This includes outfitting of Contactors Nos. 3 and 4 for ozone service, the addition of a sulfuric acid storage and feed facility as a change order to the existing construction contract, start-up/commissioning, and as-built/completion phase activities. Completion activities were authorized by the Board in December 2016.

Planned Projects

No additional projects are planned.

Whitewater Siphon Protection

15341

Total Appropriation Estimate:	\$10,585,000	Biennial Estimate:	\$2,940,513
Appropriated Amount 9/30/2017:	\$10,585,000	Cost Through 9/30/2017:	\$3,534,902

Purpose

To prevent damage to the Whitewater Siphon due to storm flows on the Whitewater River and to ensure deliveries of CRA water.

Scope

This appropriation was established to design and construct a protective barrier for the Whitewater siphons to prevent further erosion of streambed from undermining the siphons, and remediate the Whitewater Mining Pit in accordance with State regulations and prevent head-cutting of the mining pit from undermining the siphons in the event of a major flood.

Accomplishments for FY 2016/17 and FY 2017/18

New Projects Initiated Last Period:

- No projects were initiated during the last biennium.

Major Milestones Achieved Last Period:

- Began construction

Projects Completed To Date:

- No projects have been completed.

Objectives for 2018/19 and FY 2019/20

Project	Total Project Estimate	Estimated Completion	Major Milestones
Whitewater Siphons Protection	8,775,000	2019	Complete construction

Authorized Projects

Whitewater Siphons Protection

The Colorado River Aqueduct (CRA) passes beneath the Whitewater River north of the city of Palm Springs and west of the city of Desert Hot Springs via double-barreled reinforced concrete siphons, which are approximately 2,200 feet long, with diameters of 133 inches and 156 inches. The Whitewater Siphons are buried from 4 feet to 15 feet beneath the river bed. Over time soils above the siphons eroded away, and a protective slab that had been added to protect the siphon deteriorated from stream flow erosion.

This project will improve the erosion control structures that protect the Whitewater Siphons from flood damage. The erosion protection work includes construction of east and west gabion berms, an access road, and a gabion drop structure; placement of cellular concrete to protect overloading of the CRA siphon; and modification of earthen berms, concrete slabs, and grouted riprap. The Board authorized construction in March 2017.

Planned Projects

No additional projects are planned.

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Selected Demographic and Economic Information for Metropolitan's Service Area

The area served by Metropolitan represents the most densely populated and heavily industrialized portions of Southern California. Metropolitan estimates that approximately 18.9 million people lived in Metropolitan's service area in 2017, based on official estimates from the California Department of Finance and on population distribution estimates from the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG). Population projections prepared by SCAG in 2012 and SANDAG in 2013, as part of their planning process to update regional transportation and land use plans, show expected population growth of about 18 percent in Metropolitan's service area between 2010 and 2035.

The economy of Metropolitan's service area is exceptionally diverse. In 2015, the economy of the six counties which contain Metropolitan's service area had a gross domestic product larger than all but eleven nations of the world. The Six County Area economy ranked between Australia (\$1.34 trillion) and the Russian Federation (\$1.33 trillion), with an estimated gross domestic product (GDP) of just over \$1.34 trillion. The Six County Area's gross domestic product in 2015 was larger than all states except California, Texas, and New York.

Table 14. Ranking of Areas by Gross Domestic Product

Country	Dollars (in Billions)
United States	18,037
China	10,866
Japan	4,123
Germany	3,356
United Kingdom	2,849
California	2,459
France	2,422
India	2,073
Italy	1,815
Brazil	1,775
Texas	1,648
Canada	1,551
New York	1,441
Australia	1,344
Six County Area	1,340
Russian Federation	1,326
Spain	1,199
Mexico	1,144

Source: Countries - World Bank; U.S. - Bureau of Economic Analysis; California and Six County Area - U.S. Department of Commerce

Summary of Recent Trends and Outlook for the Six County Area Economy

The Six County Area economy is affected by trends in the national and world economies. The U.S. economy is producing strong job gains while GDP growth has remained well below the average for past recoveries. Private sector nonfarm wage and salary job levels in December 2016 were 6.9 million above the pre-recession peak level and 15.2 million above the recession low. The unemployment rate in the nation has declined from near 9.8% in November 2010 to 4.7% in December 2016.

Consumer price increases have remained 2% annually and interest rates continue at historically low levels although the Federal Reserve Bank has increased the federal funds rate in December and more rate hikes are anticipated on 2017 and 2018. First-time unemployment claims were below 300,000 for the 96 weeks ending December 31, 2016 while job openings have reached record levels. Job growth will slow in coming years as more baby boomers retire. World economic conditions remain uncertain in 2017.

The Six County Area has regained all the jobs lost during the recession and were 395,000 above pre-recession levels in November 2016. Year-over-year job gains continued in 2016 and between November 2015 and November 2016 ranged from a high of 2.5% in Riverside-San Bernardino metro area to a low of 1.1% in Ventura County. Job growth for the entire Six County Area was 171,800 jobs or a gain of 1.9% compared to a 1.6% increase in jobs for the nation for the comparable period.

Unemployment rates in the Six County Area have declined sharply between 2010 and November 2016. In November unemployment rates ranged from a low of 3.7% in Orange County to a high of 5.7% in Riverside County. Income, taxable sales, assessed valuation and housing prices rose in 2014 and 2015. Residential building permits rebounded in 2014 and 2015. Nonresidential permit levels reached a record \$12.6 billion in 2014 and declined slightly to \$11.9 billion in 2015. Permit levels in 2016 were near 2015 levels.

The Six County Area is experiencing growth in both domestic and foreign visitors. In 2015 Los Angeles County set tourism records for the second year in a row in visitors (45.52 million), hotel occupancy rates (79.7%) and average daily rate (\$158.35) according to data from the Los Angeles Tourism and Convention Board. In 2015 passenger travel at Los Angeles International Airport was up 5.9% to 74.7 million trips to set an all-time record. Air passenger travel at the major airports in the Six County Area reached record levels in 2015 and is up 6.5% in 2016 through November.

Population growth in the Six County Area since 2010 has exceeded the national average according to both the California Department of Finance ("DOF") estimates and those published by the Census Bureau. Population growth averaged 176,300 between 2010 and 2016 according to the DOF estimates, although growth slowed in 2016 as birth rates and migration fell. The Six County Area had 22.1 million residents in 2016, approximately 56% of the State's population.

Income, taxable sales and assessed valuation in the Six County Area increased in 2014, 2015 and 2016 along with growth in foreign trade and film permits. Gains in income, taxable sales and assessed valuation are all outpacing the growth in consumer price indices in the Six County Area all of which are helping local government revenue growth.

Long-term job growth is driven by the Six County Area's economic base—those sectors that sell most of their goods and services in national and world markets outside of the Six County Area. Recent projections by the Center for Continuing Study of the California Economy ("CCSCE"), the Southern California Association of Governments ("SCAG") and the San Diego Association of Governments ("SANDAG") report that the Six County Area will see job growth that slightly exceeds the national average during the next 10 to 30 years, led by gains in Professional and Business Services, Wholesale Trade, Tourism and Entertainment and Health Care.

Recent Six County Area Job Growth Trends

The Six County Area has regained all the jobs lost during the recession and more. Year-over-year job gains (see the table below) continued into 2016 and between November 2015 and November 2016 ranged from a high of 2.5% in Riverside-San Bernardino metro area to a low of 1.1% in Ventura County. Job growth for the entire Six County Area was 171,800 jobs or a gain of 1.9% compared to a 1.6% increase in jobs for the nation for the comparable period.

Job growth was aided by gains in foreign trade, tourism and professional services as well as a rebound in construction and related sectors and continuing growth in health care and food services.

Table 15. Recent Employment Trends (Non–Farm Wage and Salary Jobs in Thousands)

County	2007	2010	2013	2014	Aug 2014	Aug 2015	Aug 14-15 % Change
Los Angeles	4,254.2	3,923.2	4,189.0	4,274.2	4,352.7	4,418.0	1.5%
Orange	1,524.0	1,370.3	1,495.5	1,542.7	1,575.8	1,614.1	2.4%
Riverside-San Bernardino	1,289.9	1,150.7	1,289.3	1,347.4	1,384.9	1,419.0	2.5%
San Diego	1,323.8	1,242.0	1,346.5	1,386.4	1,414.2	1,445.1	2.2%
Ventura	298.4	275.5	292.9	294.8	299.5	302.7	1.1%
Total Six County Area	8,690.3	7,961.7	8,613.2	8,845.5	9,027.1	9,198.9	1.9%

Source: California Employment Development Department

Unemployment rates in the Six County Area have declined sharply between 2010 and November 2016 (See the table below). In November 2016 unemployment rates ranged from a low of 3.7% in Orange County to a high of 5.7% in Riverside County. Unemployment rates for the counties are not seasonally adjusted and peak in the summer months. All counties in the Six County Area experienced a decline in unemployment rates between November 2015 and November 2016.

Table 16. Unemployment Rates

	2000	2006	2010	2014	2015	Nov 15	Nov 16
Los Angeles County	5.4%	4.8%	12.5%	8.2%	6.7%	5.8%	4.8%
Orange County	3.5%	3.4%	9.7%	5.5%	4.5%	4.3%	3.7%
Riverside County	5.4%	5%	13.8%	8.2%	6.7%	6.3%	5.7%
San Bernardino County	4.8%	4.8%	13.5%	8%	6.5%	6%	5.3%
San Diego County	3.9%	4%	10.8%	6.4%	5.2%	5%	4.3%
Ventura County	4.5%	4.3%	10.8%	6.6%	5.7%	5.6%	5%
United States	4%	4.6%	9.6%	6.2%	5.3%	5%	4.6%
State of California	4.9%	4.9%	12.2%	7.5%	6.2%	5.9%	5.3%

Source: U.S. Bureau of Labor Statistics and EED; U.S. and California estimates for August are seasonally adjusted.

The Six County Area moved from substantial job losses on a monthly basis to a period of stability in job levels and finally accelerating job growth over the past 4 years. (See the figure below). The Six County Area has outpaced the nation in job growth since the beginning of 2013 although unemployment rates have not fully recovered from the pre-recession levels. By November 2016 job levels were 395,000 or 4.5% above the pre-recession peak level in July 2007.

Construction Activity

Residential building permit levels in the Six County Area declined sharply after 2004 falling from 108,322 to 17,932 units in 2009. Permit levels have rebounded since 2009 reaching 47,169 in 2014 and 54,911 permits in 2015 with similar levels in 2016. Permit levels in Los Angeles and Orange County are near pre-recession levels while permit levels in other parts of the Six County Area remain well below 2004 levels. Since 2011 more than half of all new permits have been for multi-family residential building with more than 2/3 since 2013. Projected long-term job and population growth will support a much higher level of residential construction than is currently occurring.

Table 17. Residential Building Permits

County	2004	2009	2014	2015	Jan-Nov 2015	Jan-Nov 2016	Jan-Nov 2015-16
Los Angeles	26,395.0	5,653.0	18,707.0	22,892.0	21,321	18,307.0	(14%)
Orange	9,322	2,200	10,636	10,897	9,997	11,079	11%
Riverside	34,226	4,190	6,938	6,196	5,739	5,684	(1%)
San Bernardino	18,470	2,495	3,203	3,912	3,623	3,446	(5%)
San Diego	17,306	2,990	6,603	10,005	9,135	9,237	1%
Ventura	2,603	404	1,082	1,009	971	1,388	43%
Total Six County Area	108,322	17,932	47,169	54,911	50,786	49,141	(3%)

Source: Construction Industry Research Board and California Homebuilding Foundation

Housing Trends in the Six County Area Economy

The housing market recovery that began in 2012 has continued and strengthened through the first eleven months of 2016. Housing prices increased, the number of new residential building permits rose and the number of new foreclosure filings declined. Mortgage rates remain near historic lows and the number of homes in the unsold inventory is low by historic standards according to the California Association of Realtors (“CAR”). These signs combined with expected job growth point to a continued strengthening in the housing market in 2016 and beyond.

Median resale housing prices in Six County Area markets were near 2003 levels at the lowest recent levels in March 2009 (See figure on the following page). Median prices fluctuated in a narrow range until the summer of 2012 and then began a rebound that continued into 2016. In November 2016 median prices throughout the Six County Area were at the top of the recent range with increases of between 51% and 78% since March 2012. CAR reported that the share of distressed properties declined from 37% of total sales in September 2012 to 6.4% statewide in December 2015. The Case Shiller home price index, which eliminates the effect of changes in the mix of housing, increased for the Los Angeles and San Diego regional markets over the five years ending in October 2016 gaining 54% in the Los Angeles market area and 51% in the San Diego market area during this period.

Nonresidential Construction

Nonresidential construction permit levels reached a record \$12.6 billion in 2014, declined slightly to \$11.9 billion in 2015 and are down 3% in the first 11 months of 2016 but still near record levels.

Nonresidential construction throughout the Six County Area peaked at \$11.3 billion in 2007. Between 2007 and 2009, nonresidential construction declined by more than 50% to a 2009 level of \$5.1 billion. The Six County Area has experienced a rebound in nonresidential permit levels since 2009 with gains in office and hotel construction. Public construction, not shown in the table below, has also increased. The increase in residential, nonresidential and public construction is supporting job growth in construction and related industries.

Table 18. Total Nonresidential Construction Permit Valuation (Dollars in Billions)

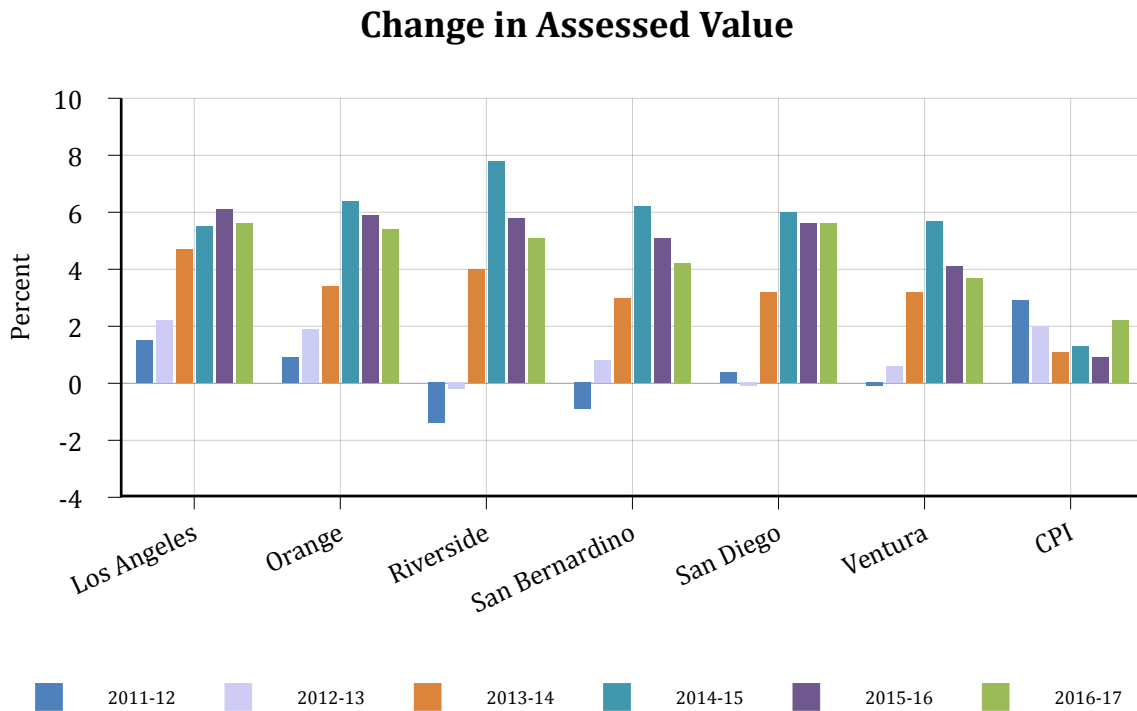
County	2007	2009	2014	2015	Jan-Nov 2015	Jan-Nov 2016	Jan-Nov 2015-16
Los Angeles	4.7	2.7	6.7	5.6	5.3	4.7	(11%)
Orange	2	1	2	2.2	2	2.3	15%
Riverside	1.5	0.4	0.8	0.9	0.8	1	25%
San Bernardino	1.4	0.3	1	1.1	1	0.9	(10%)
San Diego	1.4	0.6	1.9	1.9	1.7	1.6	(6%)
Ventura	0.3	0.2	0.2	0.2	0.1	0.1	11%
Total Six County Area	11.3	5.1	12.6	11.9	10.9	10.6	(3%)

Source: Construction Industry Research Board and California Homebuilding Foundation

Assessed Valuation

Assessed valuation in the Six County Area has rebounded and outpaced inflation in recent years after a long downturn during the last recession that was another source of fiscal pressure on local communities throughout the Six County Area. Assessed values increased again for the 2016-17 fiscal year with gains ranging from 3.7% in Ventura County to 5.6% in Los Angeles and San Diego County compared to a 2.2% increase in the Consumer Price Index (CPI) (See figure below). For four years in a row assessed valuation growth has outpaced inflation in each county in the Six County Area.

Figure 19. Change in Assessed Value

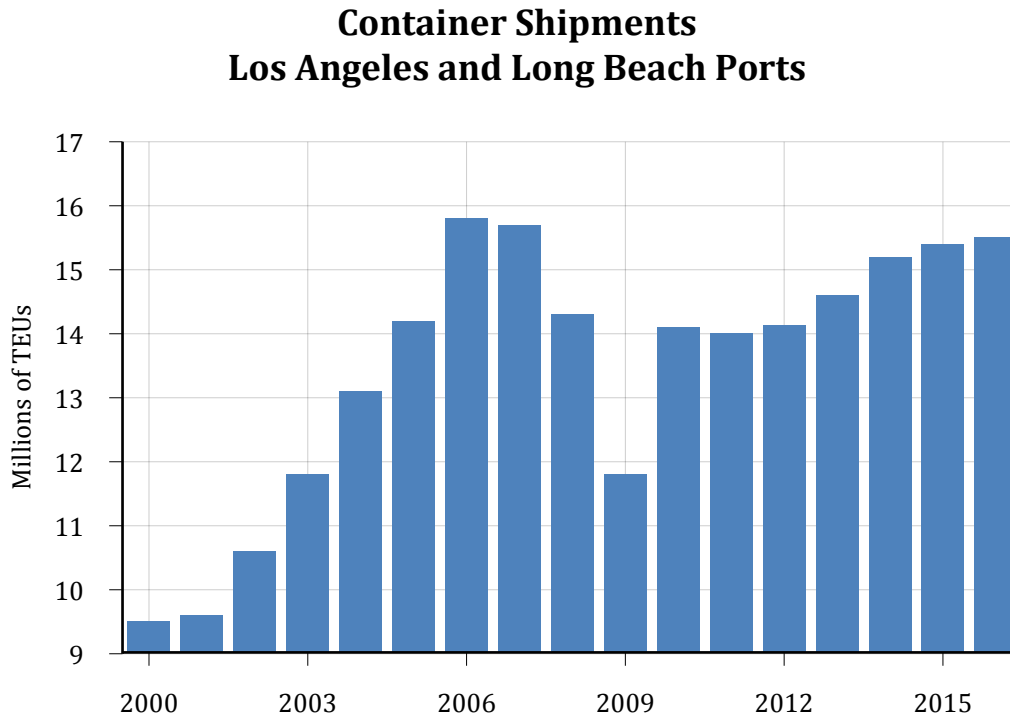


Source: County Assessor's Offices

International Trade

The recession led to a decline in the dollar volume and physical volume of international trade in the Six County Area in 2008 and 2009. Container volumes have recovered since 2009 and neared pre-recession levels in 2015. Container volumes in 2016 are up 1.3% through November 2016.

Figure 20. Container Shipments (Los Angeles and Long Beach Ports)



Source: Ports of Los Angeles and Long Beach

Over the longer term, international trade has been a leading growth sector in the Six County Area. Container volume rose 62% between 2000 and 2015 despite the large drop in 2008 and 2009. Trade volume fell by 3.7% in 2015 to \$464 billion including \$393.8 billion in the Los Angeles Customs District leading all U.S. ports and \$70.2 billion in the San Diego Customs District. This growth supports jobs and economic activity in the transportation, wholesale trade and warehousing industries as the Six County Area is a gateway for U.S. trade with Pacific Rim countries. For example in the Riverside-San Bernardino metro area where many imports are stored and shipped from saw an increase in warehousing jobs from 18,300 to 36,500 between April 2010 and October 2016 along with 19,900 jobs added in trucking and wholesale trade with all three sectors exceeding pre-recession job levels.

The Los Angeles and Long Beach ports are the nation's leading port complex in terms of trade volume. The area's ports handle 50% of the nation's trade with China. China is by far the largest trading partner for these ports with \$159.0 billion in two-way trade in 2015, down 4.5% from 2014, with the dominant portion related to imports from China. The next largest trading partner is Japan (\$38.3 billion) followed by South Korea, Taiwan and Vietnam. Mexico is by far the largest trading partner in the San Diego Customs District.

Long-term growth in the United States and in its trading partners can boost international trade levels of activity in the coming years as will new trade agreements. The Six County Area's largest trading partners include some of the world's fastest growing economies such as China, South Korea and Mexico. The Los Angeles Economic

Development Corporation (“LAEDC”) report in June 2016 cited long-term challenges including competition from the Panama Canal expansion and from other east and west-coast ports.

The outlook for foreign trade expansion particularly with China and Mexico has become uncertain with the election results and the campaign statements of the new President about foreign trade agreements.

Income and Wages

Counties in the Six County Area have income and wage levels and poverty rates that range from below the national average to above the national average. Orange and Ventura counties have the highest household income levels within the Six County Area. Los Angeles and Orange counties have the highest wage levels, well above the national average. San Diego County income and wage levels are also above the national average. Riverside and San Bernardino counties have per capita income and wage levels that are below the national average. Median household income is above the national average in each of the counties in the Six County Area except San Bernardino County.

Per capita income and median household income measures are affected by demographic trends. Per capita income measures in the region are pushed downward by the above average percent of children in the Six County Area population compared to the national average while median household income measures are pushed upward by the above average number of wage earners per household in the Six County Area. Income and wage trends in the Six County Area have been comparable to national trends since 2000. Poverty rates exceed the national average in Los Angeles, Riverside and San Bernardino counties and below the national average in Orange, San Diego and Ventura counties.

Per capita income is based on total personal income divided by population while median household income is based on money income, which is lower than total personal income. The table on the following page shows median household income, per capita income, wage levels and poverty rates for each of the counties in the Six County Area, as well as for California and the United States, in 2015.

Income and poverty levels improved in 2015 throughout the Six County Area (See table below). Per capita income growth (in current dollars) increased by from 4.1% in Orange County to 5.6% in San Bernardino County, all ahead of the national average and far faster than the increase in consumer prices. Median household income (adjusted for inflation) increased by from 1.7% in San Diego County to 6.1% in Los Angeles and Ventura counties. Average wages (in current dollars) increased by from 2.7% in San Diego County to 6.7% in San Bernardino County all faster than the national increase and the gain in consumer prices. Poverty rates fell throughout the Six County Area although these rates do not take into account the rapid rise in rents and home prices throughout the Six County Area.

Table 19. Income and Wages

	Per Capita Income	Median Household Income	Average Wage	Poverty Rate
Los Angeles County	53,521	59,134	58,742	16.6%
Orange County	57,749	78,428	59,708	12.7%
Riverside County	35,589	58,292	43,051	16.2%
San Bernardino County	35,431	53,803	43,396	19%
San Diego County	53,298	67,320	58,069	13.8%
Ventura County	54,155	80,032	53,930	9.6%
California	53,741	64,500	61,698	15.3%
United States	48,112	55,775	52,092	14.7%

Source: Per Capita Income - U.S. Department of Commerce; Median Household Income and Poverty Rate-U.S. Census Bureau (American Community Survey); Average Wage-U.S. Bureau of Labor Statistics

Population

Population growth in California and the Six County Area has been slowing since 2000 compared with previous decades. Population growth averaged 174,100 per year between 2000 and 2010 compared to 219,300 between 1990 and 2000. The Six County Area added nearly 1.2 million residents between 2000 and 2005 but only an additional 588,000 residents in the next five years. Population growth slowed after 2005 as high housing prices and large job losses contributed to larger levels of out-migration to other areas of California and other states.

Population growth averaged 176,300 between 2010 and 2016 according to the DOF estimates, although growth slowed in 2016. The Six County Area had 22.1 million residents in 2016, approximately 56% of the State's population.

Table 20. Six County Area Population (in Thousands)

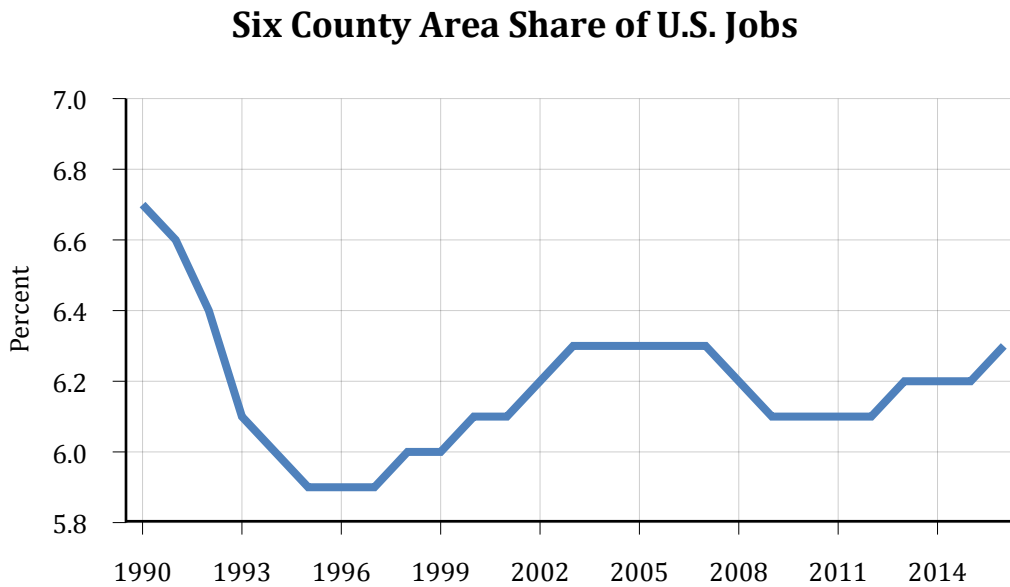
County	1990	2000	2005	2010	2014	2015	2016
Los Angeles	8,860.0	9,544.0	9,810.0	9,837.0	10,125	10,186.0	10,229
Orange	2,412	2,854	2,957	3,015	3,138	3,161	3,181
Riverside	1,188	1,557	1,935	2,196	2,306	2,329	2,361
San Bernardino	1,432	1,719	1,943	2,044	2,112	2,130	2,148
San Diego	2,505	2,828	2,970	3,100	3,248	3,275	3,301
Ventura	669	757	797	824	848	852	854
Total Six County Area	17,066	19,259	20,412	21,016	21,777	21,933	22,074

Source: California Department of Finance as of July 1

Economic Structure of the Six County Area and Long-Term Prospects

The Six County Area has now recovered all of the losses in the area's share of national jobs that occurred during the recession after 2007. In March 2015 the Six County Area accounted for 6.3% of the nation's non-farm wage and salary jobs, the highest share since 1991. The pattern of larger percentage job losses compared to the nation during a recession mirrors the experience of the early 1990s when aerospace jobs declined sharply and the Six County Area share of U.S. non-farm wage and salary jobs fell from 6.6% to a low of 5.9%. As in the economic growth period after 1994, the Six County Area's share of national jobs has grown steadily during the current expansion period.

Figure 21. Six County Share of US Jobs



Source: EDD; data are seasonally adjusted

In November 2016 Education and Health Services was the largest major industry sector in the Six County Area measured by jobs, with just fewer than 1.5 million jobs or almost 16% of the Six County Area total (see the table on the following page).

The next largest sectors in 2016 were Professional and Business Services and Government followed by Leisure and Hospitality, Retail Trade and Manufacturing. Two sectors accounted for most of the job growth since 2007: Educational and Health Services and Leisure and Hospitality. Six County Area job levels in November 2016 were nearly 500,000 above 2007 levels despite large losses in Construction and Manufacturing. Between 2010 and November 2016 the Six County Area added more than 1.2 million jobs.

Since 2010 most sectors have seen job growth and Construction jobs have rebounded but are still below pre-recession levels. There was strong growth in Professional and Business Services reversing all of the recession job losses. Wholesale Trade activity also rebounded along with port traffic and the growing economy. Financial Services and Information recovered only a small portion of recession job losses.

Long-term job growth is driven by the Six County Area's economic base—those sectors that sell most of their goods and services in national and world markets outside of the Six County Area. Recent projections by CCSCE, SCAG and SANDAG report that the Six County Area will see job growth that slightly exceeds the national average during the next 10 to 30 years, led by gains in Professional and Business Services, Wholesale Trade, Information and the tourism component of Leisure and Hospitality.

In 2014 Education and Health Services was the largest major industry sector in the Six County Area measured by jobs, with just fewer than 1.4 million jobs or almost 16% of the Six County Area total (see the table on the following page).

The next largest sectors in 2014 were Professional and Business Services and Government followed by Leisure and Hospitality, Retail Trade and Manufacturing. Two sectors accounted for most of the job growth since 2000: Educational and Health Services and Leisure and Hospitality. Six County Area job levels in 2014 were nearly

identical to 2007 levels despite large losses in Construction and Manufacturing. Between 2010 and 2014 the Six County Area added more than 830,000 jobs.

Since 2010 most sectors have seen job growth and Construction jobs have rebounded but are still below pre-recession levels. There was strong growth in Professional and Business Services reversing all of the recession job losses. Wholesale Trade activity also rebounded along with port traffic and the growing economy.

Table 21. Six County Area Employment by Major Sector (Jobs in Thousands)

	2000	2007	2010	Nov 2016	Change 2007-2010	Change 2010 - Nov 2016
Farm	67.7	63.8	59.8	54.3	-4	-5.5
Natural Resources and Mining	6.3	7.8	7.3	6.3	-0.5	-1
Construction	374	479	298.9	406.6	-180.1	107.7
Manufacturing	1,114.1	888.9	735.8	743.7	-153.1	7.9
Wholesale Trade	387.5	430	382.4	434.4	-47.6	52
Retail Trade	835.5	948.6	849.5	979.6	-99.1	130.1
Transp, Warehousing and Utilities	286.8	298	274.8	348.2	-23.2	73.4
Information	344.1	293.6	260.6	277	-33	16.4
Financial Activities	449.2	524	442.5	474.5	-81.5	32
Professional and Business Services	1,178	1,286.8	1,134.6	1,340.5	-152.2	205.9
Educational and Health Services	831	1,097	1,201	1,463.9	104	262.9
Leisure and Hospitality	740.7	897.2	861	1,106.5	-36.2	245.5
Other Services	271.2	293.9	272.4	317.4	-21.5	45
Government	1,171.1	1,245.8	1,240.9	1,300.3	-4.9	59.4
Total Wage and Salary Jobs	8,057.2	8,754.4	8,021.5	9,253.2	-732.9	1,231.7

Source: EDD

The Six County Area economy has an economic base that is diversified and well positioned to participate in U.S. and world economic growth over the next ten years. Job levels are expected to grow in the high-wage and fast-growing professional, scientific, technical and information services sectors, which include architecture, design, computer, research and development, advertising, legal, accounting, and Internet-related and management services. Other fast-growing sectors over the next ten years include entertainment and tourism industries and health care.

The Six County Area has an above-average share of four additional fast-growing sectors—Wholesale Trade and Transportation, tied to the area’s projected growth in foreign trade; Information, which includes motion pictures; and the tourism component of Leisure and Hospitality, tied to growth in disposable income in the U.S. and worldwide.

Since 2012 Amazon has opened 5 fulfillment centers (warehouses) in the Inland Empire and that has contributed to a surge in logistics (warehouse and trucking) jobs in the Riverside-San Bernardino metro area.

The diversity of the Six County Area economy has led to GDP growth since 2001 that slightly exceeds the national average despite the fact that the area had below average growth during the recession. Average GDP growth in nominal dollars was 4.0% per year compared to 3.6% for the nation between 2001 and 2015. In 2015 the Six County Area outperformed the nation in current dollar and real GDP growth.

Since 2012 Amazon has opened 5 fulfillment centers (warehouses) in the Inland empire and that has contributed to a surge in logistics (warehouse and trucking) jobs in the Riverside-San Bernardino metro area.

Table 22. Six County Area GDP (Billions of Current Dollars)

	2013	2014	2015	Average Annual Growth Rate		
				Current \$ 2014-15	Current \$ 2001-15	Real \$ 2014-15
LA-Orange	544.1	880.0	930.8	5.8%	3.9%	3.9%
Ventura	25.9	47.2	48.2	2.1%	4.5%	1.4%
Riv.-San Bern.	79.3	132.3	140.6	6.3%	4.2%	3.8%
San Diego	121.9	210.4	220.6	4.8%	4.3%	2.5%

Source: U.S. Department of Commerce; 2014 estimates are preliminary

The Bay Area is by far the largest recipient of new venture capital funding with \$27.3 billion in 2015 funding. The Six County Area has been one of the top three VC markets behind Silicon Valley for the past decade and outpacing Texas, the Southeast and DC areas in total funding (see the figure below). In 2015 the Six County Area accounted for \$6.3 billion and surpassed New England for the first time. In 2015 the Six County Area received 10.7% of national funding up from 7.4% for all of 2014. Funding levels declined nationally and in the four largest regions including the Six County Area in the first three quarters of 2016.

The motion picture and tourism sectors are two major components of the Six County Area economic base. Film LA reports an increase in the number of filming shoot days since 2010. (See the chart on the following page) However, the mix of production days changed over time with long term losses in the production of major feature films and TV drama series offset by larger gains in commercials, other kinds of TV filming and web-based and reality shows, which according to Film LA have lower dollar values per production day of activity. In September 2014 California approved an increase in the state film tax credit to \$330 million per year from \$100 million starting in 2015. Production days for TV surged in 2015 while other types of shoot days were relatively flat. Shoot days in the first three quarters of 2016 were up by 5.2% led by a 13.6% increase in TV days in part from the higher tax incentives.

California and the Six County Area are experiencing growth in both domestic and foreign visitors. Hotel rates and occupancy are increasing in the Six County and the same is true for employment in the hotel and amusement park sectors. In 2015 Los Angeles County set tourism records for the second year in a row in visitors (45.52 million), hotel occupancy rates (79.7%) and average daily rate (\$158.35) according to data from the Los Angeles Tourism and Convention Board. Foreign travel to the region is outpacing domestic travel with large gains in visitors from China of +13.6% in 2015 to 779,000 visitors following a gain of 20.6% in 2014. In 2015 passenger travel at Los Angeles International Airport was up 5.9% to 74.7 million trips to set an all-time record (see figure below). Air passenger travel at the major airports in the Six County Area reached record levels in 2015 and is up 6.5% in 2016 through November.

The positives for long-term economic growth include the strength of the region as a center for knowledge-based and creative activities and international trade, tourism and investment with the Pacific Rim. For example, the Six County Area does not have a large number of automotive industry production jobs but nearly all large worldwide auto companies have a major design studio in the Six County Area.

FINANCIAL POWERS (MWD ACT)

THE METROPOLITAN WATER DISTRICT ACT

Sec. 18. [Fiscal Year]

The fiscal year of any metropolitan water district shall commence on the first day of July of each year and shall continue until the close of the 30th day of June of the year following.

Sec. 61. [Ordinances, Resolutions and Orders]

The board may make and pass ordinances, resolutions and orders necessary for the government and management of the affairs of the district, for the execution of the powers vested in the district and for carrying into effect the provisions of this act.

Amended by Stats. 1969, ch. 441

Sec. 123. [Borrowing, Limitation]

A district may borrow money and incur indebtedness and issue bonds or other evidence of such indebtedness, except that no district shall incur indebtedness which, in the aggregate, shall exceed 15 percent of the assessed valuation of all the taxable property included within the district, as shown by the assessment records of the county or counties.¹

CASE NOTE

A contract between the State and a metropolitan water district for a water supply from the State Water Resources Development System was a contract for the furnishing of continued water service in the future, payments by the district being contingent upon performance of contractual duties by the State and not incurred at the outset, so the district did not incur an indebtedness in excess of that permitted by former Section 5(7) of the Metropolitan Water District Act (now Sec. 123).

Metropolitan Water District v. Marquardt, 59 Cal.2d 159, 28 Cal. Rptr. 724 (1963)

Sec. 124. [Taxes, Levy and Limitation]

A district may levy and collect taxes on all property within the district for the purposes of carrying on the operations and paying the obligations of the district, except that such taxes, exclusive of any tax levied to meet the bonded indebtedness of such district and the interest thereon, exclusive of any tax levied to meet any obligation to the United States of America or to any board, department or agency thereof, and exclusive of any tax levied to meet any obligation to the state pursuant to Section 11652 of the Water Code, shall not exceed five cents (\$.05) on each such one hundred dollars (\$100) of assessed valuation. The term "tax levied to meet the bonded indebtedness of such district and the interest thereon" as used in this section shall also include, but shall not be limited to, any tax levied pursuant to Section 287 to pay the principal of, or interest on, bond anticipation notes and any tax levied under the provisions of any resolution or ordinance providing for the issuance of bonds of the district to pay, as the same shall become due, the principal of any term bonds which

¹ The assessed valuation of all taxable property as of June 30, 2011 used in calculating the ad valorem tax limitation was more than \$2 trillion (\$2,050,497,523,732), fifteen percent of this amount is \$307.6 billion (\$307,574,628,560).

under the provisions of such resolution or ordinance are to be paid and retired by call or purchase before maturity with moneys set aside for that purpose.

Amended by Stats. 1969, ch. 441

CASE NOTE

An article in a contract between the State and a metropolitan water district for a water supply from the State Water Resources Development System which article is based upon Water Code Section 11652, requiring the district to levy a tax to provide for all payments due under the contract, does not contravene former Section 5(8) of the Metropolitan Water District Act, imposing a limit on taxation, as Section 11652 is a special provision relating only to taxation to meet obligations from water contracts with state agencies, whereas said Section 5(8) is a general provision relating to taxation by a district for all purposes and the special provision controls the general provision.

Metropolitan Water District v. Marquardt, 59 Cal.2d 159, 28 Cal. Rptr. 724 (1963).

Sec. 124.5. [Ad valorem Tax Limitation]

Subject only to the exception in this section and notwithstanding any other provision of law, commencing with the 1990-91 fiscal year any ad valorem property tax levied by a district on taxable property in the district, other than special taxes levied and collected pursuant to annexation proceedings pursuant to Articles 1 (commencing with Section 350), 2 (commencing with Section 360), 3 (commencing with Section 370), and 6 (commencing with Section 405) of Chapter 1 of Part 7, shall not exceed the composite amount required to pay (1) the principal and interest on general obligation bonded indebtedness of the district and (2) that portion of the district's payment obligation under a water service contract with the state which is reasonably allocable, as determined by the district, to the payment by the state of principal and interest on bonds issued pursuant to the California Water Resources Development Bond Act as of the effective date of this section and used to finance construction of facilities for the benefit of the district. The restrictions contained in this section do not apply if the board of directors of the district, following a hearing held to consider that issue, finds that a tax in excess of these restrictions is essential to the fiscal integrity of the district, and written notice of the hearing is filed with the offices of the Speaker of the Assembly and the President pro Tempore of the Senate at least 10 days prior to that date of the hearing.

Added by Stats. 1984, ch. 271.

Sec. 130. [General Powers to Provide Water Services]

A district may do all of the following:

- (a) Acquire water and water rights within or without the state.
- (b) Develop, store, and transport water.
- (c) Provide, sell, and deliver water at wholesale for municipal and domestic uses and purposes.
- (d) Fix the rates for water, and the amount of any water standby or availability service charge or assessment. Any such water standby or availability service charge or assessment shall be deemed to be amounts paid by the member public agency to the district on tax assessments.
- (e) Acquire, construct, operate, and maintain any and all works, facilities, improvements, and property necessary or convenient to the exercise of the powers granted by this section.

Amended by Stats. 1984, ch. 271.

Sec. 133. [Fixing of Water Rates]

The board shall fix the rate or rates at which water shall be sold. Such rates, in the discretion of the board, may differ with reference to different sources from which water shall be obtained by the district. The board, under conditions and on terms found and determined by the board to be equitable, may fix rates for the sale and delivery to member public agencies of water obtained by the district from one source of supply in substitution for water obtained by the district from another and different source of supply, and may charge for such substitute water at the rate fixed for the water for which it is so substituted.

Sec. 134. [Adequacy of Water Rates; Uniformity of Rates]

The Board, so far as practicable, shall fix such rate or rates for water as will result in revenue which, together with revenue from any water stand-by or availability service charge or assessment, will pay the operating expenses of the district, provide for repairs and maintenance, provide for payment of the purchase price or other charges for property or services or other rights acquired by the district, and provide for the payment of the interest and principal of the bonded debt subject to the applicable provisions of this act authorizing the issuance and retirement of the bonds. Those rates, subject to the provisions of this chapter, shall be uniform for like classes of service throughout the district.

Amended by Stats. 1984, ch. 271

Sec. 134.5. [Water Standby or Availability of Service Charge]

(a) The board may, from time to time, impose a water standby or availability service charge within a district. The amount of revenue to be raised by the service charge shall be as determined by the board.

(b) Allocation of the service charge among member public agencies shall be in accordance with a method established by ordinance or resolution of the board. Factors that may be considered include, but are not limited to, historical water deliveries by a district; projected water service demands by member public agencies of a district; contracted water service demands by member public agencies of a district; service connection capacity; acreage; property parcels; population, and assessed valuation, or a combination thereof.

(c) The service charge may be collected from the member public agencies of a district. As an alternative, a district may impose a service charge as a standby charge against individual parcels within the district.

In implementing this alternative, a district may exercise the powers of a county water district under Section 31031 of the Water Code, except that, notwithstanding Section 31031 of the Water Code, a district may (1) raise the standby charge rate above ten dollars (\$10) per year by a majority vote of the board, and (2) after taking into account the factors specified in subdivision (b), fix different standby charge rates for parcels situated within different member public agencies.

(d) Before imposing or changing any water standby or availability service charge pursuant to this section, a district shall give written notice to each member public agency not less than 45 days prior to final adoption of the imposition or change.

(e) As an alternative to the two methods set forth in subdivision (c), a district, at the option of its board, may convert the charge to a benefit assessment to be levied pursuant to Sections 134.6 to 134.9, inclusive.

Added by Stats. 1984, ch. 271.

Sec. 239.2. [Limitation on Amount of Revenue Bonds]

No revenue bonds shall be issued under this chapter, except for refunding, unless the amount of equity of the district, as shown on its balance sheet as of the end of the last fiscal year prior to the issuance of such bonds, equals at least 100 percent of the aggregate amount of revenue bonds to be outstanding following the issuance of such bonds.

Added by Stats. 1972, ch. 169

FINANCIAL POLICIES (MWD ADMINISTRATIVE CODE)

FINANCIAL POLICIES

§ 4301. Cost of Service and Revenue Requirement.

(a) The District shall fix rates for water such that anticipated water revenues, together with anticipated revenues from any water standby or availability of service charge (such as the readiness-to-serve charge or capacity charge) or assessment, ad valorem tax revenues, and other revenues pay the expenses of the District, provide for repairs and maintenance, provide for payment of the purchase price or other charges for property or services or other rights acquired by the District, and provide for the payment of the interest and principal of the District's outstanding bonded debt. Subject to the foregoing, such rates and charges shall reflect the costs of the District's major service functions, including water supply, conveyance, power, storage, distribution and treatment to the greatest degree practicable.

§ 4304. Apportionment of Revenues and Setting of Water Rates.

(a) Not later than at its February meeting the General Manager shall present to the Finance and Insurance Committee of the Board:

(1) Determinations of the revenue requirements and cost of service analysis supporting the rates and charges required during the biennial period beginning the following July 1, as determined by the General Manager in accordance with current Board policies, and,

(2) Recommendations of rates including, but not limited to, the System Access Rate, Water Stewardship Rate, System Power Rate, Treatment Surcharge, and the Supply Rates for the various classes of water service to become effective each January 1 of the biennial period. These recommended rates shall be the General Manager's determination, made in accordance with current Board policies, of the rates necessary to produce substantially the revenues to be derived from water sales during the biennial period beginning the following July 1.

(b) Not later than at its February meeting, the General Manager shall also present to the Finance and Insurance Committee recommendations regarding the continuation of a water standby charge or the imposition of an availability of service charge (such as the readiness-to-serve charge and capacity charge), which shall be the General Manager's determination, made in accordance with current Board policies, of the charge necessary to produce substantially the revenues to be derived from fixed revenue sources, if any, exclusive of taxes, during the biennial period beginning the following July 1 which the Finance and Insurance Committee has determined to be necessary.

(c) Not later than its February meeting the Finance and Insurance Committee shall set a time or times for, and shall thereafter hold, one or more meetings of the Finance and Insurance Committee, to be held prior to its regular April meeting, at which interested parties may present their views regarding the proposed water rates and availability of service charges to said committee. The Finance and Insurance Committee shall direct the General Manager to cause the publication of a notice of such public hearing to be published in newspapers of general circulation within the District's service area. Such notice shall be published not less than 10 days prior to the public hearing.

(d) Not later than its regular April meeting the Finance and Insurance Committee shall make its determination regarding the revenue requirement to be paid from water rates and the water rates to become effective each January 1 of the biennial period and shall recommend said water rates to the Board no later than the Board's regular April meeting.

(e) Not later than its April meeting, the Board shall establish water rates for deliveries beginning each January 1 of the biennial period.

(f) Proposals for changes in water rates to become effective at times other than on January 1 shall require adequate notice to the public and a hearing before such proposals are acted upon by the Board, unless the Board finds that an immediate change in water rates is urgent.

Section 311.5 - M.I. 32924 – September 18, 1979, as clarified by M.I. 33059 – January 15, 1980; paragraph (g) [formerly Section 311.5.7] amended by M.I. 34867 – September 13, 1983. Section 311.5.7 repealed and Section 4304 adopted by M.I. 36464 – January 13, 1987, effective April 1, 1987; amended, new paragraphs (d), (f), (i) and (j) added and other paragraphs renumbered by M.I. 39976 – December 8, 1992; paragraphs (b) through (g), (i) and (j) amended by M.I. 41389 – May 9, 1995; paragraphs (a)–(d) amended by M.I. 42193 – December 10, 1996; paragraphs (b) through (g), and (i) and (j) amended by M.I. 43587 – June 8, 1999; paragraphs (a) through (k) amended by M. I. 44582 – August 20, 2001; paragraphs (a) – (g), (i), and (j) amended by M. I. 44812 – March 12, 2002; paragraph (a) amended, (a) (i) & (a) (ii) added, paragraphs (b) & (c) deleted, paragraphs (d) (e) (f) renumbered to (b) (c) (d), paragraph (g) renumbered to (e) and amended, paragraphs (h) (i) renumbered to (f) (g), and paragraphs (j) (k) renumbered to (h) (i), by order of M. I. 45537 – October 14, 2003; paragraphs (a)–(e) and (g)–(h) amended by M. I. 46064 – January 11, 2005; paragraphs (a) through (e), (g) and (h) amended (committee name change) by M. I. 46148 – March 8, 2005; paragraphs (a)–(i) amended by M.I. 46983 February 13, 2007; paragraph(b) and (c) amended, paragraph (d) deleted and renumbered by M.I. 47636 – September 9, 2008; paragraphs (c)–(e) amended by M.I. 48171 – February 9, 2010; paragraphs (a)–(g) amended by M.I. 48534 – January 11, 2011; amended § 4304 title, amended paragraphs (a)–(f), deleted former paragraphs (f) and (g), and renumbered former paragraph (h) by M.I. 49187 – September 11, 2012.

§ 5101. Investment of Surplus Funds.

(a) Pursuant to Government Code Section 53607, this Board shall delegate to the Treasurer of the District annually the authority to invest or to reinvest funds of the District subject to the terms and conditions set forth in this Section 5101. The Treasurer shall report each month transactions made pursuant to this delegation.

(b) The terms and conditions of this delegation to the Treasurer are as follows:

(1) The Treasurer shall assume full responsibility for all transactions hereby delegated.

(2) The Treasurer may invest such portion of any money in any sinking fund of the District, or any surplus moneys in the District's treasury not required for the immediate necessities of the District, as the Treasurer deems wise or expedient, in any of the securities authorized for investment by local agencies pursuant to Government Code Section 53601 or any successor statute; provided that such investments meet the requirements of the most current Statement of Investment Policy approved by the Board, pursuant to Section 5114 below.

(3) The Treasurer may make any investment by direct purchase of any issue of the specified securities at their original sale or after they have been issued.

(4) The available cash amount and maximum period for any such investment by the Treasurer shall be determined by the General Manager. The Treasurer shall not liquidate any such investment except:

(i) To meet the District's cash requirements, which shall be determined by the General Manager; or

(ii) To generate cash for reinvestment whenever the General Manager determines that such reinvestment is in the District's interest.

The Treasurer shall not exchange any such investment unless the General Manager determines that such exchange is in the District's interest.

Subject to the above provisions of this subsection 5101(b)(4), the Treasurer may enter into a reverse repurchase agreement, so long as the proceeds of the reverse repurchase agreement are invested solely to supplement the income normally received from the securities involved in the agreement.

(5) The General Counsel shall review monthly and, if appropriate, approve as to eligibility the securities invested in by the Treasurer in the preceding month and report the determinations to the Board.

(6) Investment of Deferred Compensation Fund.

(i) The Treasurer may invest funds held by the District pursuant to the District's deferred compensation plan in accordance with this Section 5101, and may liquidate such investments to comply with the provisions of the plan in accordance with the determinations of the General Manager.

(ii) The Treasurer may also deposit for purposes of investment funds held by the District, pursuant to the District's deferred compensation plans, in the Metropolitan Water District Federal Credit Union to the limit insured by the National Credit Union Share Insurance Fund.

(c) The Treasurer is authorized to enter into safekeeping agreements, in form approved by the General Counsel, and thereafter may deposit for safekeeping the bonds, notes, bills, debentures, obligations, certificates of indebtedness, warrants or other evidences of indebtedness in which the money of the District is invested pursuant to the terms and conditions of this Section 5101 with any state or national bank with which there is a safekeeping agreement and which has sufficient security, as required by law, to secure the amount of any collections. All net collections which may be made by the bank from time to time pursuant to said safekeeping agreement shall immediately be deposited in a deposit account held by a state or national bank within this state which is supported by sufficient security, as required by law, to secure the amount of such collections. The Treasurer shall take from such bank a receipt for securities so deposited either in definitive form in such bank or held in book-entry form on the books of the Federal Reserve Bank. All securities purchased shall be held in safekeeping under such agreements and shall only be released from safekeeping pursuant to such agreements.

Res. 7695 - December 7, 1976; Section 471.2 amended by M.I. 33083 - January 15, 1980; paragraph (b)(6) [formerly Section 471.2.2.6] amended by M.I. 33208 - April 18, 1980; paragraph (b)(2)(vi) [formerly Section 471.2.2.2.6] added by M.I. 34811 - August 17, 1983; paragraph (b)(2) [formerly Section 471.2.2.2] amended by M.I. 35122 - May 8, 1984; paragraph (b)(5) [formerly Section 471.2.2.5] amended by M.I. 35462 - January 8, 1985; paragraphs (b)(2)(vii) and (b)(2)(viii) [formerly Sections 471.2.2.2.7 and 471.2.2.2.8] and paragraph (b)(6)(ii) [formerly Section 471.2.2.6.2] added and paragraph (b)(6) renumbered by M.I. 35555 - March 12, 1985; paragraph (b)(2)(iv) [formerly Section 471.2.2.2.4] amended and paragraph (b)(2)(ix) [formerly Section 471.2.2.2.9] added by M.I. 36272 - September 9, 1986. Section 471.2 repealed and Section 5101 adopted by M.I. 36464 - January 13, 1987, effective April 1, 1987; paragraph (b)(2)(vii) amended by M.I. 36492 - February 10, 1987 and by M.I. 36761 - August 18, 1987; amended by M.I. 36811 - September 22, 1987; amended by M.I. 38234 - May 8, 1990; paragraph (B)(2) amended by M.I. 38577 - November 20, 1990; paragraph (B)(2) amended by M.I. 39171 - August 20, 1991; paragraph (B)(2)(vi) amended by M.I. 39497 and (B)(2)(x) added by M.I. 39496 - March 10, 1992; paragraph (B)(2) amended by M.I. 39785 - August 20, 1992; paragraph (b)(2) amended and subparagraphs of (b)(2)(i) through (x) repealed by M.I. 40682 - February 8, 1994; paragraph (a) amended by M.I. 42275 - February 11, 1997; paragraph (c) amended by M.I. 42559 - August 19, 1997.

§. 5107. Biennial Budget Process.

(a) There shall be prepared each even-numbered year, under the direction of the General Manager, a proposed biennial budget covering District operations for the following two fiscal years. The proposed biennial budget shall be submitted to the Board no later than the date of the regular Board meeting in June immediately preceding the first fiscal year of the biennium to which the budget applies. The proposed biennial budget shall indicate by fund all anticipated expenses and required reserves and the source of revenues to be used to meet such expenses and provide such reserves. The proposed biennial budget will at a minimum include a five-year financial forecast. At least one Board Workshop on the proposed biennial budget will be conducted prior to submission of the proposed biennial budget for Board approval. The Finance and Insurance Committee shall review the proposed biennial budget in its entirety, together with the recommendations from the Board workshop, and report its recommendations to the Board.

(b) After considering the proposed biennial budget and making any revisions thereto that it may deem advisable, the Board shall adopt the biennial budget before the beginning of the biennial period to which the budget applies. The amounts provided in the adopted budget for the biennial period for total expenses for operations and maintenance, including minimum and variable operations and maintenance charges under water or power contracts with the State, for capital charges under such contracts, and for debt service shall be deemed to be appropriated from the funds indicated in the budget.

(c) The adoption of the budget shall have no effect upon appropriations for capital projects and continuing expenditures not susceptible to immediate direct allocation, as described in Section 5108 hereof, and shall not establish any limitations on expenditures for such purposes.

(d) The total operations and maintenance budget shall be measured against the regional rate of inflation as measured by the five-year rolling average change in the Consumer Price Index (CPI) for the Los Angeles-Riverside-range County area, not seasonally adjusted, for all items as reported by the U. S. Bureau of Labor Statistics. The budget will include explanations of increases greater than the CPI due to unique conditions, growth or expansion of services.

Ords. 127 and 129; repealed by Ord. 146; Section 471.8 added, as amended, by M.I. 32690 - April 10, 1979; amended by M.I. 36110 - June 10, 1986. Section 471.8 repealed and Section 5107 adopted by M.I. 36464 - January 13, 1987, effective April 1, 1987; paragraph (a) amended by M.I. 36535 - March 10, 1987; paragraph (a) amended by M.I. 40231 - May 11, 1993; paragraph (a) amended by M.I. 41755 - February 13, 1996; paragraphs (a) and (b) amended by M.I. 42060 - September 10, 1996; paragraph (a) amended by M.I. 42193 - December 10, 1996; paragraph (a) amended by M. I. 44095 - July 11, 2000; paragraph (a) amended by M. I. 44582 - August 20, 2001; paragraph (a) amended and paragraph (d) added by M. I. 45904 - September 14, 2004; paragraph (a) amended by M. I. 46064 - January 11, 2005; paragraph (a) amended by M.I. 46148 - March 8, 2005; paragraph (a) amended by M.I. 46983 - February 13, 2007; paragraph (a) amended by M.I. 48534 - January 11, 2011; section title and paragraphs (a)-(b) amended by M.I. 48800 - September 13, 2011; paragraphs (a), (b), and (d) amended by M.I. 49187 - September 11, 2012

The District operates as a single enterprise fund for financial statements and budgeting purposes. Through its administrative code the District identifies a number of accounts, which are referred to as funds, to separately track uses of monies for specific purposes.

§ 5109. Capital Funding from Current Revenues.

To preserve debt capacity for evolving or unexpected financial needs Metropolitan shall fund replacements and refurbishments, capital projects costing less than \$1 million, or capital projects with useful lives less than the typical bond terms, and reimbursable capital projects from annual revenues. The Board's objective shall be to fund annually on a pay-as-you-go basis these elements of the CIP to maintain stable water rates and charges, strong financial ratios, debt capacity and appropriate reserve levels. The amount of annual expenses paid from current revenues shall be determined by the Board as part of the biennial budget process and shall include the costs of:

(a) Capital facilities or projects totaling \$1,000,000 or less.

(b) Capital assets with estimated payback periods or useful lives shorter than the calculated average life of alternative long-term bond financing.

(c) Capital improvement program studies.

(d) Replacements and refurbishment of Metropolitan facilities or portions thereof.

(e) Reimbursable capital projects.

The costs relating to provisions (a) through (c) above shall be paid from operating revenues, including revenues derived from water standby or availability service charges or benefit assessments, and proceeds from disposals of surplus property made available for expenditure by the Board.

M.I. 37449 - December 13, 1988; paragraph (c) added and renumbered (d) by M.I. 37530 - February 14, 1989; amended by M.I. 37679 - May 9, 1989; amended by M.I. 41580 - September 12, 1995; first paragraph and (d) amended by M.I. 43434 - March 9, 1999; paragraph (d) amended by M. I. 44907 - June 11, 2002; Section renamed, paragraph (d) amended and paragraph (e) added by M. I. 45904 - September 14, 2004; paragraph amended by M.I. 48800 - September 13, 2011; unnumbered introductory paragraph, and item(d) amended by M.I. 49187 - September 11, 2012.

§ 5114 (a). Reporting Requirements of the Treasurer.

The Treasurer shall:

(a) Render, not later than the June Board meeting, a Statement of Investment Policy for the following year, to be considered for approval by the Board.

§. 5200. Funds Established.

To provide for accountability of public moneys in accordance with applicable federal and state law and regulations and Board policies, the following funds active or prospectively active have been established in the Treasury of the District:

(a) General Fund (Fund No. 1001, established 1929). Moneys not specifically allocated or appropriated may be placed in this fund and used for general purposes of the District. Expenditures for reimbursable work and water conservation capital and indirect costs under the contract with Imperial Irrigation District are paid from this fund.

(b) Replacement and Refurbishment Fund (Fund No. 5001, established 1988). Used to finance certain capital program expenditures from current revenues in accordance with Section 5109, subject to the conditions contained in Section 5202(b).

(c) State Contract Fund (Fund No. 5701, established 1960). Used for the payment of capital charges under the SWC, including the capital charges for off-aqueduct power facilities, subject to the conditions contained in Section 5201(d).

(d) Special Tax Fund (Fund No. 5702, established 1951). Annexation fees (cash payments and special tax collections) are deposited in this fund and transferred to the State Contract Fund to pay a portion of SWC capital charges.

(e) Water Revenue Fund (Fund No. 1002, established 1975). Receipts from water sales are deposited in this fund and are transferred to various other funds in accordance with revenue bond covenants and Board resolutions to pay in order of priority:

- (1) Operation and maintenance expenditures;
- (2) Principal of, premium, if any, and interest on the Prior Lien Waterworks Revenue Bonds and any required deposits into any reserve funds or accounts therefore;
- (3) The interest on and bond obligation of Subordinate Lien Water Revenue Bonds and Parity Obligations issued pursuant to Master Resolution 8329 (the Master Resolution) adopted by the Board on July 9, 1991 and any Supplemental Resolutions thereto;
- (4) All other payments required for compliance with the Master Resolution, and any Supplemental Resolutions;
- (5) Principal of and interest on Commercial Paper Notes and other amounts due a provider of a liquidity facility;
- (6) Deposits into the Water Standby Charge Fund in accordance with resolutions imposing such charges; and
- (7) Any other obligations which are charges, liens, or encumbrances upon or payable from net operating revenues.

Moneys remaining at the end of each month, after the foregoing transfers, are transferred to the Revenue Remainder Fund.

(f) Operation and Maintenance Fund (Fund No. 1003, established 1975). Used to pay all operation and maintenance expenditures, including SWC operation, maintenance, power and replacement charges, subject to the conditions contained in Section 5201(f).

(g) Revenue Remainder Fund (Fund No. 1004, established 1975). Used to maintain working capital and may be used for any lawful purpose by the District, subject to the conditions contained in Section 5202.

(h) Water Rate Stabilization Fund (Fund No. 5501, established 1987). Used to reduce future water revenue requirements or, as directed by the Board, for other lawful purposes, in accordance with Section 5202.

(i) Water Treatment Surcharge Stabilization Fund (Fund No. 5502, established 1988). Used to mitigate required increases in the surcharge for water treatment or, as directed by the Board, for other lawful purposes, in accordance with Section 5202.

(j) Revolving Construction Fund (Fund No. 5003, established 1988). Capital expenditures made from this fund are to be reimbursed from proceeds of security sales to the extent such expenditures are authorized uses of debt proceeds under the Act, subject to the conditions and restrictions contained in Section 5201(g).

(k) Employee Deferred Compensation Fund (Fund No. 6003, established 1976). Compensation deferred by employees under Section 457 of the Internal Revenue Code of 1986, as amended, is deposited in this fund and is withdrawn in accordance with Articles 2 and 3 of Chapter 7 of Division VI of this Administrative Code.

(l) Iron Mountain Landfill Closure/Postclosure Maintenance Trust Fund (Fund No. 6005, established 1990). Used as a trust fund to maintain moneys sufficient to cover the costs of closure and postclosure maintenance of the District's solid waste landfill facility at Iron Mountain, in accordance with regulations of the California Integrated Waste Management Board, and subject to the conditions contained in Section 5201(l).

(m) Water Standby Charge Fund (Fund No. 1005, established 1992). Used to separately hold revenues attributable to water standby charges; amounts deposited in this fund are used exclusively for the purpose for which the water standby charge was authorized.

(n) Water Transfer Fund (Fund No. 1007, established 1995). Used for moneys set aside for the purchase of water through transfers or similar arrangements, and for the costs of filling the Eastside Reservoir Project.

(o) Self-Insured Retention fund (Fund No. 1008, established 1999). Used to separately hold amounts set aside for emergency repairs and claims against the District as provided in Section 5201(o).

(p) Lake Mathews Multi Species Reserve Trust fund (Fund 6101, established 1997.) Used as set forth in agreement between Metropolitan and the Riverside County Habitat Conservation Agency for the Multi Species Reserve.

(q) There shall be established in the Treasury of the District such funds and accounts as are required pursuant to bond covenants, tax and non-arbitrage certificates, bond counsel letters of instruction and related documents, to provide for accountability of District funds and compliance with applicable federal and state law and regulations. Such funds and accounts shall be established for each issue of bonds, notes or other obligations of the district as required in the respective bond or note resolution and closing documents.

(r) Water Stewardship Fund (Fund No. 1009 established 2005). Used to collect revenue from the Water Stewardship Rate and to pay costs associated with water recycling, seawater desalination, conservation, brackish water desalination, or other demand management programs. These funds can also be used to fund administrative costs associated with these programs. Funds may be used as directed by the Board, for other lawful purposes, in accordance with Section 5201(p) and Section 5202(d).

38241 – May 8, 1990; amended and paragraph (bb) added by M.I. 38305 – June 12, 1990; paragraphs (cc), (dd) and (ee) added by M.I. 38999 – June 11, 1991; amended and paragraphs (ff), (gg), (hh) and (ii) added by M.I. 39171 – August 20, 1991; paragraphs (jj), (kk), and (ll) added by M.I. 39785 – August 20, 1992; paragraph (k)(6) added, paragraph (jj) added, paragraphs (kk) – (mm) renumbered by M.I. 39925 – November 10, 1992; new paragraphs (nn) through (uu) added by M.I. 40272 – June 15, 1993; paragraph (bb) amended by M.I. 40273 – June 15, 1993; paragraphs (vv) through (bbb) added by M.I. 40388 – August 24, 1993; paragraphs (i) and (q) amended, paragraph (r) deleted and remainder of section renumbered by M.I. 40443 – September 21, 1993; paragraph (q) amended by M.I. 40976 – August 19, 1994; paragraph (bbb) added by M.I. 41581 – September 12, 1995; paragraphs (a) through (bbb) amended and new paragraphs (bbb) through (sss) added by M.I. 42817 – February 10, 1998; paragraphs (ttt) through (aaaa) added April 1998, by authority granted to the General Counsel by M.I. 42817 – February 10, 1998; paragraphs (bbbb) through (jjjj) added September 1998, by authority granted to the General Counsel by M.I. 42817 – February 10, 1998; paragraph (kkkk) added by M.I. 43434 – March 9, 1999; paragraph (a) amended, old paragraphs (c), (g)–(j), (m), (n), (p), (q), (u)–(x), (z), (bb)–(hh), (jj)–(aaa), and (ccc)–(jjjj) deleted, remaining paragraphs renumbered, and new paragraphs (q) and (r) added by M. I. 45249 – March 11, 2003; paragraph (b) amended, paragraph (e) repealed and paragraphs (f) – (r) renumbered by M. I. 45904 – September 14, 2004; new paragraph (r) added by M. I. 46266 – June 14, 2005; paragraph (g) amended by M. I. 46838 – October 10 2006.

§. 5201. Restricted Funds.

Cash and securities to be held in the various ledger funds shall be as follows:

(a) General Obligation Bond Interest and Principal Funds and the Waterworks General Obligation Refunding Bonds Interest and Principal Funds, the cash and securities in each as of June 30, shall be at least equal to the debt service for the ensuing 18 months, less revenues anticipated to be derived from the next succeeding tax levy specifically for such debt service.

(b) For the Waterworks Revenue Bonds Interest and Principal Funds, the Water Revenue Bonds Reserve Funds, the Water Revenue Refunding Bonds Interest and Principal Funds and the Water Revenue

Refunding Reserve Bonds, the cash and securities in each shall be at least equal to the minimums required by the resolutions of issuance for such bonds.

(c) For the Bond Construction Funds there shall be no minimum requirements; provided that any cash and securities in such funds shall be restricted to use for the purposes such finances were required.

(d) For the State Contract Fund, cash and securities on hand June 30 and December 31 shall equal the capital payments to the State Department of Water Resources that are due on July 1 of the same year and January 1 of the following year, respectively.

(e) For the Special Tax Fund, there shall be no minimum requirement.

(f) For the Operation and Maintenance Fund, cash and securities shall be at least equal to the minimum required by the resolutions of issuance for revenue bonds.

(g) For the Revolving Construction Fund, there shall be no minimum requirement. Cash and securities in this fund, unless restricted as to use by resolution of the Board, shall be available for transfer to the Water Rate Stabilization Fund and the Water Treatment Surcharge Stabilization Fund at the discretion of the Board.

(h) For the Commercial Paper, Series A, Note Payment Fund, and the Commercial Paper, Series B, Note Payment Fund, the District shall deposit amounts sufficient to pay principal of, and interest on, such Commercial Paper Notes in an amount at least equal to one-half of the projected interest payments due on such notes in the subsequent fiscal year.

(i) For the Water Standby Charge Fund, there shall be no minimum requirement; provided that any cash and securities in such fund shall be restricted to use for the purposes such moneys were authorized.

(j) For the General Obligation Bond Excess Earnings Funds, the Waterworks General Obligation Refunding Bond Excess Earnings funds, the Water Revenue Bond Excess Earnings Funds and the Water Revenue Refunding Bond Excess Earnings Funds, the minimum requirement shall be the amounts deposited into this fund in accordance with the provisions of the Tax and Nonarbitrage Certificates and Resolutions for the Bonds.

(k) For the Waterworks General Obligation Refunding Bonds, 1993 Series A1 and A2, Escrow Account Fund, the minimum requirement shall be the amounts necessary to pay the principal, if any, and the interest on the Series A1 and A2 Bonds to the crossover date, and to defease certain maturities of outstanding prior general obligation bonds.

(l) For the Iron Mountain Landfill Closure/Postclosure Maintenance Trust Fund, cash and securities as of June 30, shall be at least equal to the Chief Executive Officer's latest estimates of closure and postclosure maintenance costs.

(m) For the Optional General Obligation Bond Redemption Fund and the Optional Revenue Bond Redemption Fund, the minimum requirement shall be the amount necessary to redeem such untendered, refunded bonds which have been called for redemption.

(n) For the Water Transfer Fund, all amounts budgeted or pledged for purchase of water through transfers or similar arrangements, and for the costs of filling the Eastside Reservoir Project, shall be set aside in such fund and used solely for such purpose.

(o) For the Self-Insured Retention fund, all amounts in such fund shall be set aside and used solely for emergency repairs and claims against the District. The minimum cash and securities to be held in such fund as of June 30 of each year shall be \$25 million.

(p) For the Water Stewardship Fund, there shall be no minimum requirement; all amounts in such fund shall be used to fund the CCP, Local Resources Program, seawater desalination, brackish water desalination, and similar demand management programs, including the departmental operations and maintenance costs for administering these programs.

Section 331.1 - M.I. 32735 - May 8, 1979, effective July 1, 1979 [Supersedes M.I. 30984 - August 19, 1975; M.I. 31826 - June 14, 1977 and M.I. 32292 - June 13, 1978]; paragraph (f) [formerly Section 331.1.6] added by M.I. 35309 - September 11, 1984. Section 331.1 repealed and Section 5200 adopted by M.I. 36464 - January 13, 1987, effective April 1, 1987; amended by M.I. 36676 - June 9, 1987; paragraph (g) added by M.I. 37449 - December 13, 1988; renumbered to Section 5201 and paragraphs (a) and (c) amended by M.I. 38241 - May 8, 1990; paragraph (c) amended and paragraph (h) added by M.I. 38999 - June 11, 1991; paragraphs (b) and (c) amended by M.I. 39171 - August 20, 1991; paragraphs (b) and (c) amended by M.I. 39785 - August 20, 1992; paragraph (i) added by M.I. 39925 - November 10, 1992; paragraphs (a)(b)(c) amended and paragraph (j)(k) added by M.I. 40272 - June 15, 1993; paragraph (h) amended and paragraph (l) added by M.I. 40273 - June 15, 1993; paragraphs (a), (b), and (j) amended by M.I. 40388 - August 24, 1993; paragraph (j) amended and paragraph (m) added by M.I. 40443 - September 21, 1993; paragraph (n) added by M.I. 41581 - September 12, 1995; paragraphs (b)(c)(h)(j)(k)(l)(n) amended by M.I. 42817-- February 10, 1998; paragraphs (b), (c), and (j) amended April 1998 by authority granted the General Counsel by M.I. 42817 - February 10, 1998; paragraph (o) added by M.I. 43434 - March 9, 1999; paragraphs (a)-(c), and (j) amended by M. I. 45249 - March 11, 2003; paragraph (n) amended by M. I. 45775 - June 8, 2004; paragraph (p) added by M. I. 46266 - June 14, 2005.

§. 5202. Fund Parameters.

The minimum cash and securities to be held in the various ledger funds as of June 30 of each year shall be as follows:

- (a) For the Revenue Remainder Fund cash and securities on hand of June 30 of each year shall be equal to the portion of fixed costs of the District estimated to be recovered by water revenues for the eighteen months beginning with the immediately succeeding July. Such funds are to be used in the event that revenues are insufficient to pay the costs of the District.
- (b) For the R&R Fund, any unexpended monies shall remain in the Fund for purposes defined in Section 5109, or as otherwise determined by the Board. The end-of-year fund balance may not exceed \$95 million. Available monies in excess of \$95 million at June 30 shall be transferred to the Water Rate Stabilization Fund, unless otherwise determined by the Board.
- (c) Amounts remaining in the Revenue Remainder on June 30 of each year after meeting the requirements set forth in Section 5202(a) shall be transferred to the Water Rate Stabilization Fund and to the extent required under Section 5202(d), to the Water Treatment Surcharge Stabilization Fund.
- (d) After making the transfer of funds as set forth in Section 5202(c), a determination shall be made to substantially identify the portion, if any, of such transferred funds attributable to collections of treatment surcharge revenue in excess of water treatment cost and to collections of water stewardship rate revenue in excess of costs of the CCP, Local Resources Program seawater desalination and similar demand management programs, including the departmental operations and maintenance costs of administering these programs.. Such funds shall be transferred to the Water Treatment Surcharge Stabilization Fund and the Water Stewardship Fund, respectively, to be available for the principal purpose of mitigating required increases in the treatment surcharge and water stewardship rates. If such determination indicates a deficiency in treatment surcharge or water stewardship rate revenue occurred during the fiscal year, a transfer of funds shall be made from the Water Treatment Surcharge Stabilization Fund or the Water Stewardship Fund, as needed and appropriate, to reimburse funds used for the deficiency. Notwithstanding the principal purpose of the Water Treatment Surcharge Stabilization Fund and the Water Stewardship Fund, amounts assigned to these fund shall be available for any other lawful purpose of the District.
- (e) Amounts in the Water Rate Stabilization Fund shall be held for the principal purpose of maintaining stable and predictable water rates and charges. The amount to be held in the Water Rate

Stabilization fund shall be targeted to be equal to the portion of the fixed costs of the District estimated to be recovered by water revenues during the two years immediately following the eighteen-month period referenced in Section 5202(a). Funds in excess of such targeted amount shall be utilized for capital expenditures of the District in lieu of the issuance of additional debt, or for the redemption, defeasance or purchase of outstanding bonds or commercial paper of the District as determined by the Board. Provided that the District's fixed charge coverage ratio is at or above 1.2 amounts in the Water Rate Stabilization Fund may be expended for any lawful purpose of the District, as determined by the Board of Directors, provided that any funds distributed to member agencies shall be allocated on the basis of all water sales during the previous fiscal year, such sales to include sales under the Interim Agricultural Water Program, Replenishment Service Program and all Full Service water sales.

Notwithstanding the fund parameters set forth in this Section 5202, including, but not limited to, any minimum fund balances or specified uses and purposes, all amounts held in the foregoing funds shall be available to pay interest on and Bond Obligation (including Mandatory Sinking Account Payments) of Water Revenue Bonds issued pursuant to Resolution 8329 adopted by the Board on July 9, 1991, as amended and supplemented (the Master Resolution), and Parity obligations. Capitalized terms not defined in this paragraph shall have the meanings assigned to such terms in the Master Resolution.

Section 331.2 - M.I. 32735 - May 8, 1979, effective July 1, 1979 [Supersedes M.I. 30984 - August 19, 1975; M.I. 31826 - June 14, 1977 and M.I. 32292 - June 13, 1978]; amended by M.I. 35309 - September 11, 1984; amended by M.I. 35730 - July 9, 1985. Section 331.2 repealed and Section 5201 adopted by M.I. 36464 - January 13, 1987, effective April 1, 1987; paragraph (a) amended and paragraph (b) added by M.I. 36676 - June 9, 1987; paragraph (a) amended by M.I. 36731 - July 14, 1987; paragraph (b) amended and paragraph (c) added by M.I. 37007 - February 9, 1988; amended by M.I. 37449 - December 13, 1988; paragraph (a) amended by M.I. 37679 - May 9, 1989; renumbered to Section 5202 by M.I. 38241 - May 8, 1990; paragraphs (c) and (d) amended by M. I. 38304 - June 12, 1990; paragraph (a) amended by M.I. 39794 - August 20, 1992; paragraph (e) added by M.I. 41581 - September 12, 1995; Section renamed and paragraphs (a)-(c) and (e) amended by M.I.43434 - March 9, 1999; paragraph (e) amended by M.I. 43587 - June 8, 1999; paragraph (b), (c) and (e) amended by M. I. 44907 - June 11, 2002; paragraph (b) amended by M. I. 45904 - September 14, 2004; paragraph (d) amended by M. I. 46266 - June 14, 2005; paragraph (e) amended by M. I. 46838 - October 10, 2006; final paragraph added by M.I. 47286 - November 20, 2007.

§. 5203. Indirect Credit of District.

The Chief Executive Officer may negotiate with the Department of Water Resources on the basis of using the indirect credit of the District to finance State Revenue Bonds so long as the obligation of the District thereunder does not exceed the obligation required under the State Contract.

Section 331.2 renumbered 331.3. Section 331.3 repealed and Section 5202 adopted by M.I. 36464 - January 13, 1987, effective April 1, 1987; renumbered to Section 5203 by M.I. 38241 - May 8, 1990.

§. 5204. Compliance with Fund Requirements and Bond Indenture Provisions.

As of June 30 of each year, the Chief Executive Officer shall make a review to determine whether the minimum fund requirements outlined in this Chapter have been met and whether the District has complied with the provisions of the articles and covenants contained in the resolutions of issuance for all outstanding District bond issues during the preceding fiscal year. The Chief Executive Officer, after consulting with the General Counsel, shall report the results of his review in writing to the Board of Directors annually.

Section 331.4 - M.I. 34190 - April 13, 1982. Section 331.4 repealed and Section 5203 adopted by M.I. 36464 - January 13, 1987, effective April 1, 1987; amended by M.I. 36676 - June 9, 1987; renumbered to Section 5204 by M.I. 38241 - May 8, 1990

OPERATING POLICIES

O.P. NUMBER	TITLE	ISSUE DATE	REVISION DATE
F-01	Operating, Expensed and Capital Equipment	3/17/97	5/29/02

- SUMMARY** This policy relates to the purchase, assignment, tracking, maintenance, and retirement of operating, expensed and capital (OEC) equipment.
- SUPERSESION** This Operating Policy supersedes Operating Policy F-01 dated March 17, 1997.
- AUTHORITY** The Chief Executive Officer (CEO) delegates the authority to establish and maintain OEC equipment policies and procedures to the Chief Financial Officer and Business Services Section, respectively.
- DEFINITIONS**
- Operating Equipment:** a discrete piece of equipment that is not a component part of a fixed asset or stationary facility. The equipment must have:
- An original purchase cost equal to or greater than \$5,000. The capitalized amount includes the cost of the equipment, tax, transportation, delivery, third-party installation, and other acquisition costs.
 - A useful life of at least five years from the date of acquisition (four years for vehicles).
- Expensed Equipment:** a discrete piece of equipment that is not a component part of a fixed asset or stationary facility and has an original purchase cost of less than \$5,000. Attachments and improvements to expensed equipment are also expensed.
- **Trackable:** expensed equipment that must be tracked because it is loss prone or incurs monthly charges. Items that incur monthly charges, such as cell phones, are tracked by their coordinators.

- **Nontrackable:** those pieces of expensed equipment that do not meet the criteria stated above.

Capital Equipment: equipment that is charged to capital projects and entered at zero cost in the Oracle Asset Tracking System (OATS).

POLICIES

1. Operating equipment is purchased through the operating equipment appropriation and general fund. Operating equipment is capitalized and depreciated.
2. Expensed equipment is acquired through the Operations and Maintenance (O&M) budget fund under the Equipment Expensed account. Expensed equipment is not capitalized.
3. Capital equipment is charged to the appropriate capital project. Operating equipment purchased to support a capital project or contract is depreciated against the life of the project. When the equipment is sold, the net proceeds are credited against the project cost.
4. Metropolitan assets classified as OEC equipment are purchased, received, tracked, and retired in the operating equipment database (OATS). Access to the OATS database is granted only to regular employees.
 - OEC equipment is assigned only to regular employees by their managers or supervisors.
 - Upon receipt, OEC equipment is barcoded by designated site receivers or their alternates.
5. Operating equipment upgrades extend the life or increase the functional capability of major pieces of operating equipment and are capitalized, provided the upgrade meets the following criteria:
 - Cost exceeds \$5,000
 - Cost is greater than 50% of the original total purchase price of the equipment
 - Upgrade extends the estimated life of the equipment by at least three years

O.P. NUMBER	TITLE	ISSUE DATE	REVISION DATE
F-07	Capitalization & Retirement of Plant Assets	3/6/02	3/12/09

SUMMARY This document establishes the policies governing the capitalization and retirement of plant assets.

SUPERSESSION This Operating Policy supersedes Operating Policy F-07 originally issued September 23, 1998; revised March 6, 2002.

AUTHORITY The General Manager delegates the authority to establish and maintain policies regulating the capitalization and retirement of plant assets to the Chief Financial Officer/Assistant General Manager or designee.

DEFINITIONS Component Equipment – equipment considered to be part of a plant, usually determined when the item is permanently affixed in one location (as opposed to operating equipment as defined in Operating Policy F-01, Operating, Expensed and Capital Equipment).

Plant Assets – a new facility, betterment, replacement/refurbishment, or equipment which is a component part of a plant and that has both:

- A total cost of at least \$50,000
- A useful life of at least five years

Replacement/Refurbishment – the substitution/repair of a new facility or component of an existing facility. A replacement always involves a replacement of facilities or component, and a refurbishment may involve the replacement of facilities or component.

Retirement – the result of the replacement of existing facilities with new facilities designed to accomplish the same function, or as the result of the sale or abandonment of facilities that are no longer of economic use.

Service Connection – a pipeline, with its appurtenances, that branches off or connects the water distribution system to customer facilities.

Integrated Software – computer software that is integrated into and necessary to operate general plant and equipment (e.g., Supervisory Control and Data Acquisition system [SCADA], telephone system, and computer-operated lathes), rather than perform an application.

POLICIES

1. Any item of cost that conforms to the criteria of plant assets shall be capitalized as a plant asset; otherwise the cost is charged to operations and maintenance expense.
2. When multiple components of a plant asset are acquired or built, and the components have individual costs of less than \$50,000, the cost of these items is an operations and maintenance expense. If the components have useful lives of five years or more, they are capitalized when:
 - The aggregate total costs exceed \$50,000, and
 - The components are added simultaneously or within a planned short period of time.
3. Service connections are capitalized as plant assets and are not subject to the \$50,000 cost criterion. Customers pay the cost of acquiring and installing service connections. The customer contribution is recorded as contributed capital.
4. Integrated software is considered part of the plant and equipment of which it is an integral part and capitalized and depreciated accordingly. The aggregate cost of the hardware and software is used to determine whether to capitalize or expense the costs.
5. Replacement or refurbishment costs are charged to operations and maintenance expense provided such costs do not exceed the capital cost and useful life criteria for the assets involved.
6. Plant assets replaced, sold or abandoned are removed from accounting records. The Engineering Services Section notifies the Controller of plant assets to be retired.
7. Costs of replacement plant assets are accumulated under separate and identifiable project numbers. Project descriptions identify, to the extent practicable, the plant assets being retired.

STATEMENT OF INVESTMENT POLICY (June 13, 2017)

I. INVESTMENT AUTHORITY

In accordance with Section 53600 et seq. of the Government Code of the state of California (California Government Code), the authority to invest public funds is expressly delegated to the Board of Directors for subsequent re-delegation to the Treasurer. Investments by the Treasurer pursuant to the delegation hereby made by this Statement of Investment Policy are limited to those instruments specified by the Board in Section 5101 of the Metropolitan Water District Administrative Code, and as further defined in this Statement of Investment Policy.

II. STATEMENT OF OBJECTIVES

Per Section 53600.5 of the California Government Code, the primary objective of the Treasurer shall be to safeguard the principal of the funds under their control when investing public funds. The secondary objective shall be to meet liquidity requirements and the third objective shall be to achieve a return on the funds under their control.

In order of priority, three fundamental criteria shall be followed in the investment program:

1. Safety of Principal - Investments shall be undertaken in a manner which first seeks to ensure the preservation of principal in the portfolio. Each investment transaction shall be entered into after taking into consideration the quality of the issuer, the underlying security or collateral, and diversification of the portfolio. Cash flow analysis will be conducted and utilized to avoid the need to sell securities prior to maturity and to reduce market risk.
2. Liquidity - In an effort to ensure that Metropolitan's portfolio will be sufficiently liquid to meet current and anticipated operating requirements, a cash flow analysis will be performed on an ongoing basis. Investments shall be made so that the maturity date is compatible with cash flow needs and safety of principal.
3. Return on Investment - Investments shall be undertaken to produce an acceptable rate of return after first considering safety of principal and liquidity and the prudent investor standard.

The Investment Strategy is subordinate to the Statement of Objectives, i.e., implementing the investment strategies listed below is not intended to supersede the objectives of Safety, Liquidity and Return.

Investment Programs - The portfolio is divided into long-term, short-term and bond reserves segments. The long-term segment of the portfolio will be actively managed, and performance measured against the Bank of America Merrill Lynch, Corporate and Government, 1 to 5 years, A Rated and above index or other index determined by the Finance and Insurance Committee. The duration of the long-term segment will be limited to the duration of the index plus or minus 1.5.

The short-term segment of the portfolio will be managed to meet Metropolitan's cash flow needs. The total return of the short-term segment of the portfolio will be measured against the total return of the Bank of America Merrill Lynch 3-Month Treasury Bill index, or other index determined by the Finance and Insurance Committee. The duration of the short-term segment is limited to the duration of the index plus or minus 0.2. Also, for purposes of the duration calculation, Local Agency (e.g., a California municipality), securities that provide Metropolitan the right to redeem the security at par on a daily, weekly, or monthly basis will be considered to have a maturity of no more than 30 days.

The bond reserves segment shall be invested in high quality securities, with the goal of earning a return that minimizes any potential negative arbitrage experienced by each bond reserve fund. The bond reserve funds may be invested in securities issued by a Local Agency including securities issued by Metropolitan. Bond reserve funds may also be invested in money market and fixed income investments.

All investment activity shall be consistent with the prudent investor standard.

The Investment Strategy is subordinate to the Statement of Objectives, i.e., implementing the investment strategies listed below is not intended to supersede the objectives of Safety, Liquidity and Return.

III. **PRUDENT INVESTOR STANDARD**

As applicable to Metropolitan and its fiduciaries, the prudent investor standard is a standard of conduct whereby any person authorized to make investment decisions on behalf of Metropolitan acts with care, skill, prudence and diligence under the circumstances then prevailing, including but not limited to, the general economic conditions and the anticipated needs of Metropolitan, that a prudent person acting in like capacity and familiarity with those matters would use in the conduct of funds of a like character and with like aims, to safeguard the principal and meet the liquidity needs of Metropolitan.

IV. **PORTFOLIO**

Any reference to the portfolio shall mean the total of Metropolitan's cash and securities under management by the Treasurer, excluding cash and securities held in escrow or trust on behalf of Metropolitan. The Treasurer may invest in any security authorized for investment under the state law, subject to the limitations described herein:

1. Maturity Limitations

- a. The Treasurer is authorized to invest special trust funds in investments with a term to maximum maturity in excess of five years. These funds include, but are not limited, to the following:

Water Revenue Bond Reserve Funds

Escrow Funds

Debt Service Funds

Iron Mountain Landfill Closure/Post-closure Maintenance Trust Fund

Lake Mathews Multi Species Reserve Trust Fund

- b. For certain instruments, the term of the investment is limited by market convention or as otherwise prescribed herein.
- c. The Short-Term portfolio may be invested in United States Treasury, Federal Agency and California Local Agency securities (including securities issued by Metropolitan) with stated maturities in excess of five years. All other securities held in the short-term portfolio are limited to maximum maturities of 5 years or as otherwise specified in Section V, Authorized Investments.

- d. The Long-Term portfolio may be invested in United States Treasury and Federal Agency securities with maturities in excess of five years.

2. Investment Transactions

- a. Information concerning investment opportunities and market developments will be gained by maintaining contact with the financial community.
- b. Confirmations of all investment transactions will be sent directly to the Controller for audit.
- c. Annually the Treasurer shall transmit a copy of the current Statement of Investment Policy to all approved dealers. Each dealer is required to return a signed statement indicating receipt and understanding of Metropolitan's investment policies.
- d. When practical, the Treasurer shall solicit more than one quotation on each trade. All investment trades will be awarded on a competitive bid basis.
- e. Each day's listing of market indices and quotations shall be recorded and retained by the Treasurer for a period of five years.

3. Sale of Securities

- a. Securities may be sold to provide needed liquidity, to restructure the portfolio to reduce risk or to increase the expected return of the portfolio. In no instance shall a sale of securities be used for speculative purposes.

4. Prohibited Investments

- a. Prohibited investments include inverse floaters, range notes, interest only strips derived from a pool of mortgages (Collateralized Mortgage Obligations), and any security that could result in zero interest accrual if held to maturity. (Zero interest accrual means the security has the potential to realize zero earnings depending upon the structure of the security. Zero coupon bonds and similar investments that start at a level below the face value are legal because their value increases.)

5. Portfolio Adjustments

- a. Portfolio percentage limitations for each category of investment are applicable only at the date of purchase. Should an investment percentage of portfolio limitation be exceeded due to an incident such as a fluctuation in portfolio size, the portfolio manager is not required to sell the affected securities.
- b. Should a security held in the portfolio be downgraded below the minimum criteria included in this Statement of Investment Policy, the Treasurer or investment manager shall sell such security in such a manner to minimize losses on the sale of such security. If the security is downgraded to a level that is less than investment grade, the Treasurer or investment manager shall sell such affected security immediately; however, if immediate liquidation of the security is not in the best interests of Metropolitan, the Treasurer or investment manager, in consultation with an ad hoc committee made up of the Chairman of the Board, the Chairman of the Finance and Insurance Committee and the General Manager, and with the concurrence of the General Counsel, may dispose of the security in an orderly and prudent manner considering the circumstances, under terms and conditions approved by a majority of the members of such ad hoc committee. If the security matures within 60 days of the rating change, the Treasurer or

investment manager may choose not to sell the security. The Treasurer shall include a description of any securities that have been downgraded below investment grade and the status of their disposition in their monthly report.

6. Safekeeping

- a. All securities transactions, including collateral for repurchase agreements entered into by Metropolitan shall be conducted on a delivery versus payment (DVP) basis.
- b. Securities will be held by an independent custodian designated by the Treasurer and held in safekeeping pursuant to a safekeeping agreement.
- c. All financial institutions that provide safekeeping services for Metropolitan shall be required to provide reports or safekeeping receipts directly to the Controller to verify securities taken into their possession.

V. **AUTHORIZED INVESTMENTS**

Money market securities described in this section must be of prime quality of the highest letter and number rating (A1, P1, F1 or higher) as provided by a nationally recognized statistical rating organization (NRSRO). NRSRO for the purpose of this section are Moody's Investors Service, Standard and Poor's Ratings Services, and Fitch Ratings. Money market securities include Bankers' Acceptances, Commercial Paper, Negotiable Certificates of Deposit, and Time Deposits.

1. U.S. Government and Agencies

- a. Investments in individual U.S. Treasury and Federal Agency securities shall not be subject to any maturity limitations, provided that the duration of the portfolio managed by any manager in which such investments are held does not exceed the applicable limitation described under STATEMENT OF OBJECTIVES - Investment Strategy above.
- b. Investments in Treasury or Federal Agency obligations shall not exceed 100 percent of all investments.
- c. United States Treasury securities consist of notes, bonds, bills or certificates of indebtedness, or those for which the faith and credit of the United States are pledged for the payment of principal and interest.
- d. Federal Agency securities consist of obligations, participations, or other instruments issued by United States federal agencies or government-sponsored enterprises, including those issued by or fully guaranteed as to principal and interest by federal agencies or United States government-sponsored enterprises.

2. Bankers' Acceptances

Restrictions are as follows:

- a. Investments in prime bankers' acceptances may not exceed 40 percent of the portfolio in effect on the date of purchase of any such investment.
- b. No more than 25 percent of this category of investments may be invested in any one commercial bank's acceptances.

- c. The maximum maturity shall be limited to 180 days.

3. Negotiable Certificates of Deposit

Restrictions are as follows:

- a. Investments in negotiable certificates of deposit may not exceed 30 percent of the total portfolio in effect on the date of purchase of any such investment.
- b. The total investment in an eligible financial institution shall not exceed 25 percent of the total portfolio available for investment in this investment category.
- c. To be eligible, a negotiable certificate of deposit must be issued by a nationally or state-chartered bank, a state or federal savings and loan association or savings bank, or by a state-licensed branch of a foreign bank.
- d. The investment shall not exceed the shareholders' equity of any depository bank. For the purpose of this constraint, shareholders' equity shall be deemed to include capital notes and debentures.
- e. The investment shall not exceed the total of the net worth of any depository savings and loan association, except that investments up to a total of \$500,000 may be made to a savings and loan association without regard to the net worth of that depository, if such investments are insured or secured as required by law.
- f. The maximum maturity shall be limited to two years.

4. Commercial Paper

Restrictions are as follows:

- a. Investments in commercial paper shall not exceed 25 percent of the portfolio in effect on the date of purchase of any such investment.
- b. Each investment shall not exceed 270 days maturity.
- c. No more than 10 percent of the outstanding commercial paper of an issuing corporation may be purchased. In addition, the entity that issues the commercial paper shall meet the following conditions in Option 1 or Option 2:

Option 1:

- a. Is organized and operating in the United States as a general corporation and has total assets in excess of \$500 million.
- b. Has debt other than commercial paper, if any, that is rated in a rating category of A or its equivalent or higher by a nationally recognized rating agency.

Option 2:

- a. Is organized within the United States as a special purpose corporation, trust or limited liability company.
- b. Has program-wide credit enhancements including, but not limited to, over-collateralization, letters of credit or surety bond.

- c. Has commercial paper that is rated A-1 or higher by a nationally recognized rating agency.

5. Repurchase Agreements

A repurchase agreement is a purchase of authorized securities (other than commercial paper) with terms including a written agreement by the seller to repurchase the securities on a later specified date for a specified amount. Restrictions are as follows:

- a. The percentage limit for investment in repurchase agreements shall be 50 percent of the total portfolio.
- b. Purchases of repurchase agreements will be limited to a maximum maturity of one year.
- c. Repurchase agreements shall be made only with primary dealers in government securities or financial institutions with a Moody's Investors Service, Inc., or equivalent, rating of A or better.
- d. Such investments shall provide for purchased securities with a market value at least 102 percent of the amount of the invested funds. Value shall be adjusted not less than quarterly.
- e. Purchased securities are limited to Treasury bills, bonds and notes, or other investments that are direct obligations of or fully guaranteed as to principal and interest by the United States or any agency thereof; negotiable certificates of deposit; and bankers' acceptances eligible for acceptance under Federal Reserve rules. Zero coupon and stripped coupon instruments are not acceptable.
- f. Such investments shall provide for transfer of ownership and possession of the purchased securities either to Metropolitan directly or to a custodian depository institution which shall take record title and shall establish and maintain a sub-account in its financial records for the securities in Metropolitan's name, and such custodian shall not be the dealer from which the securities were purchased.
- g. Each repurchase agreement shall provide a contractual right to liquidation of the purchased securities upon the bankruptcy, insolvency or other default of the counterparty.
- h. Purchased securities shall have maturities within 60 months of the date of investment.

6. Reverse Repurchase Agreements

A reverse repurchase agreement is a sale by the Treasurer of securities in the portfolio with terms including a written agreement to repurchase the securities on or before a specified date for a specified amount.

- a. Subject to the approval of the Board of Directors, the Treasurer may enter into a reverse repurchase agreement provided that the proceeds are invested solely to supplement the income normally received from the securities involved in the agreement. These agreements shall only be performed with primary dealers of the Federal Reserve Bank of New York.

- b. Reverse repurchases may be entered into to meet temporary liquidity needs and not for leverage.
- c. Investments in reverse repurchase agreements are limited to 20 percent of the base value of the portfolio. For the purpose of this constraint, base value of the portfolio shall be the total of Metropolitan's cash and securities under management by the Treasurer, excluding any amounts obtained through selling securities by reverse purchase agreements, securities lending agreements, or similar borrowing methods.
- d. The investment purchased with the proceeds of a reverse repurchase agreement must match or closely approximate the maturity of the reverse repurchase agreement(s).
- e. Purchases of securities with proceeds from reverse repurchase agreements may not be subject to a reverse repurchase agreement.
- f. Reverse repurchase agreements will be limited to a maximum maturity of 92 days.
- g. Securities used to make reverse repurchase agreements must be paid for and held for a minimum of 30 days prior to the transaction.

7. Time Deposits

For purposes of this policy, collateralized time deposits shall be considered investments.

The following criteria will be used in evaluating financial institutions and the form of collateral to determine eligibility for deposits:

- a. The financial institution must have been in existence for at least five years.
- b. Credit requirements may be waived for the maximum deposit amount that is insured by the Federal Deposit Insurance Corporation.
- c. The deposit shall not exceed the shareholders' equity of any depository bank. For the purposes of this constraint, shareholders' equity shall be deemed to include capital notes and debentures.
- d. The deposit shall not exceed the total of the net worth of any depository savings and loan association, except that deposits not exceeding a total of five hundred thousand dollars (\$500,000) may be made to a savings and loan association without regard to the net worth of that depository, if such deposits are insured or secured as required by law.
- e. The total deposits shall not exceed the shareholders' equity of any depository bank.
- f. In order to secure such deposits, the financial institution shall maintain in the collateral pool, securities having a market value of at least 10 percent in excess of the total amount deposited.
- g. Promissory notes secured by real estate mortgages or deeds of trust may not be accepted as collateral.

- h. When other factors are equal, appropriate consideration will be given to a financial institution that either individually or as a member of a syndicate bids on or makes a substantial investment in Metropolitan's bonds; contributes service to Metropolitan or a member public agency; or offers significant assistance to Metropolitan, in order to provide for distribution of total deposits among eligible financial institutions.
- i. Purchased time deposits will be limited to a maximum maturity of one year.

8. Medium-Term Notes

Restrictions are as follows:

- a. Investment in medium-term notes are limited to corporations organized and operating within the United States or by depository institutions licensed by the United States or any state and operating within the United States.
- b. Notes eligible for investment shall be rated in a rating category of A or its equivalent or better by a nationally recognized rating service.
- c. Purchases of medium-term notes shall not exceed 30 percent of the portfolio.
- d. Purchases of medium-term notes will be limited to a maximum maturity of five years.
- e. The total investment in the medium-term notes of an issuer shall not exceed 25 percent of the total portfolio available for investment in this investment category.

9. Mortgage Obligations and Asset Backed Securities

This category of investments includes any mortgage pass-through security, collateralized mortgage obligation, mortgage-backed or other pay-through bond, equipment lease-backed certificate, consumer receivable pass-through certificate, or consumer receivable-backed bond.

Restrictions are as follows:

- a. Mortgage pass-through, collateralized mortgage obligation, mortgage-backed or other pay-through bond, equipment lease-backed certificate, and consumer receivable pass-through certificate are subject to a maximum maturity of five years.
- b. Securities eligible for investment shall be issued by an issuer rated in a rating category of A or its equivalent or better for the issuer's debt as provided by a nationally recognized rating service and rated in a rating category of AAA by a nationally recognized rating service.
- c. Purchase of securities authorized by this subdivision shall not exceed 20 percent of the portfolio.
- d. The total investment in the mortgage-backed or asset-backed securities of an issuer shall not exceed 25 percent of the total portfolio available for investment in this category.

10. Local Agency Investment Fund Deposits

Deposits for the purpose of investment in the Local Agency Investment Fund of the State of California may be made up to the maximum amount permitted.

11. Shares of Beneficial Interest

The Treasurer may invest in shares of beneficial interest issued by eligible diversified management companies that (1) invest in authorized securities such as United States Treasury notes, bonds, bills; registered state warrants or treasury notes and bonds for the State of California, obligations of local agencies; commercial paper; negotiable certificates of deposit; repurchase agreements or reverse repurchase agreements and medium term notes or (2) are money market funds registered with the Securities and Exchange Commission under the Investment Company Act of 1940. These companies must meet the following criteria:

- a. Attain the highest ranking of the highest letter and numerical rating provided by not less than two nationally recognized statistical rating agencies.
- b. Retain an investment adviser registered or exempt from registration with the Securities and Exchange Commission with not less than five years' experience investing in authorized securities and obligations listed above.
- c. Assets under management shall be in excess of \$500 million.
- d. The purchase price of the shares of beneficial interest purchased shall not include any commission that the companies may charge and shall not exceed 20 percent of the Portfolio. However, no more than 10 percent of the Portfolio may be invested in shares of beneficial interest of any one mutual fund described above.

12. Investment Contracts

Funds held by a trustee or fiscal agent and pledged to the payment or security of bonds may be invested in accordance with the statutory provisions governing the issuance of those bonds or other forms of debt. These funds may also be invested in accordance with the ordinance, resolution, indenture or agreement executed by Metropolitan. Other forms of debt include, but are not limited to, the following: (a) obligations under a lease, and (b) an installment sale or other agreements. Eligible investments would consist of the following:

- a. Guaranteed Investment Contracts.
- b. Forward Delivery Agreements collateralized with U.S. Treasury or Agency Securities.
- c. Other investment contracts collateralized with U.S. Treasury or Agency Securities.
- d. These investments may be purchased with maturities in excess of five years as noted in Section IV 1. of this policy.

13. California Local Agency Securities

- a. Investments in California local agency securities, including securities issued by Metropolitan, shall not be subject to any maturity limitations, provided that the duration of the portfolio managed does not exceed the applicable limit described under STATEMENT OF OBJECTIVES - Investment Strategy.
- b. California local agency securities with a maturity in excess of five years must have a credit rating of at least AA (may be insured) and an underlying credit rating of A or better by a nationally recognized rating service
- c. The purchase of California local agency securities may not exceed 30 percent of the portfolio.
- d. The total investment in California local agency securities of an issuer shall not exceed 25 percent of the total portfolio available for investment in local agency securities. Investments in Metropolitan's tendered bonds may exceed the 25 percent limitation by issuer.
- e. The maximum limit of 30 percent specified in c. of this section is waived to the extent that such investments are for the purpose of purchasing Metropolitan's tendered bonds as a temporary investment. In other words, the investment portfolio may consist of Metropolitan- issued debt in amounts greater than 30 percent, but only Metropolitan securities.

VI. **REPORTING**

In accordance with the Metropolitan Water District Administrative Code, Section 5114, the Treasurer shall submit a monthly report to the Board Executive Secretary of the Board of Directors via the General Manager indicating the types of investment by fund and date of maturity, and shall provide the current market value of all securities, rates of interest, and expected yield to maturity. The Treasurer shall also submit a monthly summary report to the Board of Directors via the General Manager showing investment activity, including yield and earnings, and the status of cash by depository.

VII. **MONITORING SAFETY AND LIQUIDITY OF DISTRICT FUND**

The Treasurer shall monitor or cause to be monitored the extent to which financial institutions with which Metropolitan maintains deposits or investments are consistent with Metropolitan's policies regarding business activities within countries that may jeopardize the safety and liquidity of Metropolitan funds or violate other Metropolitan policies. Such matters shall be reported to the Finance and Insurance Committee as part of the Treasurer's monthly report.

VIII. **ADMINISTRATION**

The Treasurer may, at any time, establish more restrictive requirements for the securities approved for investment as deemed appropriate in this Statement of Investment Policy. These restrictions may include, but are not limited to, higher credit ratings, lower percentage limits by security type or issuer, shorter maturities and additional collateral for repurchase agreements.

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GLOSSARY OF TERMS

20 x 2020 — 2009 Water Conservation Act goal of twenty percent reduction in per capita regional water use by 2020.

ACE — Association of Confidential Employees; an employee bargaining unit at Metropolitan.

Accrual — An accounting method that records revenues when earned and expenses when incurred regardless of the timing of when the cash is actually paid or received.

Acre-Foot — A unit of measure equivalent to 325,851.4 gallons of water and weighs approximately 62.4 pounds, which meets the needs of two average families in and around the home for one year.

ACWA — Association of California Water Agencies.

AFSCME — American Federation of State, County, and Municipal Employees, Local 1902.

Appropriation — Money set aside for a specific purpose. The designation of the use to which a fund of money is to be applied.

Bay Delta — An environmentally sensitive area of the Sacramento/San Joaquin River Delta through and from which water flows to reach portions of California from the San Francisco Bay Area to San Diego. Moving water across the delta during the high-demand summer months is becoming more difficult as additional water is set aside to mitigate for environmental impacts.

Budget — A report of all anticipated expenditures and required reserves and the source of moneys to be used to meet such expenditures and provide such reserves.

Budgeted Position — A staff position approved by the Board of Directors for the fiscal year.

California WaterFix (CA WaterFix) — CA WaterFix is a comprehensive science-based solution proposed by the state to modernize critical water delivery infrastructure of the SWP. The CA WaterFix proposes construction of new water intakes in the north Delta and two 40-foot diameter tunnels under the Delta terminating at a forebay in the South Delta. This would fulfill the requirement of the 2009 Delta Reform Act to contribute toward meeting the coequal goals of providing a more reliable water supply for California and protecting, restoring and enhancing the Delta ecosystem.

Capital Investment Plan (CIP) — Metropolitan's CIP is designed to refurbish existing facilities needed to ensure a reliable distribution system, expand treatment facilities to meet current and future water quality regulations, and expand storage and conveyance facilities to meet current and future storage requirements.

Capital Project — A project that results in a new asset (e.g., a facility, betterment, replacement, equipment, etc.) that has a total cost of at least \$50,000 and a useful life of at least five years. Computer software can be capitalized if it costs \$250,000 or more and has a useful life of at least three years.

The California Environmental Quality Act (CEQA) — A statute that requires state and local agencies to identify the significant environmental impacts of their actions, and to avoid or mitigate those impacts, if feasible.

Colorado River Aqueduct (CRA) — The 242-mile-long water conveyance system built by Metropolitan to carry water from the Colorado River to its Southern California service area.

Conservation Credits Program (CCP) — A program where Metropolitan provides financial assistance for the development of conservation programs at the local level (e.g. energy efficient washing machines, low flush toilets, etc.).

CUWCC — California Urban Water Conservation Council, a non-profit 501c3 formed as a partnership of water suppliers, environmental groups, and others interested in conserving California's greatest natural resource, water.

Debt Service — The annual cost of repaying outstanding debt.

Department of Water Resources (DWR) — A department within the California Resources Agency which is responsible for the state's management and regulation of water usage.

Distribution System — Refers to the network of pipelines and canals used for the conveyance of water from Metropolitan's terminal reservoirs to member agency service connections.

DVL — Diamond Valley Lake. A reservoir built by Metropolitan with a capacity of 800,000 AF.

EIR — Environmental Impact Report.

EMS — Energy Management System.

Endangered Species Act (ESA) — An act of the federal government enacted in 1973 that provides for the conservation of species that are endangered or threatened and the conservation of the ecosystems on which they depend. A species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future.

Enterprise Fund — To account for operations that are financed and operated where the intent is that the costs (expenses, including depreciation) of providing goods or services to the general public on a continuing basis be financed or recovered primarily through user charges.

Ethics Program — State law (SB 60) mandates that Metropolitan maintain a program to address and seek to avoid potential ethical abuses relating to business relationships, solicitation and/or receipt of campaign contributions, and public notice and approval procedures for contracts of \$50K or more. This program includes on-going training for board members and employees regarding ethics in the workplace.

FERC — Federal Energy Regulatory Commission.

Fund — A self-balancing set of accounts recording cash and other financial resources, together with all related liabilities and residual equities or balances, and changes therein, which are segregated for the purpose of carrying on specific activities or attaining certain objective in accordance with special regulations, restrictions, or limitations.

Fund Balance — Created from excess revenues over expenditures. This can be a combination of collections/revenues being higher than budget and actual expenditures being lower than budget.

IID/Metropolitan Conservation Agreement — Water conservation agreement with the Imperial Irrigation District (IID) that allows for the development of certain water conservation capital structures by Metropolitan in the Imperial Valley. Metropolitan, in turn, gets the quantity of water conserved during the term of this agreement, four years during construction, and 35 years after completion. It encompasses both the operating

and maintenance, in direct, and capital cost of developing and implementing the program. This agreement is renewable.

IRWMP — Integrated Regional Water Management Plan.

Integrated Resources Plan (IRP) — An open and participatory planning process that takes a broad view of all water resource options available to the region and searches for the right combination of investments to achieve water supply objectives in a cost-conscious and environmentally responsible manner.

Local Resources Program (LRP) — A program in which Metropolitan provides financial assistance to its member agencies for the development of local groundwater recycling and groundwater recovery projects.

MAPA — Management and Professional Employees Association, Local 1001.

Member Agency — Refers to any of the 26 cities or public water agencies that comprise the Metropolitan Water District and whose representatives constitute the Board of Directors of Metropolitan.

MAF (million acre-feet) — A unit measure of water.

Minute 319 — Agreement that amends the 1944 Treaty between Mexico and the United States by establishing new rules in sharing Colorado River water and provides immediate plans to address current challenges. Parties to the agreement include Metropolitan Water District of Southern California, Southern Nevada Water Authority, Central Arizona Water Conservation District. Minute 319 allows Mexico to store water in Lake Mead as Intentionally Created Mexican Apportionment for future delivery and environmental flows. Stored water will be exchanged among the parties to the agreement.

MWDOC — Municipal Water District of Orange County; one of 26 member agencies that comprise Metropolitan.

MOU (Memorandum of Understanding) — Legal agreements entered into between Metropolitan and any of the four employee bargaining units that dictate terms and conditions of employment.

Operating Equipment — Any portable equipment costing \$5,000 or more and having a useful life of five years or more.

Operations Maintenance Power & Recovery (OMP&R) — A component of the SWC that is billed to the contracting agencies to maintain the system.

OPEB — Other Post Employment Benefits.

ORP — Oxidation Retrofit Program.

Ozone — It is an unstable form of oxygen composed of three-atom molecules that break down readily to normal oxygen and nascent oxygen. The latter is a powerful oxidizing agent and has germicidal action. Ozone is usually produced with on-site generators by passing high-voltage electricity through dry atmospheric air or pure oxygen between stationary electrodes. This process converts a small percentage of the oxygen in the air into ozone. It is usually injected into the water to be treated in a highly baffled mixing chamber.

PAYGO — The practice of funding construction expenditures from current operating revenues in lieu of using debt proceeds.

PVID — Palo Verde Irrigation District.

Palo Verde Land Management and Water Supply Program — Calls for the development of a flexible water supply of between 25,000 and 111,000 acre-feet per year for 35 years through a land management and crop

rotation program to be implemented by participating farmers in the Palo Verde Valley. The maximum water supply that could be developed would be about 3.63 million acre–feet during the 35–year term while the minimum water supply required to be developed would be 1.76 million acre–feet.

Performance Measure — An indicator of progress toward completing an initiative, achieving a goal, or implementing a strategy. Performance measures are quantifiable and tracked over time. Measures can indicate problem areas that need attention or be a guide for continual performance improvement through specific initiatives and actions.

PCCP — Pre–stressed Concrete Cylinder Pipe.

Power Recovery — Energy generated from the operation of sixteen Metropolitan–owned hydroelectric generating facilities. The term "recovery" derives from the capture of potentially wasted electrical energy from Metropolitan's water distribution system.

Quagga Mussel — A destructive non–native species of mussel from the Ukraine region that could clog pipes and water line.

Quantification Settlement Agreement (QSA) — The QSA, executed by Coachella Valley Water District (CVWD), Imperial Irrigation District (IID) and Metropolitan in October 2003, establishes Colorado River water use limits for IID and CVWD, and provides for specific acquisitions of conserved water and water supply arrangements for up to 75 years. The QSA and related agreements provide a framework for Metropolitan to enter into other cooperative Colorado River supply programs and set aside several disputes among California's Colorado River water agencies.

Regional Recycled Water Program (RRWP) — An advanced water treatment demonstration facility that will take treated wastewater and purify it through various advanced treatment technologies to produce a safe, high–quality water source; the project is a partnership between Metropolitan and the Sanitation Districts of Los Angeles County.

Replacement and Refurbishment (R&R) — Capital projects that invest in Metropolitan's aging infrastructure by restoring them to optimal operating status.

Reserves — Funds set aside to comply with bond covenants, working capital policy, or other board policies as part of a prudent financial strategy.

Revenue Remainder Fund — See Financial Policies for description.

SCADA — Supervisory Control and Data Acquisition; automated systems that are used to monitor, operate, and control Metropolitan's water conveyance, treatment, and distribution systems.

SDCWA — San Diego County Water Authority; one of 26 member agencies that make up Metropolitan.

Senate Bill 60 (SB 60) — This bill requires Metropolitan to place increased emphasis on sustainable, environmentally sound, and cost–effective water conservation, recycling, and groundwater storage and replenishment measures and, commencing February 1, 2001, to prepare and submit to the Legislature a prescribed annual report relating to water conservation.

State Water Contract (SWC) — State Water Contracts are the basis for all SWP construction and ongoing operations. As the largest of the now 29 contractors, Metropolitan is entitled to slightly less than half of all SWP supplies. Water supplies from the SWP are conveyed to Metropolitan via the SWP's 444–mile California Aqueduct, which was made possible pursuant to Metropolitan's SWC.

State Water Project (SWP) — The SWP is the largest state-built, user-financed water supply and transportation project in the country. The SWP serves urban and agricultural agencies from the San Francisco Bay area to Southern California. Its facilities were constructed with several general types of financing, the repayment of which is made by the 29 agencies and districts that participate in the SWP through long-term contracts (the State Water Contractors). The State Water Contractors also pay for the operations, maintenance, power, and replacement costs of the SWP.

System Overview Study — An analysis of Metropolitan's current delivery and treatment capacities versus projected needs during the planning horizon. The System Overview Study, coupled with the Integrated Area Study, analyzes various portfolios of projects that could be used to meet future demand and then develops a potential CIP. Finally, the System Overview Study analyzes the potential impact to rates from the proposed facilities.

TAF (thousand acre-feet) — A unit of measure of water.

Total Dissolved Solids (TDS) — Refers to the total organic carbon concentration in water. Measurement of TDS removal is used as a surrogate for disinfection by-product precursor removal.

Treatment Plants — Facilities used by Metropolitan for the treatment of water to remove contaminants or total dissolved solids thus ensuring that such water is potable before it is distributed to member agencies.

U.S. Department of the Interior, Bureau of Reclamation (USBR) — Largest wholesaler of water and second largest supplier of hydroelectric power in the American West. Promotes water conservation, recycling, and reuse.

Vacancy Factor — A calculated reduction to the O&M labor budget that attempts to account for vacancies that occur within organizations throughout the year. Budgeted labor dollars assume that budgeted positions will be filled for the entire fiscal year (2,080 hours). However, positions routinely become vacant throughout Metropolitan for part of the year as staff transfer to other positions or leave employment in the company and time elapses during the recruitment period to refill the vacated positions.

WRSF — Water Rate Stabilization Fund. See Financial Policies for description.

WRM — Water Resource Management (group); an organization within Metropolitan that focuses on water resource planning and management, including conservation.

WSF — Water Stewardship Fund. See Financial Policies for description.

Water Supply Allocation Plan (WSAP) — This plan is intended to be implemented during periods of regional water shortages to promote conservation of scarce water supplies. The WSAP was created to approach limiting supplies in a manner that is regionally fair and minimizes impacts by establishing accurate and fair baselines for each of Metropolitan's 26 member agencies.

Water Supply Programs — Water transfer and storage programs that supplement Colorado River and SWP supplies.

Water Surplus Drought Management Plan (WSDM Plan) — This plan directs Metropolitan's resource operations to help attain the region's reliability goal. The WSDM Plan recognizes the interdependence of surplus and shortage actions and is a coordinated plan that utilizes all available resources to maximize supply reliability. The overall objective is to ensure that shortage allocation of Metropolitan's imported water supplies is minimized.

Working Capital — A measure of both a company's efficiency and its short-term financial health. The working capital ratio is calculated as: Working Capital = Current Assets - Current Liabilities.

WSO — Water System Operations (group); an organization within Metropolitan responsible for operating and maintaining Metropolitan’s water conveyance, treatment, and distribution system and its appurtenant systems.

**THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA**

RESOLUTION 9234

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
FIXING AND ADOPTING WATER RATES
TO BE EFFECTIVE JANUARY 1, 2019 AND 2020**

WHEREAS, the Board of Directors (“Board”) of The Metropolitan Water District of Southern California (“Metropolitan”), pursuant to Sections 133 and 134 of the Metropolitan Water District Act (the “Act”), is authorized to fix such rate or rates for water that, so far as practicable, will result in revenue which, together with revenue from any water standby or availability service charge or assessment, will pay the operating expenses of Metropolitan, provide for repairs and maintenance, provide for payment of the purchase price or other charges for property or services or other rights acquired by Metropolitan, and provide for the payment of the interest and principal of its bonded debt; and

WHEREAS, on March 12, 2002, the Board adopted Resolution 8805, “Resolution Of The Board Of Directors Of The Metropolitan Water District Of Southern California Fixing And Adopting Rates And Charges For Fiscal Year 2002/03 And To Direct Further Actions In Connection Therewith”, adopting a new structure for Metropolitan’s water rates and charges in order to enhance Metropolitan’s fiscal stability and ability to ensure the region’s long-term water supply while reasonably and fairly allocating the cost of providing service to its member agencies; and

WHEREAS, the rate structure adopted by Resolution 8805 was the product of a three- year process that included a strategic planning process commenced by the Board in July 1998, discussions with member agencies, retail agencies and other stakeholders and numerous meetings of Metropolitan’s Board, Audit, Budget and Finance Committee, Budget, Finance and Investment Committee and Subcommittee on Rate Structure Implementation; and

WHEREAS, development of the rate structure adopted by Resolution 8805 included Strategic Plan Policy Principles adopted by the Board on December 14, 1999 to provide a framework for the development of a revised rate structure; a Composite Rate Structure Framework adopted by the Board on April 11, 2000 (the “Rate Structure Framework”); a Rate Structure Action Plan adopted by the Board on December 12, 2000; and study of (i) a detailed rate design proposal presented in December 2000 (the “December 2000 Proposal”) developed from the Rate Structure Framework and (ii) an alternative rate structure proposal presented in September 2001 (the “Proposal”) that addressed concerns which were raised about the December 2000 Proposal; and

WHEREAS, by Resolution 8774, “Resolution Of The Board Of Directors Of The Metropolitan Water District Of Southern California To Approve Rate Structure Proposal And To Direct Further Actions In Connection Therewith,” adopted October 16, 2001, the Board approved the Proposal, which unbundled water rates and charges to reflect the different services provided by Metropolitan, and determined that the Proposal (i) was consistent with the Board's Strategic Plan Policy Principles, (ii) addressed issues raised

during the consideration of the December 2000 Proposal, (iii) furthered Metropolitan's strategic objectives of ensuring the region's long term water supply reliability through encouragement of sound and efficient water resources management, water conservation, and accommodating a water transfer market, and (iv) enhanced the fiscal stability of Metropolitan; and

WHEREAS, by Resolution 8774, the Board directed the General Manager to (i) prepare a report on the Proposal describing each of the rates and charges and the cost of service process used to develop the rates and charges and (ii) utilize the Proposal as the basis for determining Metropolitan's revenue requirements and recommending rates to become effective January 1, 2003, in accordance with Metropolitan's annual rate-setting procedure under the Administrative Code; and

WHEREAS, on January 7, 2002, the General Manager presented to the Budget, Finance and Investment Committee (formerly the Audit, Budget and Finance Committee and today, the Finance and Insurance Committee) a detailed report describing each of the rates and charges and the supporting cost of service process, dated December 2001 (the "2001 Cost of Service Report"), that (i) described the rate structure process and design; (ii) identified revenue requirements; (iii) showed the costs of major service functions that Metropolitan provides to its member agencies, (iv) classified these service function costs based on the use of and benefit from the Metropolitan system to create a logical nexus between the costs and the revenues required from each of the rates and charges; and (iv) set forth the rates and charges necessary to defray such costs; and

WHEREAS, by Resolution 8805 the Board found and determined that the cost of service process reasonably and fairly: (i) identified revenue requirements; (ii) allocated costs to the service functions that Metropolitan provides to its member agencies; (iii) classified service function costs based upon use of and benefit from Metropolitan's system, and (iv) allocated costs to rates and charges based upon customary water industry standards; and

WHEREAS, by Resolution 8805 the Board found and determined that the water rates and charges were supported by the cost of service process and that such rates and charges reasonably and fairly allocated the costs of providing service of Metropolitan's water system to its member agencies and third-party transporters of water, if any; and

WHEREAS, the Board received the Final Report on Rates and Charges, dated June 28, 2002, that (i) described the rate structure process and design; (ii) identified revenue requirements; (iii) showed the costs of major service functions that Metropolitan provides to its member agencies, (iv) classified these service function costs based on the use of and benefit of the Metropolitan system to create a logical nexus between the costs and the revenues required from each of the rates and charges; and (iv) set forth the rates and charges necessary to defray such costs; and

WHEREAS, Metropolitan's water rates approved by the Board thereafter (on March 11, 2003, March 9, 2004, March 8, 2005, March 14, 2006, April 10, 2007, March 11, 2008, April 14, 2009, April 14, 2010, April 10, 2012, April 8, 2014, and April 12, 2016) have utilized the unbundled water rate elements in the rate structure approved by Resolution 8774 and implemented by Resolution 8805; and

WHEREAS, the cost of service process supporting Metropolitan's water rates approved by the Board on March 11, 2003 and in following years is consistent with the cost of service process described in the 2001 Cost of Service Report. Raftelis Financial Consultants, Inc. ("RFC"), the firm engaged in 1998 to perform a comprehensive cost of service study and assist in the development of the rate structure, confirmed to the Board in a report dated April 6, 2010, that the fiscal year 2010/11 cost of service report presented to the Board in January 2010 was accurate and consistent with the 2001 Cost of Service Report and that the fiscal year 2010/11 cost of service report and rate methodology was consistent with water

industry best practices and complies with cost of service and rate guidelines in the American Water Works Association's Manual M-1, Principles of Water Rates, Fees and Charges; and

WHEREAS, in San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., San Francisco Superior Court Case Nos. CPF-10-510830 and CPF- 12-512466 (the "2010 and 2012 Cases," collectively), the San Diego County Water Authority challenged Metropolitan's water rates adopted on April 13, 2010 and April 10, 2012, and Metropolitan is defending such challenges; and

WHEREAS, on June 21, 2017, the Court of Appeal entered a decision in the 2010 and 2012 Cases in San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., 12 Cal.App.5th 1124, holding that Metropolitan may recover its State Water Project transportation costs through its transportation rates and that based on the administrative record before it the rates in CYs 2011 through 2014 did not support Metropolitan's Water Stewardship Rate allocation to its transportation rates, and on September 27, 2017, the California Supreme Court denied SDCWA's Petition for Review, making the decision final; and

WHEREAS, San Diego County Water Authority filed a lawsuit also challenging Metropolitan's water rates adopted on April 8, 2014, also titled San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., San Francisco Superior Court Case No. CPF-14-514004, and the Court has ordered the case stayed pending the 2010 and 2012 Cases; and

WHEREAS, San Diego County Water Authority filed a lawsuit also challenging Metropolitan's water rates and charges adopted on April 12, 2016, also titled San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., San Francisco Superior Court Case No. CPF-16-515282, and the Court has ordered the case stayed pending final resolution of the 2010 and 2012 appeal; and

WHEREAS, on February 1, 2018, the General Manager and Chief Financial Officer provided to the Board and the public a board letter describing the proposed biennial budget for fiscal years 2018/19 and 2019/20, identifying key assumptions, addressing key circumstances such as current state water supply conditions, and continued suspension of the ad valorem rate restrictions under Section 124.5 of the MWD Act to allow Metropolitan to maintain the current ad valorem tax rate, incorporating a ten-year financial forecast; determining anticipated total revenues and revenues anticipated to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, identifying revenue requirements for that period and recommending rates and charges consistent with cost of service principles to be effective January 1, 2019/ and January 1, 2020, and explaining that costs and revenues may be at variance with forecasts and variations will be addressed, for example by contributions to, or withdraws from, financial reserves maintained for this purpose; and

WHEREAS, the recommended rates were developed using the same unbundled water rate elements in the rate structure approved by Resolution 8774 and implemented by Resolution 8805, as detailed in the FYs 2018/19 and 2019/20 Cost of Service Report for Proposed Water Rates and Charges (the "2018 Cost of Service Report") provided to the Board and the public on February 1, 2018; and

WHEREAS, the detailed proposed departmental and non-departmental biennial budget for fiscal years 2018/19 and 2019/20 (the "Proposed Biennial Budget") was distributed to the Board and the public on February 1, 2018; and

WHEREAS, on March 7, 2018, the CIP appendix to the detailed Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 was provided to the Board and the public, providing detailed information on proposed capital projects and capital improvement costs; and

WHEREAS, Board workshops and discussions regarding the Proposed Biennial Budget and future water rates and charges were held on February 12, 2018 and March 12, 2018 at the regularly scheduled Finance and Insurance Committee meetings, and on February 27, 2018 and March 27, 2018 at the Finance and Insurance Committee; and

WHEREAS, on February 12, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee of Metropolitan's Board the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20, ten-year financial forecast, determination of anticipated total revenues and of revenues anticipated to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and his recommended rates to be effective January 1, 2019 and January 1, 2020, and charges for fiscal years 2018/19 and 2019/20; and

WHEREAS, on February 27, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee further detail regarding the estimated revenue requirements in the Proposed Biennial Budget, provided an overview of Metropolitan's existing rate structure and the process of determining rate components under Metropolitan's existing rate structure, and addressed questions previously raised by the Board; and

WHEREAS, on March 12, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee a summary of the proposed CIP budget, addressed additional questions raised by the Board, and discussed financial policies and the impact on the Proposed Biennial Budget and resulting revenue requirements and rates and charges; and

WHEREAS, the Board conducted a public hearing at its regular meeting on March 13, 2018, at which interested parties were given the opportunity to present their views regarding the proposed water rates and charges; and

WHEREAS, notice of the public hearing was published prior to the hearing in various newspapers of general circulation within Metropolitan's service area; and

WHEREAS, Metropolitan received written comments regarding the proposed water rates and charges, which, together with Metropolitan's responses, have been provided to the Board and the public; and

WHEREAS, on April 4, 2018, the General Manager and Chief Financial Officer provided to the Board and the public a board letter describing the recommendations for the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 (updated with minor revisions since the version distributed on February 1, 2018); determination of total revenues and of revenues to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and proposed rates to be effective January 1, 2019 and January 1, 2020, and charges to be effective January 1, 2019; and

WHEREAS, the April 4, 2018 board letter included the Proposed Biennial Budget, ten-year financial forecast and detailed 2018 Cost of Service Report (updated with minor revisions, corrections, and updates since the version distributed on February 1, 2018); and

WHEREAS, on April 9, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee of Metropolitan's Board the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 and ten-year financial forecast, determination of total revenues and of revenues to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and the recommended rates to be effective January 1, 2019 and January 1, 2020, and charges to be effective

January 1, 2019, explaining that actual revenues and expenses may vary from budgeted amounts for a variety of reasons, and that Administrative Code Section 5202(e) contemplates variation in actuals to budget and provides policy guidance to the Board, and that Metropolitan’s financial obligations may include liabilities and future commitments, such as retiree obligations and debt service, that are not reflected in the budget but that can be addressed in a fiscally prudent manner to reduce future obligations and keep future rate increases reasonable within the policy guidance provided by Administrative Code Section 5202(e); and

WHEREAS, each of the meetings of the Board were conducted in accordance with the Brown Act (commencing at Section 54950 of the Government Code), for which due notice was provided and at which quorums were present and acting throughout; and

WHEREAS, all board letters, reports, presentations and other documents referred to in this Resolution may be viewed by Board members and the public on Metropolitan’s web page at <http://www.mwdh2o.com> or in the office of the Board Executive Secretary;

NOW, THEREFORE, the Board of Directors of The Metropolitan Water District of Southern California does hereby resolve, determine and order as follows:

Section 1. That the Board of Directors of The Metropolitan Water District of Southern California hereby fixes and adopts the following water rates, to be effective on January 1, 2019 and January 1, 2020 as shown in the table below, in order to enhance Metropolitan’s fiscal stability and ability to ensure the region’s long-term water supply while reasonably and fairly allocating the cost of providing service to its member agencies and other users of Metropolitan’s system:

Table 1. Rates and Charges by Option

Rates & Charges Effective	2018	2019	% Change	2020	% Change
Tier 1 Supply Rate (\$/AF)	\$209	\$209	0.0%	\$208	(0.5%)
Tier 2 Supply Rate (\$/AF)	\$295	\$295	0.0%	\$295	0.0%
System Access Rate (\$/AF)	\$299	\$326	9.0%	\$346	6.1%
Water Stewardship Rate (\$/AF)	\$55	\$69	25.5%	\$65	(5.8%)
System Power Rate (\$/AF)	\$132	\$127	(3.8%)	\$136	7.1%
Full Service Untreated Volumetric Cost (\$/AF)					
Tier 1	\$695	\$731	5.2%	\$755	3.3%
Tier 2	\$781	\$817	4.6%	\$842	3.1%
Treatment Surcharge (\$/AF)	\$320	\$319	(0.3%)	\$323	1.3%
Full Service Treated Volumetric Cost (\$/AF)					
Tier 1	\$1,015	\$1,050	3.4%	\$1,078	2.7%
Tier 2	\$1,101	\$1,136	3.2%	\$1,165	2.6%
Readiness-to-Serve Charge (\$M)	\$140	\$133	(5.0%)	\$136	2.3%
Capacity Charge (\$/cfs)	\$8,700	\$8,600	(1.1%)	\$8,800	2.3%
Overall Rate Increase			3.0%		3.0%

Section 2. The Board finds and determines that the rates specified in Section 1 utilize the unbundled water rate and charge elements of the rate structure approved by Resolution 8774 and implemented by Resolution 8805, and that the cost of service process supporting the rates and charges specified in Section 1 is the cost of service process described in the 2018 Cost of Service report. The adopted rates and charges and cost of service reports are on file and available for review by interested

parties at Metropolitan's headquarters.

Section 3. The Board finds and determines that the cost of service process reasonably, fairly and proportionately: (i) identifies revenue requirements; (ii) shows the costs of major service functions that Metropolitan provides to its member agencies, (iii) assigns costs to the service functions that Metropolitan provides to its member agencies and other users of Metropolitan's system; (iv) allocates service function costs based upon use of and benefit from Metropolitan's system, and (v) distributes costs to rates and charges based upon customary water industry standards. Accordingly, the Board finds that the cost of service process supports the rates and charges by creating a logical nexus between the costs and the revenues required and the rates and charges necessary to defray Metropolitan's costs of providing its services and for use of its water system.

Section 4. The Board finds and determines that the rates specified in Section 1 are fixed by the Board pursuant to Sections 133 and 134 of the Act, and, so far as practicable, will result in revenue which, together with revenue from water standby or availability service charges or assessments, will pay the operating expenses of Metropolitan, provide for repairs and maintenance, provide for payment of the purchase price or other charges for property or services or other rights acquired by Metropolitan, and provide for the payment of the interest and principal of its bonded debt. Actual revenues and expenses may vary from budgeted amounts for a variety of reasons, and Administrative Code Section 5202(e) contemplates variation in actuals to budget and provides policy guidance to the Board, and the Board finds and determines that Metropolitan's financial obligations may include liabilities and future commitments, such as retiree obligations and debt service, that are not reflected in the budget but that can be addressed in a fiscally prudent manner to reduce future obligations and keep future rate increases reasonable within the policy guidance provided by Administrative Code Section 5202(e).

Section 5. The Board finds and determines that the rates specified in Section 1, together with other revenues from Metropolitan's charges, ad valorem property taxes, and other miscellaneous revenue, do not exceed the reasonable and necessary cost of providing Metropolitan's water service for which the rates and charges are made, or of conferring the benefit provided, and is fairly apportioned to each member agency as specified in Section 6 below.

Section 6. The Board finds and determines that the respective per-acre-foot rates and charges specified in Section 1 are paid for the corresponding products or services and use of Metropolitan's water system, that Metropolitan provides such products or services directly to the member agencies or other users of Metropolitan's system that pay such rates and charges, and that such products or services are not provided to those not charged.

Section 7. The Board finds and determines that each of the rates specified in Section 1 are set for Metropolitan's services and are not levied for separate general revenue purposes.

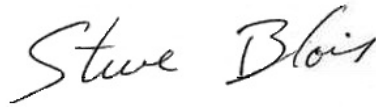
Section 8. The General Manager and the General Counsel are hereby authorized to do all things necessary and desirable to accomplish the purposes of this Resolution, including, without limitation, the commencement or defense of litigation.

Section 9. This Board finds that approval of the rates provided in this Resolution is not defined as a Project under the California Environmental Quality Act (CEQA), because they will not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment and involve continuing administrative activities, such as general policy and procedure making (Section 15378(b)(2) of the State CEQA Guidelines). In addition, the proposed actions are not subject to CEQA because they involve the creation of government funding mechanisms or other government fiscal activities, which do not involve any commitment to any specific project which may

result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines).

Section 10. If any provision of this is held invalid, that invalidity shall not affect other provisions of this Resolution which can be given effect without the invalid portion or application, and to that end the provisions of this Resolution are severable.

I HEREBY CERTIFY that the foregoing is a full, true and correct copy of a Resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California, at its meeting held on April 10, 2018.



Secretary of the Board of Directors
of The Metropolitan Water District
of Southern California

**THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA**

RESOLUTION 9235

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
FIXING AND ADOPTING
A READINESS-TO-SERVE CHARGE EFFECTIVE JANUARY 1, 2019**

WHEREAS, pursuant to Resolution 8774, the Board of Directors (“Board”) of The Metropolitan Water District of Southern California (“Metropolitan”) approved a rate structure proposal at its meeting on October 16, 2001, described in Board Letter 9-6, including a Readiness-To-Serve (“RTS”) Charge; and

WHEREAS, providing firm revenue sources is a goal of such rate structure; and

WHEREAS, the amount of revenue to be raised by the RTS Charge shall be as determined by the Board and allocation of the RTS Charge among member public agencies (“member agencies”) shall be in accordance with the method established by the Board; and

WHEREAS, the RTS Charge is a charge fixed and adopted by Metropolitan and charged to its member agencies, and is not a fee or charge imposed upon real property or upon persons as an incident of property ownership; and

WHEREAS, Metropolitan has legal authority to fix and adopt such RTS Charge as a water rate pursuant to Sections 133 and 134 of the Metropolitan Water District Act (the “Act”), and to fix it as an availability of service charge pursuant to Section 134.5 of the Act; and

WHEREAS, under authority of Sections 133 and 134 of the Act, the Board has the authority to fix the rate or rates for water as will result in revenue which, together with other revenues, will pay Metropolitan’s operating expenses and provide for payment of other costs, including payment of the interest and principal of Metropolitan’s non-tax funded bonded debt; and

WHEREAS, the RTS Charge recovers the capital expenditures for infrastructure projects needed to provide emergency storage capacity and available capacity needed to maintain reliable deliveries during outages and service interruptions and during periods of hydrologic variability; and

WHEREAS, pursuant to Resolution 8329, adopted by the Board on July 9, 1991 and Resolution 9199, adopted by the Board on March 8, 2016, and as each is thereafter amended and supplemented, proceeds of the RTS Charge and other revenues from the sale or availability of water are pledged to the payment of Metropolitan’s outstanding revenue bonds and to the payment of Metropolitan’s outstanding subordinate revenue bonds and to revenue bonds and subordinate bonds to be issued pursuant to Resolution 8329 and Resolution 9199; and

WHEREAS, under authority of Section 134.5 of the Act, a RTS Charge levied as an availability of service charge may be collected from the member agencies within Metropolitan, or may continue to be collected as a standby charge against individual parcels within Metropolitan’s service area; and

WHEREAS, certain member agencies of Metropolitan have opted in prior fiscal years to provide collection of all or a portion of their RTS Charge obligation through a Metropolitan water standby charge (“Standby Charge”) levied on parcels within those member agencies; and

WHEREAS, under authority of Section 134.5 of the Act, the Standby Charge may continue to be levied on each acre of land or each parcel of land less than an acre within Metropolitan to which water is made available for any purpose by Metropolitan, whether the water is actually used or not; and

WHEREAS, Metropolitan is willing to comply with the requests of member agencies opting to have Metropolitan continue to levy the Standby Charge within their respective territories, on the terms and subject to the conditions contained herein; and

WHEREAS, in *San Diego County Water Authority v. Metropolitan Water District of Southern California, et al.*, San Francisco Superior Court Case Nos. CPF-16-515282 and CPG-17-563350 (the “2016 and 2017 Cases”, collectively), the San Diego County Water Authority challenged Metropolitan’s water rates and charges adopted on April 12, 2016 and the charges adopted on April 11, 2017, respectively, and Metropolitan is defending such challenges; and

WHEREAS, on February 1, 2018, the General Manager and Chief Financial Officer provided to the Board and the public a board letter describing the proposed biennial budget for fiscal years 2018/19 and 2019/20, identifying key assumptions, addressing key circumstances such as current state water supply conditions, and continued suspension of the ad valorem rate restrictions under Section 124.5 of the MWD Act to allow Metropolitan to maintain the current ad valorem tax rate, incorporating a ten-year financial forecast; determining anticipated total revenues and revenues anticipated to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, identifying revenue requirements for that period and recommending rates and charges consistent with cost of service principles to be effective January 1, 2019/ and January 1, 2020, and explaining that costs and revenues may be at variance with forecasts and variations will be addressed, for example by contributions to, or withdraws from, financial reserves maintained for this purpose; and

WHEREAS, the recommended charges were developed using the same unbundled water rate elements in the rate structure approved by Resolution 8774 and implemented by Resolution 8805, as detailed in the fiscal years 2018/19 and 2019/20 Cost of Service Report for Proposed Water Rates and Charges (the “2018 Cost of Service Report”) provided to the Board and the public on February 1, 2018; and

WHEREAS, the detailed proposed departmental and non-departmental biennial budget for fiscal years 2018/19 and 2019/20 (the “Proposed Biennial Budget”) was distributed to the Board and the public on February 1, 2018; and

WHEREAS, on March 7, 2018, the CIP appendix to the detailed Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 was provided to the Board and the public, providing detailed information on proposed capital projects and capital improvement costs; and

WHEREAS, Board workshops and discussions regarding the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 and water rates and charges for calendar years 2019 and 2020 were held on February 12, 2018 and March 12, 2018 at the regularly scheduled Finance and Insurance Committee meetings, and on February 27, 2018 and March 27, 2018 at special meetings of the Finance and Insurance Committee; and

WHEREAS, on February 12, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee of Metropolitan’s Board the Proposed Biennial Budget for fiscal years 2018/19 and

2019/20, ten-year financial forecast, determination of anticipated total revenues and of revenues anticipated to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and his recommended rates to be effective January 1, 2019 and January 1, 2020, and charges for fiscal years 2018/19 and 2019/20; and

WHEREAS, on February 27, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee further detail regarding the estimated revenue requirements in the Proposed Biennial Budget, provided an overview of Metropolitan's existing rate structure and the process of determining rate components under Metropolitan's existing rate structure, and addressed questions previously raised by the Board; and

WHEREAS, on March 12, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee a summary of the proposed CIP budget, addressed additional questions raised by the Board, and discussed financial policies and the impact on the proposed biennial budget and resulting revenue requirements and rates and charges; and

WHEREAS, the Board conducted a public hearing on its proposed rates and charges for calendar years 2019 and 2020 at its regular meeting on March 13, 2018, at which interested parties were given the opportunity to present their views regarding the proposed rates and charges; and

WHEREAS, notice of the public hearing on the proposed rates and charges was published prior to the hearing in various newspapers of general circulation within Metropolitan's service area; and

WHEREAS, written notice of intention of Metropolitan's Board to consider and take action at its regular meeting held April 10, 2018, to adopt Metropolitan's RTS Charge for calendar year 2019 was given to each of Metropolitan's member agencies; and

WHEREAS, Metropolitan received written comments regarding the proposed water rates and charges, which, together with Metropolitan's responses, have been provided to the Board and the public; and

WHEREAS, on April 4, 2018, the General Manager and Chief Financial Officer provided to the Board and the public a board letter describing the recommendations for the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 (updated with minor revisions since the version distributed on February 1, 2018); determination of total revenues and of revenues to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and proposed rates to be effective January 1, 2019 and January 1, 2020, and charges to be effective January 1, 2019; and

WHEREAS, the April 4, 2018 board letter included the Proposed Biennial Budget, ten-year financial forecast and detailed 2018 Cost of Service Report (updated with minor revisions, corrections and updates since their version distributed on February 1, 2018); and

WHEREAS, on April 9, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee of Metropolitan's Board the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 and ten-year financial forecast, determination of total revenues and of revenues to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and the recommended rates to be effective January 1, 2019 and January 1, 2020, and charges to be effective January 1, 2019, explaining that actual revenues and expenses may vary from budgeted amounts for a variety of reasons, and that Administrative Code Section 5202(e) contemplates variation in actuals to budget and provides policy guidance to the Board and that

Metropolitan's financial obligations may include liabilities and future commitments, such as retiree obligations and debt service, that are not reflected in the budget but that can be addressed in a

fiscally prudent manner to reduce future obligations and keep future rate increases reasonable within the policy guidance provided by Administrative Code Section 5202(e); and

WHEREAS, based on the feedback received from board workshops held on February 12, 2018, February 27, 2018, March 12, 2018, and March 27, 2018, and at the public hearing on March 13, 2018, the General Manager proposed rates and charges for adoption on April 10, 2018; and

WHEREAS, on April 10, 2018, the Board considered the rates and charges presented by the General Manager and approved the biennial budget for fiscal years 2018/19 and 2019/20 and adopted recommended water rates for calendar years 2019 and 2020 and charges for calendar year 2019; and

WHEREAS, in approving the Proposed Biennial Budget and adopting the rates and charges on April 10, 2018, the Board determined the amount of revenue to be raised by the RTS Charge in calendar year 2019 to be \$133,000,000; and

WHEREAS, written notice of intention of Metropolitan's Board to consider and take action at its regular meeting of April 10, 2018, to adopt Metropolitan's RTS Charge for calendar year 2019 was given to each of Metropolitan's member agencies; and

WHEREAS, the RTS Charge for calendar year 2019 applicable to each member agency is reflected in the Engineer's Report dated April 2018 and its method of its calculation and the specific data used in its determination are as specified in the updated cost of service report; and

WHEREAS, each of the meetings of the Board were conducted in accordance with the Brown Act (commencing at Section 54950 of the Government Code), for which due notice was provided and at which quorums were present and acting throughout;

NOW, THEREFORE, the Board of Directors of The Metropolitan Water District of Southern California does hereby resolve, determine and order as follows:

Section 1. That the Board of Directors of Metropolitan hereby fixes and adopts an RTS Charge for the period from January 1, 2019 through December 31, 2019.

Section 2. That said RTS Charge shall be in an amount sufficient to provide for payment of debt service not paid from ad valorem property taxes, and other appropriately allocated costs, for capital expenditures for infrastructure projects needed to provide emergency storage capacity and available capacity needed to maintain reliable deliveries during outages and service interruptions and during periods of hydrologic variability.

Section 3. That such RTS Charge for January 1, 2019 through and including December 31, 2019 shall be in the amounts specified in Section 4, which shall be determined on a historic basis for each acre-foot of water, excluding water sales of reclaimed water under the Local Projects Program, and Local Resources Program, groundwater under the Groundwater Recovery Program, and Local Resources Program, groundwater under the Groundwater Recovery Program and deliveries under Replenishment and Interim Agricultural Water, included in Metropolitan's average water deliveries to its member agencies for the applicable ten-year period identified in Section 4. The aggregate RTS Charge for the period from January 1, 2019 through and including December 31, 2019 shall also be as specified in Section 4.

Section 4. That the RTS Charge for January 1, 2019 through December 31, 2019 shall be allocated among the member agencies in proportion to the average of deliveries through Metropolitan's system (in acre-feet) to each member agency during the ten-year period ending June 30, 2017. Metropolitan sales of reclaimed water under the Local Projects Program, groundwater under the Groundwater Recovery

Program, and deliveries under the Replenishment and Interim Agricultural Water Service Programs are not included in the RTS Charge water sales calculation. The allocation of the RTS Charge among member agencies is based on sales data recorded by Metropolitan and shall be conclusive in the absence of manifest error.

The amount of the RTS Charge to be charged to each member agency effective January 1, 2019, is as follows:

Schedule 1

Calendar Year 2019 Readiness–To–Serve Charge

Water rate \$78.74/acre–foot			
Member Agency	Rolling Ten-Year Average Firm Deliveries (Acre-Feet) FY2007/08 - FY2016/17	RTS Share	12 months @ \$133 million per year (1/19-12/19)
Anaheim	18,523.8	1.14%	\$ 1,517,685
Beverly Hills	10,823.4	0.67%	886,779
Burbank	12,640.6	0.78%	1,035,665
Calleguas MWD	103,113.8	6.35%	8,448,282
Central Basin MWD	48,484.8	2.99%	3,972,439
Compton	1,274.6	0.08%	104,430
Eastern MWD	95,591.2	5.89%	7,831,943
Foothill MWD	9,104.1	0.56%	745,914
Fullerton	8,711.6	0.54%	713,756
Glendale	17,789.4	1.10%	1,457,515
Inland Empire Utilities Agency	58,419.2	3.60%	4,786,381
Las Virgenes MWD	21,650.8	1.33%	1,773,885
Long Beach	32,108.6	1.98%	2,630,710
Los Angeles	322,746.6	19.88%	26,443,157
Municipal Water District of Orange County	210,138.2	12.95%	17,216,966
Pasadena	19,875.5	1.22%	1,628,432
San Diego County Water Authority	318,873.9	19.64%	26,125,860
San Fernando	35.7	—%	2,925
San Marino	815.9	0.05%	66,848
Santa Ana	11,210.7	0.69%	918,511
Santa Monica	7,253.7	0.45%	594,308
Three Valleys MWD	63,729.7	3.93%	5,221,479
Torrance	16,891.1	1.04%	1,383,915
Upper San Gabriel Valley MWD	24,161.1	1.49%	1,979,558
West Basin MWD	118,121.7	7.28%	9,677,904
Western MWD	71,214.9	4.39%	5,834,753
MWD Total	1,623,304.6	100.02%	\$ 133,000,000
Totals may not foot due to rounding			

Section 5. That the RTS Charge specified in Schedule 1, together with other revenues from Metropolitan’s water rates, other charges, ad valorem property taxes, and other miscellaneous revenue, does not exceed the reasonable and necessary cost of providing Metropolitan’s water service for which the rates and charges are made, or of conferring the benefit provided, and is fairly apportioned to each member

agency as specified in Section 6 below.

Section 6. That water conveyed through Metropolitan's system for the purposes of water transfers, exchanges or other similar arrangements shall be included in the calculation of a member agency's rolling ten-year average firm demands used to allocate the RTS Charge.

Section 7. That the RTS Charge and the amount applicable to each member agency, the method of its calculation, and the specific data used in its determination are as specified in the adopted rates and charges to be effective January 1, 2019, which forms the basis of the RTS Charge, and the corresponding 2018 Cost of Service Report. The adopted rates and charges and cost of service reports are on file and available for review by interested parties at Metropolitan's headquarters.

Section 8. That except as provided in Section 10 below with respect to any RTS Charge collected by means of the Standby Charge, the RTS Charge shall be due monthly, quarterly or semiannually as agreed upon by Metropolitan and the member agency.

Section 9. That such RTS Charge may, at the request of any member agency which elected to utilize the Standby Charge as a mechanism for collecting the RTS Charge obligation in fiscal year 1996/97, be collected by continuing the Standby Charge at the same rates levied in fiscal year 1996/97 upon land within Metropolitan's (and such member agency's) service area to which water is made available by Metropolitan for any purpose, whether such water is used or not.

Section 10. That the Standby Charge shall be collected on the tax rolls, together with the ad valorem property taxes which are levied by Metropolitan for the payment of pre-1978 voter-approved indebtedness. Any amounts so collected shall be applied as a credit against the applicable member agency's RTS Charge obligation. After such member agency's RTS Charge allocation is fully satisfied, any additional collections shall be credited to other outstanding obligations of such member agency to Metropolitan that funds the capital costs or maintenance and operation expenses for Metropolitan's water system, or future RTS Charge obligations of such agency. Notwithstanding the provisions of Sections 8 and 9 above, any member agency requesting to have all or a portion of its RTS Charge obligation collected through Standby Charge levies within its territory as provided herein shall pay any portion not collected through net Standby Charge collections to Metropolitan within 50 days after Metropolitan issues an invoice for remaining RTS Charge obligations for such member agency, as provided in Administrative Code Section 4507.

Section 11. That notice is hereby given to the public and to each member agency of The Metropolitan Water District of Southern California of the intention of Metropolitan's Board to consider and take action at its regular meeting to be held May 8, 2018 (or such other date as the Board shall hold its regular meeting in such month), on the General Manager's recommendation to continue the Standby Charge for fiscal year 2018/19 under authority of Section 134.5 of the Act on land within Metropolitan at the same rates, per acre of land, or per parcel of land less than an acre, levied in fiscal year 1996/97 upon land within Metropolitan's (and such member agency's) service area. Such Standby Charge will be continued as a means of collecting the RTS Charge.

Section 12. That no failure to collect, and no delay in collecting, any Standby Charge shall excuse or delay payment of any portion of the RTS Charge when due.

Section 13. That the RTS Charge is fixed and adopted by Metropolitan as a rate or charge on its member agencies, and is not a fee or charge imposed upon real property or upon persons as incidents of property ownership, and the Standby Charge is collected within the respective territories of electing member agencies as a mechanism for collection of the RTS Charge. In the event that the Standby Charge, or any portion thereof, is determined to be an unauthorized or invalid fee, charge or assessment by a final

judgment in any proceeding at law or in equity, which judgment is not subject to appeal, or if the collection of the Standby Charge shall be permanently enjoined and appeals of such injunction have been declined or exhausted, or if Metropolitan shall determine to rescind or revoke the Standby Charge, then no further Standby Charge shall be collected within any member agency and each member agency which has requested continuation of the Standby Charge as a means of collecting its RTS Charge obligation shall pay such RTS Charge obligation in full, as if continuation of such Standby Charge had never been sought.

Section 14. That the General Manager and the General Counsel are hereby authorized to do all things necessary and desirable to accomplish the purposes of this Resolution, including, without limitation, the commencement or defense of litigation.

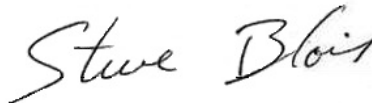
Section 15. That this Board finds that the RTS Charge and other charges provided in this Resolution are not defined as a project under CEQA because they will not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment and involve continuing administrative activities, such as general policy and procedure making (Section 15378 (b)(2) of the State CEQA Guidelines). In addition, the proposed action is not subject to CEQA because it involves other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines).

Section 16. That if any provision of this Resolution or the application to any member agency, property or person whatsoever is held invalid, that invalidity shall not affect other provisions or applications of this Resolution which can be given effect without the invalid portion or application, and to that end the provisions of this Resolution are severable.

Section 17. That the General Manager is hereby authorized and directed to take all necessary action to satisfy relevant statutes requiring notice by mailing or by publication.

Section 18. That the Board Executive Secretary is hereby directed to transmit a certified copy of this Resolution to the presiding officer of the governing body of each member agency.

I HEREBY CERTIFY that the foregoing is a full, true and correct copy of a Resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California, at its meeting held on April 10, 2018.



Secretary of the Board of Directors
of The Metropolitan Water District
of Southern California

**THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
ENGINEER'S REPORT**

**PROGRAM TO LEVY READINESS-TO-SERVE CHARGE EFFECTIVE JANUARY 1, 2019,
INCLUDING LOCAL OPTION FOR STANDBY CHARGE,
DURING FISCAL YEAR 2018/19**

April 2018

BACKGROUND

The Metropolitan Water District of Southern California is a public agency with a primary purpose to provide imported wholesale water supply for domestic and municipal uses to its 26 member public agencies. More than 18 million people reside within Metropolitan's service area, which covers approximately 5,200 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura. Metropolitan historically provided between 40 and 60 percent of the water used within its service area. To supply Southern California with reliable and safe water, Metropolitan imports water from the Colorado River and Northern California to supplement local supplies, and helps its member agencies develop increased water conservation, recycling, storage and other local resource programs.

REPORT PURPOSES

As part of its role as an imported water supplier, Metropolitan builds capital facilities and implements water management programs that ensure the delivery of reliable high quality water supplies throughout its service area. The purpose of this report is to: (1) identify and describe those facilities and programs that will be financed in part by Metropolitan's Readiness-to-Serve (RTS) Charge, and (2) describe the method and basis for levying Metropolitan's Standby Charge for those agencies electing to continue to collect a portion of their RTS obligation through Metropolitan's Standby Charge in fiscal year 2018/19. **Because the Standby Charge is levied and collected on a fiscal year basis the calculations in this report also are for the fiscal year, even though the RTS Charge is levied on a calendar year basis.** The RTS Charge for calendar year 2018 was adopted by Metropolitan's Board on April 11, 2017 and the RTS Charge for 2019 will be considered by the Board on April 10, 2018.

Metropolitan levies the RTS Charge on its member agencies to recover a portion of the capital costs including debt service on bonds issued to finance capital facilities needed to meet demands on Metropolitan's system for emergency storage and available capacity to meet outages and hydrologic variability. The Standby Charge is collected from parcels of land within Metropolitan's member agencies that have elected to collect all or a portion of their RTS obligation through the Standby Charge, as a method of recovering the costs of special benefits conferred on parcels within their service area. The RTS Charge will partially pay for the facilities and programs described in this report, namely, the amount attributable to the portions providing emergency storage and available capacity to meet outages and hydrologic variability. The Standby Charge, when collected, will be utilized solely for capital payments and debt service on the capital facilities funded by the RTS Charge, as identified in this report.

The budgeted total RTS revenue for fiscal year 2018/19 is \$136.5 million, of which \$43.6 million is estimated to be collected via the Standby Charge.

METROPOLITAN'S RESPONSE TO FLUCTUATING WATER DEMANDS AND AVAILABILITY OF WATER SOURCES

Metropolitan's member agencies have widely differing imported water supply needs and the availability of imported water supply from various sources also varies widely. Some agencies have no local water resources and rely on Metropolitan for 100 percent of their annual water needs. Other agencies have adequate local surface supplies and storage and/or groundwater basins that provide them with the majority of their water supplies during wet and average years. However, during dry periods and/or based on a variety of other factors, these agencies rely on Metropolitan to make up any shortfalls in local water supplies. Similar coordination challenges arise in managing water available from Metropolitan's various water supply sources.

To respond to fluctuating demands for water, Metropolitan and its member agencies collectively examined the available local and imported resource options in order to develop a least-cost plan that meets the reliability and quality needs of the region. The product of this intensive effort was an Integrated Resources Plan (IRP) for achieving a reliable and affordable water supply for Southern California. The major objective of the IRP was to develop a comprehensive water resources plan that ensures (1) reliability, (2) affordability, (3) water quality, (4) diversity of supply, and (5) adaptability for the region, while recognizing the environmental, institutional, and political constraints to resource development. As these constraints change over time, the IRP is periodically revisited and updated by Metropolitan and the member agencies to reflect current conditions. To meet the water supply needs of the region, by delivering water to member agencies that contributes to water available to existing and future end users throughout Metropolitan's service area, Metropolitan continues to identify and develop additional water supplies to maintain the reliability of the imported water supply and delivery system. These efforts include the construction of capital facilities and implementation of demand management programs. The demand management programs offset the need to transport or store additional water into or within the Metropolitan service area, thus avoiding and deferring the need for additional infrastructure construction, operation, and maintenance, saving such costs; and free up capacity in the system.

CAPITAL FACILITIES - CONVEYANCE AND DISTRIBUTION

Metropolitan's total water system has been built over time to meet the widely differing needs of its member agencies and the various sources of water available to Metropolitan. To meet those needs, Metropolitan's water delivery system is comprised of three basic conveyance and delivery components that form one integrated water system:

- SWP;
- Colorado River Aqueduct (CRA); and
- Distribution System

The system draws on diverse supply sources, transports water across a large part of the State and distributes water in six counties, where member agencies or their retail sub-agencies serve an estimated 18.8 million people. The CRA and the California Aqueduct of the SWP convey imported water into the Metropolitan service area. This water is then delivered to Metropolitan's member agencies via a regional network of canals, pipelines, and appurtenant facilities, which constitute the Distribution System. Supply, treatment, and storage facilities augment the Distribution System. The system is an interconnected regional conveyance and distribution system with the ability to deliver supplies from each of the SWP, the CRA, and its storage portfolio throughout its vast and diverse service area to almost every member agency. This flexibility derives from the capital facilities and provides local and system-wide benefits to all member agencies, as the facilities directly contribute to the reliable delivery of water supplies throughout Metropolitan's service area.

As the 2007 Integrated Area Study (IAS) emphasized, regional system flexibility is a key component of overall reliability.¹ Metropolitan must maintain operational flexibility-the ability to respond to short-term changes in regional water supply, water quality, treatment requirements, and member agency demands. Metropolitan must maintain delivery flexibility-the ability to maintain partial to full water supply deliveries during planned and unplanned facility outages. Metropolitan is also required by state statute to serve as large an area as is determined to be reasonable and practical with SWP water; and where a blend of water sources is served, to have the objective to the extent determined to be reasonable and practical, that at least 50 percent of the blend be SWP water. (MWD Act, Sec. 136.)

Operational flexibility has been achieved by creating an interconnected regional delivery network integrating the SWP and the CRA conveyance systems with the Distribution System. This integrated network allows Metropolitan to incorporate supply from the SWP and the CRA with a diverse portfolio of geographically dispersed storage programs, including the Central Valley groundwater storage programs, carryover storage in San Luis Reservoir, flexible storage capacity in Castaic Lake and Lake Perris, Lake Mead storage, the Desert Water Agency/Coachella Valley Water District Advanced Delivery account, in-basin surface storage in Diamond Valley Lake and Lake Mathews, and in-basin groundwater Conjunctive Use Programs. This integrated, regional network also allows Metropolitan to move supplies throughout the system in response to service demands, supply availability and operational needs.

Therefore, each of Metropolitan's integrated conveyance, distribution and storage assets contributes to regional system reliability. It is fair and reasonable for member agencies and all property owners within the service area to share the cost of developing and maintaining these assets because they all benefit from regional system reliability.

State Water Project Description and Benefits

One of Metropolitan's two major sources of water is the SWP.² The SWP is the largest state-built, multipurpose, user-financed water project in the country. It was designed and built primarily to deliver water, but also provides flood control, generates power for pumping, is used for recreation, and enhances habitat for fish and wildlife.

The SWP consists of a complex system of dams, reservoirs, power plants, pumping plants, canals and aqueducts to deliver water. See Figure 1. SWP water consists of water from rainfall and snowmelt runoff that is captured and stored in SWP conservation facilities and then delivered through SWP transportation facilities to water agencies and districts located throughout the Upper Feather River, Bay Area, Central Valley, Central Coast, and Southern California. In addition to the supply of SWP water, the SWP is also used to convey transfers of SWP water and non-SWP water. Metropolitan receives water from the SWP through the California Aqueduct, which is 444 miles long, and at four delivery points near the northern and eastern boundaries of Metropolitan's service area.

¹ 2007 Integrated Area Study, Report No. 1317, pg. 2-10.

² For historical and current information regarding the SWP, refer to Bulletin 132, published periodically by DWR since 1963. The most recently published Bulletin is Bulletin 132-16 dated June 2017 and titled "Management of the California State Water Project."

Figure 1. Facilities of the State Water Project



The SWP is managed and operated by the Department of Water Resources (DWR). All water supply-related capital expenditures and operations, maintenance, power and replacement (OMP&R) costs associated with the SWP conservation and transportation facilities are paid for by 29 agencies and districts, known collectively as the State Water Contractors (Contractors). The Contractors are participants in the SWP through long-term contracts for the delivery of SWP water and use of the SWP transportation facilities.

In 1960, Metropolitan signed the first water supply contract (as amended, the State Water Contract) with DWR. In addition to SWP water, Metropolitan also obtains water from water transfers, groundwater banking and exchange programs delivered through the California Aqueduct.

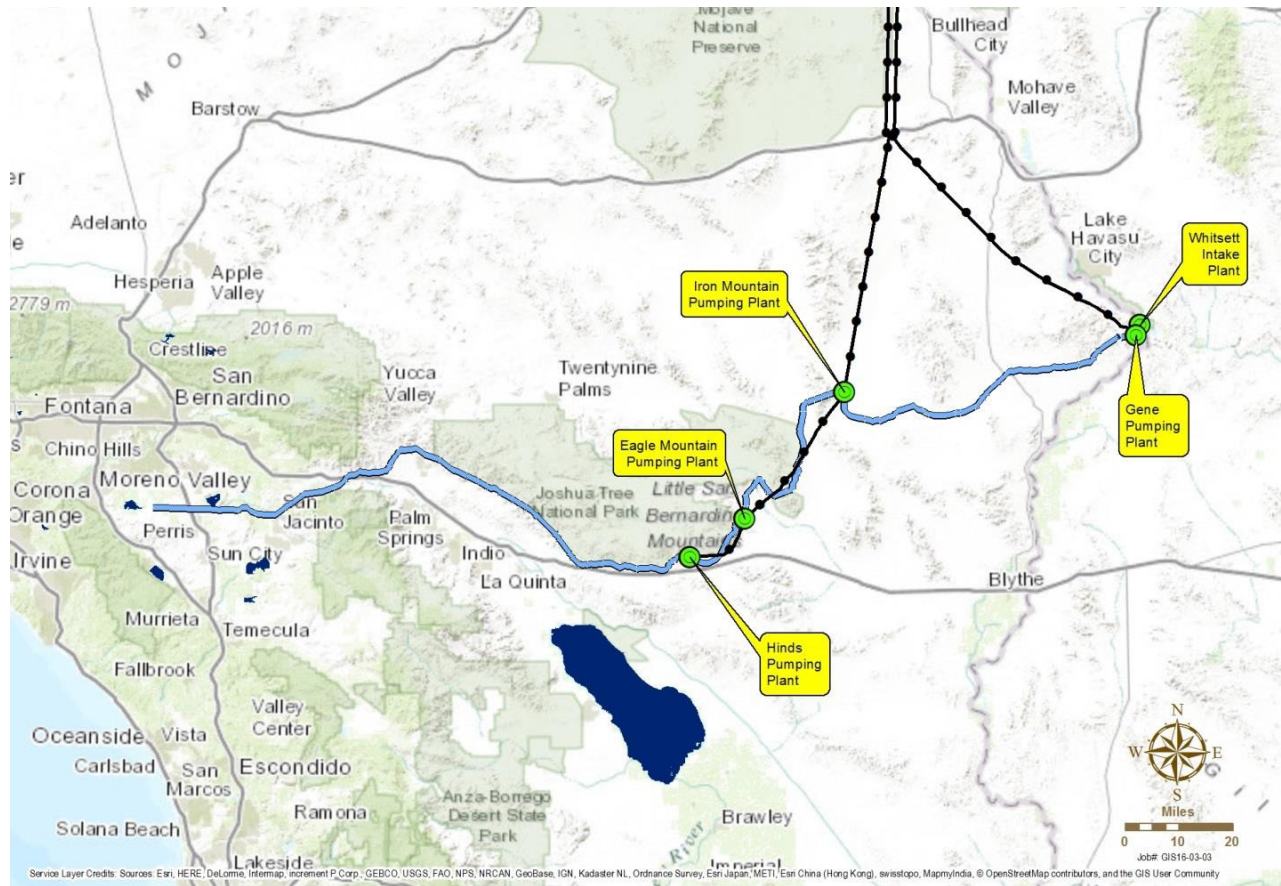
All Metropolitan member agencies benefit from the SWP system and its supplies, which can be distributed to all member agencies. Metropolitan's member agencies distribute that water to parcels as retail water providers or as wholesale water providers to retail agencies. In this way, the SWP water that Metropolitan delivers to its member agencies contributes to water available to existing and future end users throughout Metropolitan's service area. The potential benefits of the SWP allocable to the Standby Charge in fiscal year 2017/18 is \$38 million, as shown in Table 1.

Colorado River Aqueduct Description and Benefits

Metropolitan's other major source of water is the CRA. Metropolitan was established to obtain an allotment of Colorado River water, and its first mission was to construct and operate the CRA. The CRA consists of five pumping plants, 450 miles of high voltage power lines, one electric substation, four regulating reservoirs, and 242 miles of aqueducts, siphons, canals, conduits and pipelines terminating at Lake Mathews in Riverside County. See Figure 2. Metropolitan owns, operates, and manages the Colorado River Aqueduct. Metropolitan is responsible for operating, maintaining, rehabilitating, and repairing the CRA, and is responsible for obtaining and scheduling energy resources adequate to power pumps at the CRA's five pumping stations.

Metropolitan incurs capital and operations and maintenance expenditures to support the CRA activities. The direct costs of the CRA activities include labor, materials and supplies, as well as outside services to provide repair and maintenance, and professional services. The CRA activities benefit from Water System Operations support services and management supervision, as well as Administrative and General activities of Metropolitan. Metropolitan finances past, current and future capital improvements on the CRA, and capitalizes those improvements as assets. The costs of Metropolitan's capital financing activities are apportioned to service functions, such as the CRA Conveyance and Aqueduct function. The potential benefits of the Colorado River Aqueduct allocable to the Standby Charge is shown as part of the \$158 million Non-SWP Conveyance and Distribution System line item in Table 1.

Figure 2. Colorado River Aqueduct



Metropolitan’s Conveyance and Distribution System Benefits

For purposes of this report, components of the conveyance system are considered to include only those major trunk facilities that transport water from primary supply sources to either regional storage facilities or feeder lines linked to the primary conveyance facilities. See Figure 3. For a list of Metropolitan’s conveyance facilities within its service area, see Table 3. All other water transport facilities, including pipelines, feeders, laterals, canals and aqueducts, are considered to be distribution facilities. Distribution facilities can be further identified in that they generally have at least one connection to a member agency’s local distribution system. For a list of Metropolitan’s distribution facilities, see Table 3.

All water transport facilities not specifically identified as part of the regional conveyance system are considered to be distribution facilities (Distribution System). While conveyance and aqueduct system components are regional in nature and generally do not link directly to local agency distribution systems, Distribution System facilities do ultimately connect to local agency systems. As a result, these facilities rely on conveyance and aqueduct facilities to import water from regional supply sources. The Distribution System is a complex network of facilities which routes water from the CRA and SWP to the member agencies. Beginning at the terminal delivery points of the CRA and SWP, Metropolitan’s Distribution System includes approximately 775 miles of pipelines, feeders, and canals. Distribution System operations are coordinated from the Operations Control Center in Eagle Rock. The control center plans, schedules, and balances daily water operations in response to member agency demands and the operational limits of the system as a whole. Metropolitan’s storage and treatment facilities augment the Distribution System. Metropolitan operates and maintains separate untreated and treated distribution facilities.

Figure 3. Metropolitan’s Distribution and Storage Facilities



Metropolitan has an ongoing commitment, through physical system improvements and the maintenance and rehabilitation of existing facilities, to maintain the reliable delivery of water throughout the entire service area. System improvement projects include additional conveyance and distribution facilities to maintain the dependable delivery of water supplies, provide alternative system delivery capacity, and enhance system operations. Conveyance and distribution system improvement benefits also include projects to upgrade obsolete facilities or equipment, or to rehabilitate or replace facilities or equipment. These projects are needed to enhance system operations, comply with new regulations, and maintain a reliable distribution system. A list of conveyance and distribution system facilities is provided in Table 3 along with the fiscal year 2018/19 estimated conveyance and distribution system benefits. The potential benefits of the Distribution System allocable to the Standby Charge is shown as part of the \$158 million Non-SWP Conveyance and Distribution System line item in Table 1.

CAPITAL FACILITIES - WATER STORAGE

System Storage Benefits

The Metropolitan system, for purposes of meeting demands during times of shortage, regulating system flows, and to ensure system reliability in the event of a system outage, provides over 1,000,000 acre-feet of system storage capacity. Diamond Valley Lake provides 810,000 acre-feet of that storage capacity, effectively doubling Southern California's previous surface water storage capacity. Other existing imported water storage available to the region consists of Metropolitan's raw water reservoirs, a share of the SWP's raw water reservoirs in and near the service area, and the portion of the groundwater basins used for conjunctive-use storage.

Water stored in system storage during above average supply conditions (surplus) provides a reserve against shortages when supply sources are limited or disrupted. Water storage also preserves Metropolitan's capability to deliver water during scheduled maintenance periods, when conveyance facilities must be removed from service for rehabilitation, repair, or maintenance. The benefits of these capital facilities are both local and system-wide, as the facilities directly contribute to the reliable delivery of water supplies throughout Metropolitan's service area. The potential benefits of water storage allocable to the Standby Charge in fiscal year 2018/19 is shown in Table 1.

DEMAND MANAGEMENT PROGRAMS

Demand management programs include local water resource development programs and water conservation programs. These demand management programs incentivize the development of local water supplies and the conservation of water to reduce the reliance on imported water. These programs are implemented after the service connection between Metropolitan and its member agencies and, as such, do not add any water to the quantity Metropolitan obtains from other sources or to Metropolitan's own supply. Rather, the effect of these downstream programs in terms of water supply is to produce or conserve a local supply of water for the local agencies. The financial effect for Metropolitan is to avoid and defer the need for additional infrastructure construction, operation, and maintenance, thus contributing to transportation infrastructure savings for all users of the system. The programs also free up conveyance capacity in the system to the benefit of all system users.

Therefore, investments in demand side management programs like conservation, water recycling and groundwater recovery help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all system users. The potential benefits of the demand management programs allocable to the Standby Charge of \$89 million in fiscal year 2018/19 is shown in Table 1.

Local Resources Program Benefits

In 1982, Metropolitan's Board adopted the Local Resources Program (LRP) with the goal of developing local water resources in a cost-efficient manner. Financial incentives are provided to member agency-sponsored projects that best help the region achieve its local resource production goals of restoring degraded groundwater resources for potable use as well as developing recycled water and seawater desalination supplies. These projects provide new water supplies within Metropolitan's service area, which, as explained, help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all system users.

In 1999, the California Legislature and Governor recognized the regional benefit of demand management programs by enacting Senate Bill 60, which states: "It is the intent of the Legislature that the

Metropolitan Water District of Southern California expand water conservation, water recycling, and groundwater recovery efforts” and “The Metropolitan Water District of Southern California shall place increased emphasis on sustainable, environmentally sound, and cost-effective water conservation, recycling, and groundwater storage and replenishment measures.” (MWD Act, Sec. 130.5.)

Combined production from participating recycling and groundwater recovery projects produced approximately 228,000 acre-feet of water in fiscal year 2016/17 with financial incentive payments of about \$36 million. Regional recycling, recovered groundwater, and desalinated seawater production are projected to be about 750,000 acre-feet per year, by year 2025. An estimate of the potential benefits as measured by Metropolitan’s estimated incentive payments for recycling and groundwater recovery projects is shown in Table 2.

Water Conservation Benefits

Metropolitan actively promotes water conservation programs within its service area as a cost-effective strategy for ensuring the long-term reliability of supplies and as a means of reducing the need to increase imported supplies and offset the need to transport or store additional water into or within the Metropolitan service area. Through the Conservation Credits Program, Metropolitan provides financial incentives in regional conservation programs and also reimburses local agencies for a share of their costs of implementing their own conservation programs. Since fiscal year 1990/91, Metropolitan has spent over \$772 million in financial incentives to support regional and local conservation projects.

The actual conservation of water takes place at the retail consumer level. Regional conservation approaches have proven to be effective at reaching retail consumers throughout the service area and successfully implementing water saving devices, programs and practices. Regional investments in demand management programs, of which conservation is a key part along with local supply programs, benefit all member agencies regardless of project location. These programs help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on the district’s infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all system users. Thus, water conservation, as a demand management program, contributes to transportation infrastructure savings for all users of the regional water system.

Through fiscal year 2016/17, Metropolitan’s Conservation Credits Program has saved over 2,312,000 acre-feet since inception. In order to comply with the Governor’s mandate of reducing demand by 20 percent by the year 2020, Metropolitan has continued to increase its conservation efforts to meet that mandate.

In 1999, the California Legislature and Governor recognized the regional benefit of conservation, as well as local supply development, by enacting Senate Bill 60 which states: “It is the intent of the Legislature that the Metropolitan Water District of Southern California expand water conservation, water recycling, and groundwater recovery efforts” and “The Metropolitan Water District of Southern California shall place increased emphasis on sustainable, environmentally sound, and cost-effective water conservation, recycling, and groundwater storage and replenishment measures.” (MWD Act, Sec. 130.5.) An estimate of the potential benefits of water conservation programs as measured by Metropolitan’s incentive payments is given in Table 2.

METROPOLITAN’S REVENUE

Metropolitan’s major capital facilities are financed largely from the proceeds of revenue bond issues, which are repaid over future years. The principal source of revenue for repayment of these bonds is water sales to its member agencies, which is currently Metropolitan’s largest source of revenue. In addition, ad valorem property taxes provide an additional limited revenue source, which is used to pay pre-1978 voter-

approved indebtedness. However, the use of water rates as a primary source of revenue has placed an increasing burden on ratepayers, which would more equitably continue to be paid in part by assessments on land that in part derives its value from the availability of water through an integrated and reliable water system.

Readiness-To-Serve

In December 1993, Metropolitan's Board approved a revenue structure that included additional charges to establish a commitment to Metropolitan's capital improvement program and provide revenue stability. This revenue structure included the RTS Charge, which in 1995 certain member agencies opted to pay in part pursuant to the collection of a standby charge. In October 2001, the Board adopted the current unbundled rate structure, and maintained the RTS Charge.

As noted above, Metropolitan levies the RTS Charge on its member agencies to recover capital costs, including a portion of the debt service on bonds issued to finance capital facilities needed to meet existing demands on Metropolitan's system for emergency storage and available capacity.

The estimated fiscal year 2018/19 RTS Charge for each member agency is shown in Table 4.

Standby Charge Option

Metropolitan's Standby Charge is authorized by the State Legislature and has been levied by Metropolitan since fiscal year 1992/93. The Standby Charge recognizes that there are economic benefits to lands that have access to a water supply, whether or not such lands are using it, which excludes lands permanently committed to open space and maintained in their natural state that are not now and will not in the future be supplied water and lands that the General Manager, in his discretion, finds do not now and cannot reasonably be expected to derive a benefit from the projects to which the proceeds of the Standby Charge will be applied. Utilization of the Standby Charge transfers some of the burden of maintaining Metropolitan's capital infrastructure from water rates and ad valorem taxes to all the benefiting properties within the service area. A fraction of the value of this benefit and of the cost of providing it can be effectively recovered, in part, through the levying of a standby charge. The projects to be supported in part by the Standby Charge are capital projects that provide both local and Metropolitan-wide benefit to current landowners as well as existing water users.

Although a standby charge could have been set to recover all Conveyance, Distribution, Storage and Demand Management costs as detailed in Table 1, Metropolitan's continued Standby Charge only collects about 11% of those charges. For fiscal year 2018/19, the amount to be recovered by the RTS Charge is estimated to be \$136.5 million and of that only \$43.6 million is estimated to be recovered by the Standby Charge.

The Standby Charge for each acre or parcel of less than an acre varies from member agency to member agency, as permitted under the legislation establishing Metropolitan's Standby Charge. The water Standby Charge for each member agency is continued at amounts not to exceed the rates in place since fiscal year 1996/97 and is shown in Table 5, which consists of composite rates by member agencies, not to exceed \$15.00. The composite rates consist in part of a uniform component of \$5 applicable throughout Metropolitan, and in part of a variable component, not exceeding \$10 in any member public agency, reflecting the allocation of historical water deliveries by the member agencies as of fiscal year 1993/94 when the composite rates were initially established. Metropolitan will continue Standby Charges only within the service areas of the member agencies that have requested that the standby charge be utilized for purposes of meeting their outstanding RTS obligation.

The proposed Standby Charge includes the continuation of water standby charges on: (1) parcels on

which water standby charges have been levied in fiscal year 1996/97 and annually thereafter and (2) parcels annexed to Metropolitan and to an electing member agency after January 1997. Table 6 lists parcels annexed, or to be annexed, to Metropolitan and to electing member agencies during fiscal year 2017/18, such parcels being subject to the Standby Charge upon annexation.

The estimated potential benefits of Metropolitan's water supply program, which could be paid by a Standby Charge, exceed \$391 million for fiscal year 2018/19, as shown in Table 1. An average total Standby Charge of about \$91.42 per acre of land or per parcel of land less than one acre would be necessary to pay for the total potential program benefits. Benefits in this amount will accrue to each acre of property and parcel within Metropolitan's service area, as Metropolitan delivers water to member agencies that contributes to water available to these properties, via that member agency or a retail sub-agency. Because Metropolitan's water deliveries to member agencies contributes to water available only to properties located within Metropolitan's service area boundaries (except for certain contractual deliveries as permitted under Section 131 of the Metropolitan Water District Act), any benefit received by the public at large or by properties outside of the area is merely incidental.

Table 5 shows that the distribution of Standby Charge revenues from the various member agency service areas would provide net revenue flow of approximately \$43.6 million for fiscal year 2018/19. Metropolitan will use other revenue sources, such as water sales revenues, RTS Charge revenues (except to the extent collected through standby charges, as described above), interest income, and revenue from sales of hydroelectric power, to pay for the remaining program benefits. Additionally, the actual Standby Charge proposed to be continued ranges from \$5 to \$15 per acre of land or per parcel of land less than one acre. Thus, the benefits of Metropolitan's investments in water conveyance, storage, distribution, and demand management programs far exceed the recommended Standby Charge.

Equity

The RTS Charge is a firm revenue source. The revenues to be collected through this charge will not vary with sales in the current year. This charge is levied on Metropolitan's member agencies and is not a fee or charge upon real property or upon persons as an incident of property ownership. It ensures that agencies that only occasionally purchase water from Metropolitan but receive the reliability benefits of Metropolitan's system pay an equitable share of the costs to provide that reliability. Within member agencies that elect to pay the RTS Charge through Metropolitan's standby charges, the Standby Charge results in lower water rates than would otherwise be necessary due to the amount of revenue collected from lands which benefit from the availability of Metropolitan's water supply. With the Standby Charge, these properties are now contributing a more appropriate share of the cost of importing water to Southern California.

Metropolitan's water system increases the availability and reliable delivery of water throughout Metropolitan's service area. A reliable system benefits existing end users and land uses through retail water service provided by Metropolitan member agencies or by water retailers that purchase water from a Metropolitan member agency, and through the replenishment of groundwater basins and reservoir storage as reserves against shortages due to droughts, natural emergencies, or scheduled facility shutdowns for maintenance. The benefits of reliable water resources from the SWP, CRA, Storage, and system improvements accrue to more than 250 cities and communities within Metropolitan's six-county service area. Metropolitan's regional water system is interconnected, so water supplies from the SWP and CRA can be used throughout most of the service area and therefore benefit water users and properties system-wide.

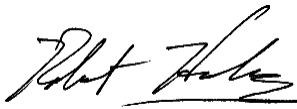
Additional Metropolitan deliveries required in the coming fiscal year due to the demands of property development will be reduced by the implementation of demand management projects, including water conservation, water recycling, and groundwater recovery projects. As with the SWP, CRA and Storage and

the conveyance and distribution facilities, demand management programs increase the future reliability of water resources. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all system users. However, the abilities of each member agency to implement these projects under Metropolitan's financial assistance programs vary, depending on local conditions. A major advantage of a firm revenue source, such as a RTS charge, is that it contributes to revenue stability during times of drought or low water sales. It affords Metropolitan additional security, when borrowing funds, that a portion of the revenue stream will be unaffected by drought or by rainfall. This security will help maintain Metropolitan's historically high credit rating, which results in lower interest expense to Metropolitan, and therefore, lower overall cost to its member agencies.

SUMMARY

The foregoing and the attached tables describe the current benefits provided by the projects listed as mainstays to the water system for Metropolitan's service area. Benefits are provided to member agencies, their retail sub-agencies, water users and property owners. The projects represented by this report provide both local benefits as well as benefits throughout the entire service area. It is recommended, for calendar year 2019, that the Metropolitan Board of Directors adopt the RTS Charge as set forth in Table 4 with an option for local agencies to request that a Standby Charge be collected for fiscal year 2018/19 from lands within Metropolitan's service area as a credit against such member agency's RTS Charge, up to the Standby Charge amounts collected by Metropolitan within the applicable member agency for fiscal year 1996/97. The maximum Standby Charge would not exceed \$15 per acre of land or per parcel of less than one acre. The benefits described in this Engineer's Report exceed the recommended Standby Charge by at least \$347 million. A preliminary listing of all parcels subject to the proposed 2018/19 Standby Charge and the amounts proposed to be continued for each is available in the office of the Chief Financial Officer. A final listing is available upon receipt of final information from each county.

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TABLE 1

**ESTIMATED DISTRIBUTION OF BENEFITS OF
CONVEYANCE, STORAGE, AND DISTRIBUTION INFRASTRUCTURE,
AND DEMAND MANAGEMENT PROGRAMS THAT COULD BE PAID BY STANDBY CHARGE**

	Estimated Potential Program Benefits for FY2018/19	Dollars Per Parcel of 1 Acre or Less
Capital Payments for Water Conveyance, Distribution and Storage		
Net Capital Payments to State Water Project (less portion paid by property taxes)	\$ 38,208,171	\$8.93
Non Tax Supported Capital Costs for System Storage ¹	\$ 157,629,589	\$36.83
Non Tax Supported Capital Costs for Conveyance and Distribution System ²	\$ 106,358,286	\$24.85
Sub-Total Capital Payments	\$ 302,196,046	\$70.61
Demand Management Programs:		
Water Recycling, Groundwater Recovery, and Water Conservation Projects	\$ 89,059,873	\$20.81
TOTAL BENEFITS: Capital Payment and Demand Management Programs	\$ 391,255,919	\$91.42
Estimated Standby Charge Revenues	\$ 43,611,561	\$10.19
Percent Collected by Standby Charge	11%	
Remaining Costs Not Paid by Standby Charge		
Capital Payments for Water Conveyance, Storage, and Distribution	\$ 258,584,485	\$60.42
Demand Management Programs	\$ 89,059,873	\$20.81
Total Remaining Costs Not Paid by Standby Charge	\$ 347,644,358	\$81.23

Notes:

^[1] Non-SWP Conveyance and Distribution facilities include the Colorado River Aqueduct, Inland Feeder and the pipelines, laterals, feeders and canals that distribute water throughout the service area.

^[2] System storage includes Diamond Valley Lake, Lake Mathews, Lake Skinner and several other smaller surface reservoirs which provide storage for operational purposes.

Totals may not foot due to rounding

TABLE 2

**WATER RECYCLING, GROUNDWATER RECOVERY
AND CONSERVATION PROJECTS**

Project Name	FY 2018/19 Payment
Water Recycling Projects	
Advanced Water Purification Facility Project	\$ 31,268,863
Alamitos Barrier Reclaimed Water Project	
Anaheim Water Recycling Demonstration Project	
Burbank Reclaimed Water System Expansion Project	
Burbank Recycled Water System Expansion - Phase 2	
Century / Rio Hondo Water Recycling Program	
City of Industry Regional Water System - Rowland	
City of Industry Regional Water System - USGVMWD	
City of Industry Regional Water System - walnut	
Development of Non-Domestic Water Sys. Exp. Ladera	
Direct Reuse Project Phase IIA	
Dry Weather Runoff Reclamation Facility	
Eastern Recycled Water Expansion Project	
Eastern Recycled Water Pipeline Reach 16	
Eastern Regional Reclaimed Water System	
El Toro Phase II Recycled Water Distribution System Expansion Project	
El Toro Recycled Water Expansion	
Encina Basin Water Rec. Prog - Phases I and II (5)	
Escondido Regional Reclaimed Water Project	
EVMWD Recycled Water Program	
Glendale Verdugo-Scholl and Brand Park Reclaimed Water Project II	
GRIP Water Recycling Project	
Groundwater Replenishment System Talbert Seawater Intrusion Barrier Component	
Hansen Area Water Recycling Project Phase 1	
Hansen Dam Golf Course Water Recycling Project	
Harbor Water Recycling Project	
IRWD Recycled Water System Upgrade	
Lake Mission Viejo Advance Purification Water Treatment Facility	
Leo J. Vander Lanz (Alamitos Barrier Expansion)	
Long Beach Reclaimed Water Master Plan Phase I System Expansion	
Los Angeles Taylor Yard Park	
Moulton Niguel Water Reclamation Project	
North Atwater, Chevy Chase Park, Los Felis Water Recycling Project	
North City Water Reclamation Project	
North Hollywood Water Recycling Project	

TABLE 2 (Continued)

**WATER RECYCLING, GROUNDWATER RECOVERY
AND CONSERVATION PROJECTS**

Project Name	FY 2018/19 Payment
Water Recycling Projects (continued)	
Olivenhain Recycled Project - SE Quadrant Otay Recycled Water System	
Padre Dam MWD Reclaimed Water System Phase 1	
San Clemente Recycled Water System Expansion	
San Elijo Reclamation Water System	
Santa Maria Water Reclamation Program	
Sepulveda Basin sports complex Water Recycling Project	
Sepulveda Basin Water Recycling Project Phase IV	
South Griffith Park Recycled Water Project	
Terminal Island Recycled Water Expansion Project	
Van Nuys Area Water Recycling Project	
West Basin Water Reclamation Program	
West Basin Water Recycling Phase V Expansion Project	
Westside Water Recycling Project	

TABLE 2 (Continued)

**WATER RECYCLING, GROUNDWATER RECOVERY
AND CONSERVATION PROJECTS**

Project Name	FY 2016/17 Payment
Groundwater Recovery Projects	\$9,831,010
Beverly Hills Desalter Project	
Cal Poly Pomona Water Treatment Plant	
Capistrano Beach Desalter Project	
Chino Basin Desalination Program / IEUA	
Chino Basin Desalination Program / Western	
Colored Water Treatment Facility Project	
Irvine Desalter Project	
IRWD Wells 21 & 22 Desalter Project	
Madrona Desalination Facility (Goldsworthy Desalter) Project	
Menifee Basin Desalter Project	
Perris II Desalter	
Pomona Well #37-Harrison Well Groundwater Treatment Project	
Round Mountain Water Treatment Plant	
San Juan Basin Desalter Project	
Temescal Basin Desalting Facility Project	
On-site Retrofit Program	\$3,000,000
Future Supply Actions	\$1,960,000
Conservation Projects	\$4,300,000
Regionwide Residential	
Regionwide Commercial	
Member Agency Administered/MWD Funded	
Water Incentive Savings Program	
California Friendly Landscape Training Classes	
Turf Removal Training Classes	
Landscape Irrigation Surveys	
Pilot programs/Studies	
Inspections	
Total Demand Management Programs	\$89,059,873

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Storage Facilities

ALAMEDA CORRIDOR, PIPELINE RELOCATION, PROTECTION
 CAPITAL PROGRAM FOR PROJECTS COSTING LESS THAN \$250,000-LIVE OAK
 CAPITAL PROGRAM FOR PROJECTS COSTING LESS THAN \$250,000-MORRIS DAM
 CHINO BASIN GROUNDWATER SERVICE CONNECTION CB-15T
 CHLORINATION AND PH CONTROL FACILITIES- ORANGE COUNTY & GARVEY (50/50)
 CLEARING OF LAKE MATHEWS RESERVOIR AREA
 CONVERSION OF DEFORMATION SURVEY MONITORING AT COPPER BASIN
 COPPER BASIN AND GENE WASH DAM, INSTALL SEEPAGE ALARM (50/50)
 COPPER BASIN RESERVOIR SUPERVISORY CONTROL
 COPPER BASIN SEWER SYSTEM
 CORONA DEL MAR RESERVOIR- REPLENISHMENT
 CORONA DEL MAR RESERVOIR-: CHLORINATION STATION
 CRANE - LAKE MATHEWS OUTLET TOWER (ORG CONST)
 DAM SEISMIC UPGRADES - PHASE 3
 DIAMOND VALLEY LAKE DAM MONITORING SYSTEM UPGRADE
 DIAMOND VALLEY LAKE, CAL PLAZA CHARGES
 DIAMOND VALLEY LAKE, CONSULTANT COSTS
 DIAMOND VALLEY LAKE, DAM DEFORMATION MONITORING
 DIAMOND VALLEY LAKE, EAST DAM SUMP PUMP ELECTRICAL STUDY
 DIAMOND VALLEY LAKE, GENERAL CONSTRUCTION MGMT, 2000-2001
 DIAMOND VALLEY LAKE, INUNDATION MAPS
 DIAMOND VALLEY LAKE, UNDERGROUND TANK CLOSURE
 DIAMOND VALLEY RECREATION, EAST MARINA
 DIAMOND VALLEY RECREATION, FISHERY
 DIAMOND VALLEY RECREATION, MUSEUM FOUNDATION REHABILITATION
 DIAMOND VALLEY RECREATION, SEARL PARKWAY IMPROVEMENTS, PHASE I
 DIAMOND VALLEY TRAILS PROGRAM, TRAILS
 DISTRICT DESIGN AND INSPECTION - MORRIS DAM
 DISTRICT RESERV. AQUEOUS AMMONIA FEED SYSTEM
 DISTRICT RESERVOIR - LONGTERM CHEMICAL FAC CONTAINMENT
 DOMESTIC WATER SUPPLY - LAKE MATHEWS (ORG CONST)
 DOMESTIC WATER SYSTEM - LAKE MATHEWS (ORG CONST)
 DOMESTIC WATER SYSTEM-PALOS VERDES RESERVOIR (INTERIM CONST)
 DVL - SEARL PARKWAY EXTENSION - PHASE 2
 DVL - SEARL PARKWAY LANDSCAPING
 DVL EAST DAM POWER LINE REALIGNMENT
 DVL INLET/OUTLET FISH SCREEN REHABILITATION
 DVL RECREATION - ALTERNATE ACCESS ROAD
 DVL RECREATION, COMMUNITY PARK AND REGIONAL AQUATIC FACILITY
 DVL SECURITY ENHANCEMENT
 DVL, CONSTRUCTION
 DVL, CONSTRUCTION CLAIMS SUPPORT
 DVL, CONSTRUCTION MANAGEMENT SERVICE
 DVL, CONSTRUCTION SUPERVISION
 DVL, CONSTRUCTION, WEST DAM FOUNDATION
 DVL, DEDICATION CEREMONY
 DVL, DISTURBED
 DVL, DOMENIGONI PARK
 DVL, EAST DAM
 DVL, EAST DAM EMBANKMENT
 DVL, EAST DAM FENCING
 DVL, EAST DAM INLET OUTLET TOWER CONSTRUCTION
 DVL, EAST DAM LANDSCAPE SCREENING
 DVL, EAST DAM NORTH RIM REMEDIATION
 DVL, EAST DAM P-1 FACILITIES
 DVL, EAST DAM SITE COMPLETION
 DVL, EAST DAM STATE STREET IMPROVEMENTS
 DVL, EAST DAM VERTICAL SLEEVE VALVE
 DVL, EAST MARINA, PHASE 2
 DVL, EXCAVATION
 DVL, FIXED CONE, SPHERE
 DVL, GENERAL
 DVL, GRADING OF CONT
 DVL, INSTALL NEW WATERLINE
 DVL, MISC SMALL CONS
 DVL, NORTH HIGH WATER ROAD
 DVL, P-1 PUMPING FACILITY
 DVL, PROCUREMENT
 DVL, SCOTT ROAD EXTENSION
 DVL, SOUTH HIGH WATER ROAD & QUARRY
 DVL, SPILLWAY
 DVL, START UP
 DVL, VALLEY-WIDE SITE ROUGH GRADING
 DVL, WORK PACKAGE
 DVL, WORK PACKAGE 1
 DVL, WORK PACKAGE 10, INLET OUTLET WORK
 DVL, WORK PACKAGE 11, FOREBAY
 DVL, WORK PACKAGE 12, TUNNEL
 DVL, WORK PACKAGE 13, P-1 PUMP OPERATIONS FACILITY
 DVL, WORK PACKAGE 14, PC-1
 DVL, WORK PACKAGE 15, SITE CLEARING

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Storage Facilities

DVL, WORK PACKAGE 16, GROUNDWATER MONITORING
DVL, WORK PACKAGE 17, FIELD OFFICE
DVL, WORK PACKAGE 18, TEMPORARY VISITOR CENTER
DVL, WORK PACKAGE 19, PERMANENT VISITOR CENTER
DVL, WORK PACKAGE 2, EASTSIDE PIPELINE
DVL, WORK PACKAGE 20, EAST DAM EXCAVATION, FOUNDATION
DVL, WORK PACKAGE 21, WEST DAM EXCAVATION, FOUNDATION
DVL, WORK PACKAGE 23, WEST RECREATION AREA
DVL, WORK PACKAGE 24, EAST RECREATION AREA
DVL, WORK PACKAGE 25, EXCAVATION
DVL, WORK PACKAGE 26, ELECTRICAL TRANSMISSION LINES
DVL, WORK PACKAGE 27, MAJOR EQUIPMENT P-1
DVL, WORK PACKAGE 28, MAJOR EQUIPMENT, GATES
DVL, WORK PACKAGE 29, MAJOR EQUIPMENT, PC-1
DVL, WORK PACKAGE 30, INSTRUMENTATION AND CONTROL SYSTEMS
DVL, WORK PACKAGE 31, GEOGRAPHICAL INFO
DVL, WORK PACKAGE 32, PERMIT
DVL, WORK PACKAGE 33, MAJOR EQUIPMENT, VALVES
DVL, WORK PACKAGE 34, EMERGENCY RELEASE
DVL, WORK PACKAGE 35
DVL, WORK PACKAGE 36, TRANSMISSION LINE TO PC-1
DVL, WORK PACKAGE 38, RUNOFF EROSION
DVL, WORK PACKAGE 39, SADDLE DAM FOUNDATION
DVL, WORK PACKAGE 4, NEWPORT ROAD RELOCATION
DVL, WORK PACKAGE 40
DVL, WORK PACKAGE 42, GEOTECHNICAL
DVL, WORK PACKAGE 43, MOBILIZATION
DVL, WORK PACKAGE 44, SITE DEVELOPMENT
DVL, WORK PACKAGE 47, HAZARDOUS MATERIAL
DVL, WORK PACKAGE 48, GENERAL ADMIN
DVL, WORK PACKAGE 49
DVL, WORK PACKAGE 5, SALT CREEK FLOOD CONTROL
DVL, WORK PACKAGE 52, HISTORY ARCHEOLOGY INVENTORY
DVL, WORK PACKAGE 53, PREHISTORIC ARCHEOLOGY
DVL, WORK PACKAGE 54, PLANTS, WILDLIFE
DVL, WORK PACKAGE 55, AIR QUALITY, NOISE
DVL, WORK PACKAGE 6, SURFACE WATER MITIGATION
DVL, WORK PACKAGE 7, DESIGN WEST DAM ACCESS
DVL, WORK PACKAGE 8, DESIGN EAST DAM ACCESS
DVL, WORK PACKAGE 9, SADDLE DAM
DVL, WORKING INVENTORY, 80,000 ACRE FEET (10% OF CAPACITY)
EAST DAM TUNNELS
EAST MARINA BOAT RAMP EXTENSION
ELECTRICAL SERVICE - LAKE MATHEWS (ORG CONST)
ELECTRICAL SYSTEM - LAKE MATHEWS (ORG CONST)
FIRST SAN DIEGO AQUEDUCT - REPLACE PIPELINE SECTION BOTH BARRELS
FLOATING BOAT HOUSE - LAKE MATHEW
FLOOD RELEASE VALVE, MORRIS DAM & WATER SUPPLY SYSTEM,PV RESER.
FOOTBRIDGE - LAKE MATHEWS (ORG CONST)
FOOTHILL FEEDER- LIVE OAK RESERVOIR- CLAIMS
FOOTHILL FEEDER- LIVE OAK RESERVOIR- RESIDENCE
GARVEY RESERVIOR OPERATION & MAINTENANCE CENTER
GARVEY RESERVIOR OPERATION & MAINTENANCE CENTER
GARVEY RESERVIOR OPERATION & MAINTENANCE CENTER (RETIREMENT)
GARVEY RESERVOIR - JUNCTION STRUCTURE,REPLACE VALVE # 1
GARVEY RESERVOIR- EMERGENCY GENERATOR
GARVEY RESERVOIR- FLOATING COVER
GARVEY RESERVOIR HYPOCHLORITE FEED SYSTEM
GARVEY RESERVOIR- JUNCTION STRUCTURE, REPLACE VALVE #1
GARVEY RESERVOIR- JUNCTION STRUCTURE, REPLACE VALVE #1 - INTEREST
GARVEY RESERVOIR- JUNCTION STRUCTURE, REPLACE VALVES # 4 & 5
GARVEY RESERVOIR- MODIFY DESILTING BASINS
GARVEY RESERVOIR REPAIR
GARVEY RESERVOIR, LOWER ACCESS ROAD, PAVING & DRAINS
GARVEY RESERVOIR, REPLACE VALVE # 4 & 5
GARVEY RESERVOIR, TWO VALVES AT JUNCTION STRUCTURE
GARVEY RESERVOIR: CONT. 565, SPEC.412
GARVEY RESERVOIR: TWO COTTAGES WITH GARAGES
GARVEY RESERVOIR-HYPOCHLORINATION
GARVEY RESERVOIR-HYPOCHLORINE STATION
GARVEY RESERVOIR-INLET AND OUTLET CONDUIT SYSTEM MODIFICATION
GARVEY RESEVOIR-JUNCTION STRUCTURE REPLACE TWO VALVES
GARVEY RSVR REPLACE VENTURI THROAT SECTION
HEADWORKS OF DISTRIBUTION SYSTEM LAKE MATHEWS
HEADWORKS: ADDITIONAL VALVES
HEADWORKS: MOTOR OPERATED SLIDE GATES
HOUSE AND GARAGE AT CORONA DEL MAR RESERVOIR
HOUSE AND GARAGE AT ORANGE COUNTY RESERVOIR
HOUSE AT PALOS VERDES RESERVOIR

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Storage Facilities

HOWELL-BUNGER VALVE OPERATOR, LAKE MATHEWS, 5 VALVES 1939
 HOWELL-BUNGER VALVE OPERATOR, LAKE MATHEWS, 5 VALVES 1955
 JENSEN FINISHED WATER RESERVOIR NO. 2 FLOATING COVER IMPROVEMENT
 JENSEN, REPAIR COVER OVER RESERVOIR 1
 LAKE MATHEWS - REPLACE STANDBY GENERATOR
 LAKE MATHEWS - ELECTRICAL SYSTEM IMPROVEMENT
 LAKE MATHEWS BUILDING
 LAKE MATHEWS BUILDINGS 8 & 15, RENOVATION OF ASSEMBLY AREA AND ADMIN. BLDG.
 LAKE MATHEWS- CARPENTER AND VEHICLE MAINTENANCE BUILDING
 LAKE MATHEWS- CHLORINATION FACILITIES
 LAKE MATHEWS CHLORINATION FACILITY- REPLACE CHLORINATION EQPMT.
 LAKE MATHEWS CNTRL TOWER-REPL. 45 30-INCH GATE/BUTTERFLY VALVES
 LAKE MATHEWS CONTROL TOWER - REPLACE 45 10-INCH GATE VALVE
 LAKE MATHEWS DIKE
 LAKE MATHEWS DIVERSION TUNNEL
 LAKE MATHEWS DIVERSION TUNNEL WALKWAY REPAIR
 LAKE MATHEWS- DOCK AND BOAT SHELTER
 LAKE MATHEWS DOMESTIC FACILITIES
 LAKE MATHEWS- DOMESTIC WATER SYSTEM
 LAKE MATHEWS- ELECTRICAL SYSTEM IMPROVEMENT
 LAKE MATHEWS- EMERGENCY GENERATOR
 LAKE MATHEWS ENLARGEMENT (SPEC NO. 505)
 LAKE MATHEWS FOREBAY OUTLET STRCTR-REPL.CONCRETE BLOCK BLDG
 LAKE MATHEWS FOREBAY OUTLET, CONCRETE BLDG
 LAKE MATHEWS FOREBAY- REPLACE FOOTBRIDGE
 LAKE MATHEWS FOREBAY WALKWAY REPAIRS
 LAKE MATHEWS FOREBAY, HEADWORK FACILITY AND EQUIPMENT UPGRADE
 LAKE MATHEWS HEADWORKS-INSTALL AIR MTRS,3 HOWELL BNGR VALVE OP.
 LAKE MATHEWS- HOUSE AND GARAGE
 LAKE MATHEWS I/O TOWER EMERGENCY GENERATOR
 LAKE MATHEWS- IMPROVE MAIN SUBSTATION
 LAKE MATHEWS- IMPROVEMENT OF DOMESTIC WATER & FIRE PROT. SYSTEM
 LAKE MATHEWS -LUMBER STORAGE BUILDING
 LAKE MATHEWS -LUMBER STORAGE BUILDING - INTEREST
 LAKE MATHEWS LUMBER STORAGE ROOF COVER
 LAKE MATHEWS MAIN DAM AND SPILLWAY
 LAKE MATHEWS MAIN DAM SUB DRAIN SYSTEM
 LAKE MATHEWS MAINTENANCE BUILDING
 LAKE MATHEWS MAINTN.FACILITIES-REPLACE 75 KVA TRANSFORMER.SERV.
 LAKE MATHEWS- MODIFY CHLORINATION
 LAKE MATHEWS- MODIFY CHLORINE STORAGE TANK FOUNDATIONS
 LAKE MATHEWS- MODIFY ELECTRICAL SERVICE
 LAKE MATHEWS MULTIPLE SPECIES RESERVE, MANAGER'S OFFICE AND RESIDENCE
 LAKE MATHEWS OFFICE BLDG MODIFICATIONS-AMERICANS W/ DISABILITY
 LAKE MATHEWS OFFICE TRAILER MODIFICATIONS-AMERICANS W/ DISABILITY
 LAKE MATHEWS -OPERATOR RESIDENCE
 LAKE MATHEWS OULET TOWER
 LAKE MATHEWS OUTLET FACILITIES
 LAKE MATHEWS OUTLET TOWER- REPLACE CRANES
 LAKE MATHEWS OUTLET TOWER-REPLACE GATE VALVES
 LAKE MATHEWS OUTLET TOWER-REPLACE GATE VALVES (RETIREMENT)
 LAKE MATHEWS OUTLET TUNNEL
 LAKE MATHEWS- PREFABRICATED AIRCRAFT HANGER
 LAKE MATHEWS- PREFABRICATED AIRCRAFT HANGER - INTEREST
 LAKE MATHEWS- PROPANE STORAGE TANK
 LAKE MATHEWS- PROPANE STORAGE TANK - INTEREST
 LAKE MATHEWS- REPLACE HOWELL-BUNGER VALVE OPERATORS
 LAKE MATHEWS- REPLACE VALVES
 LAKE MATHEWS RESERVOIR - RELOCATE SOUTHERLY SECURITY FENCE
 LAKE MATHEWS RESERVOIR-RELOCATE SOUTHERLY SECURITY FENCE
 LAKE MATHEWS RESERVOIR-RELOCATE SOUTHERLY SECURITY FENCE - INTEREST
 LAKE MATHEWS- SEEPAGE ALARMS
 LAKE MATHEWS- SEEPAGE ALARMS - INTEREST
 LAKE MATHEWS- SPRAY PAINT BOOTH
 LAKE MATHEWS WATERSHED, DRAINAGE
 LAKE MATHEWS WATERSHED, DRAINAGE WATER QUALITY MGMT PLAN (CAJALCO CREEK DAM)
 LAKE MATHEWS, HAZEL ROAD
 LAKE MATHEWS, REPLACE CHLORINATION EQUIPMENT
 LAKE MATHEWS,DIKE #1- INSTALL PIEZOMETERS, STAS.55+00 & 85+50
 LAKE MATHEWS: VALVES AND FITTINGS IN HEADWORKS
 LAKE MATHEWS-CONST. CONCR.TRAFFIC BARR. WALL TO PROTECT HQ FACIL.
 LAKE MATTHEWS FIRE WATER LINE
 LAKE PERRIS POLLUTION PREVENTION AND SOURCE WATER PROTECTION (CAPITAL PORTION)
 LAKE SKINNER - AERATION SYSTEM
 LAKE SKINNER - CHLORINATION SYSTEM OUTLET TOWER BYPASS PPLN
 LAKE SKINNER - CHLORINATION SYSTEM OUTLET TOWER BYPASS PPLN - INTEREST
 LAKE SKINNER - INSTALL OUTLET CONDUIT FLOWMETER
 LAKE SKINNER (AULD VALLEY RESERVOIR)- CLAIMS
 LAKE SKINNER AERATOR AIR COMPRESSORS REPLACEMENT
 LAKE SKINNER- EQUIPMENT YARD SECURITY
 LAKE SKINNER- EQUIPMENT YARD SECURITY - INTEREST

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Storage Facilities

LAKE SKINNER FACILITIES
 LAKE SKINNER FACILITIES - EMPLOYEE HOUSING
 LAKE SKINNER FACILITIES - FENCING
 LAKE SKINNER FACILITIES - LANDSCAPING
 LAKE SKINNER FACILITIES - RELOCATE BENTON ROAD
 LAKE SKINNER OUTLET CONDUIT REPAIR
 LAKE SKINNER- PROPANE STORAGE TANK
 LAKE SKINNER- PROPANE STORAGE TANK - INTEREST
 LIVE OAK RESERVOIR & RESERVOIR BYPASS SCHEDULE 264A
 LIVE OAK RESERVOIR SURFACE REPAIR
 MAINTENANCE FACILITIES, 75KVA TRANSFORMER SERVICE-LAKE MATHEWS (ORG CONST)
 MINOR CAPITAL PROJECTS FOR FY 1989/90 - LAKE MATHEWS
 MINOR CAPITAL PROJECTS FOR FY 1989/90 - PALOS VERDES RESERVOIR
 MINOR CAPITAL PROJECTS-LAKE SKINNER, INLET CANAL ELECTRIC FISH BARRIER
 MINOR CAPITAL PROJECTS-LIVE OAK RESERVOIR, DESILT BASIN IMPROVEMENTS
 MODIFICATION OF THE LAKE MATHEWS SERVICE WATER SYSTEM
 MORRIS DAM COTTAGE
 MORRIS DAM- ENLARGMT. OF SPILLWAY FACLT.& UPPER FDR.VALVE MODF
 MORRIS DAM ROAD IMPROVEMENT
 MORRIS DAM, SEISMIC STABILITY REANALYSIS
 MORRIS DAM-REPLACE EMERGENGY POWER SYSTEM
 MORRIS RESERVOIR- CAPITAL OBLIGATION PAID
 MORRIS RESERVOIR- INTEREST OBLIGATION PAID
 O.C.RESERVOIR - IMPROVE DOMESTIC SYSTEM
 ORANGE COUNTY RESERVOIR -- JUNCTION STRUCTURE,REPLACE VALVE # 1
 ORANGE COUNTY RESERVOIR (SPEC NO. 341)
 ORANGE COUNTY RESERVOIR CHLORINATION STATION
 ORANGE COUNTY RESERVOIR- EMBANKMENT AND SPILLWAY
 ORANGE COUNTY RESERVOIR- EMERGENCY GENERATOR
 ORANGE COUNTY RESERVOIR- FLOATING COVER
 ORANGE COUNTY RESERVOIR- HOUSE
 ORANGE COUNTY RESERVOIR- MODIFY DOMESTIC WATER SYSTEM
 ORANGE COUNTY RESERVOIR- REPLACE RESIDENCE NO. 95D
 ORANGE COUNTY RESERVOIR-MODIFY ELEC. CONTROL CENTER
 ORANGE COUNTY RESERVOIR-REPLACE CHLORINATION EQUIPMENT
 ORANGE COUNTY RESERVOIR-REPLACE CHLORINATION SYSTEM
 P V RESERVOIR-REPLACE CHLORINATION SYSTEM
 PALOS VERDES CHLORINATION STATION AND COTTAGE
 PALOS VERDES RESERVOIR
 PALOS VERDES RESERVOIR - INLET/OUTLET TOWER
 PALOS VERDES RESERVOIR- BY PASS PIPELINES
 PALOS VERDES RESERVOIR COVER REPLACEMENT
 PALOS VERDES RESERVOIR- FENCING AROUND
 PALOS VERDES RESERVOIR- REPLACE DOMESTIC WATER SYSTEM PIPING
 PALOS VERDES RESERVOIR SODIUM HYPOCHLORITE FEED SYSTEM UPGRADE
 PALOS VERDES RESERVOIR,BYPASS PIPELINE RELIEF STRUCTURE MODIFN.
 PALOS VERDES RESERVOIR,COVERING
 PALOS VERDES RESERVOIR,REPLACE ACCESS AND PERIMETER ROADS
 PALOS VERDES RESERVOIR: INCREASING ELEVATION OF SPILLWAY CREST
 PALOS VERDES RESERVOIR-INSTALL VALVE & CHLORINATION NOZZLE,INL.TWR
 PALOS VERDES RESERVOIR-REPLACE CHLORINATION SYSTEM
 PAMO RESERVOIR- WATER STORAGE FEASIBILITY STUDY
 PAMO RESERVOIR- WATER STORAGE FEASIBILITY STUDY- INTEREST
 RECORD DRAWING RESTORATION PROGRAM, CRA
 REPAIRS TO AZUSA CONDUIT
 REPLACEMENT OF A 30 INCH GATE VALVE P.V.R.
 RESIDENCE # 95-D, ORANGE COUNTY RESERVOIR
 RESIDENCE 45-D - CORONA DEL MAR RESERVOIR
 RESIDENCE 80-D - ORANGE COUNTY RESERVOIR
 RESIDENCE 90-D - LAKE MATHEW
 RESIDENCE 91-D - SAN JACINTO RESERVOIR
 RESIDENCE 93-D - SAN JACINTO RESERVOIR
 ROADS AT LAKE MATHEWS ABOVE FLOODLINE
 SAN DIEGO ACQUEDUCT: COTTAGE AT SAN JACINTO RESERVOIR
 SAN JACINTO RESERVOIR - SAN DIEGO ACQUEDUCT
 SECOND OUTLET, PALOS VERDES RESERVOIR (SPEC NO. 597)
 SEEPAGE CONTROL AT LAKE MATHEWS
 TEMPORARY EMPLOYEE LABOR SETTLEMENT
 VALVE - GENE RESERVOIR (REPLACED 201)
 VALVE STRUCTURE MODIFICATIONS-UPPER FDR, SAN GABRIEL CROSSING (INTERIM CONST)
 WADSWORTH PUMP PLANT CONDUIT PROTECTION
 WADSWORTH PUMP PLANT, PUMP MOTOR CONVERSION
 WATER QUALITY PROJECT UPSTREAM
 WATER SUPPLY SYSTEM, OPERATING TOWER, LAKE MATHEWS

Sub-total Storage facilities benefits

106.358.286

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Conveyance and Aqueduct Facilities

ACCESS STRUCTURE, TRANSITION STRUCTURE AND MANHOLE COVER REPLACEMENT
 ALL PUMPING PLANTS - 230 KV & 69 KV DISCONNECTS REPLACEMENT
 ALL PUMPING PLANTS - BRIDGE CRANES
 ALL PUMPING PLANTS - TRANSFORMER BANK BRIDGE
 ALLEN MCCOLLOCH PIPELINE - CORROSION INTERFERENCE MITIGATION
 ALLEN MCCOLLOCH PIPELINE - RIGHT OF WAY
 ALLEN MCCOLLOCH PIPELINE - UPDATE / MODIFY ALL BOYLE ENGINEERING DRAWINGS
 AMP VALVE & SERVICE CONNECTION VAULT REPAIR
 AQUEDUCT & PUMPING PLANT ISOLATION / ACCESS FIXTURES - STUDY
 AQUEDUCT & PUMPING PLANT ISOLATION GATES
 ARROWHEAD EAST TUNNEL CONSTRUCTION
 ARROWHEAD TDS REDUCTION
 ARROWHEAD TUNNELS CLAIMS COST
 ARROWHEAD TUNNELS CONNECTOR ROAD
 ARROWHEAD TUNNELS CONSTRUCTION
 ARROWHEAD TUNNELS ENGINEERING
 ARROWHEAD TUNNELS RE-DESIGN
 ARROWHEAD WEST TUNNEL CONSTRUCTION
 AULD VALLEY CONTROL STRUCTURE AREA FACILITIES UPGRADE STUDY
 AUXILIARY POWER SYSTEM REHABILITATION / UPGRADES STUDY
 BACHELOR MOUNTAIN COMMUNICATION SITE ACQUISITION
 BACHELOR MOUNTAIN TELECOM SITE IMPROVEMENTS
 BANK TRANSFORMERS REPLACEMENT STUDY
 BLACK METAL MOUNTAIN - COMMUNICATIONS FACILITY UPGRADE
 BOX SPRINGS FEEDER REHAB PHASE III
 BUDGET ADJUSTMENT
 CABAZON RADIAL GATE FACILITY IMPROVEMENTS
 CAJALCO CREEK MITIGATION FLOWS
 CAST-IRON BLOW OFF REPLACEMENT - PHASE 4
 CATHODIC PROTECTION STUDY - DESIGN AND CONSTRUCTION
 CCRP - BLOW-OFF VALVES PHASE 4 PROJECT
 CCRP - CONTINGENCY
 CCRP - EMERGENCY REPAIR
 CCRP - HEADGATE OPERATORS & CIRCUIT BREAKERS REHAB.
 CCRP - PART 1 & 2
 CCRP - SAND TRAP CLEANING EQUIPMENT & TRAVELING CRANE STUDY
 CCRP - TRANSITION & MAN-WAY ACCESS COVER REPLACEMENT - STUDY & DESIGN
 CCRP - TUNNELS STUDY
 CEPSRP - 230 KV SYSTEM SYNCHRONIZERS
 CEPSRP - ALL PUMPING PLANTS - CONTINGENCY & OTHER CREDITS
 CEPSRP - ALL PUMPING PLANTS - REPLACE 6.9 KV TRANSFORMER BUSHINGS
 CEPSRP - ALL PUMPING PLANTS - REPLACE 230KV , 69 KV & 6.9 KV LIGHTENING ARRESTERS
 CEPSRP - ALL PUMPING PLANTS - REPLACE 230KV TRANSFORMER PROTECTION
 CEPSRP - SWITCHYARDS & HEAD GATES REHABILITATION
 CEPSRP- ALL PUMPING PLANTS - IRON MOUNTAIN - 230KV BREAKER SWITCH. INST.
 COLORADO RIVER AQUEDUCT - PUMPING
 COLORADO RIVER AQUEDUCT - SIPHONS AND RESERVOIR OUTLETS REFURBISHMENT
 COLORADO RIVER AQUEDUCT CONVEYANCE RELIABILITY, PHASE II REPAIRS AND INSTRUMENTATION
 CONTROL SYSTEM DRAWING UPGRADE STUDY (PHASE 1) - STUDY
 COPPER BASIN AND GENE DAM OUTLET WORKS REHABILITATION (STUDY & DESIGN)
 COPPER BASIN INTERIM CHLORINATION SYSTEM
 COPPER BASIN OUTLET GATES RELIABILITY
 COPPER BASIN OUTLET REHABILITATION
 COPPER BASIN OUTLET, AND COPPER BASIN & GENE WASH DAM SLUICWAYS REHABILITATION
 COPPER BASIN POWER & PHONE LINES REPLACEMENT
 COPPER SULFATE STORAGE AT LAKE SKINNER AND LAKE MATHEWS
 CORROSION CONTROL OZONE MATERIAL TEST FACILITY
 COST OF LAND AND RIGHT OF WAY
 CRA - ACCESS STRUCTURE, TRANSITION STRUCTURE AND MANHOLE COVER REPLACEMENT
 CRA - AQUEDUCT AND PUMPING PLANT ISOLATION GATES
 CRA - AQUEDUCT RESERVOIR AND DISCHARGE LINE ISOLATION GATES
 CRA - AUXILIARY POWER SYSTEM REHAB
 CRA - BANK TRANSFORMERS REPLACEMENT STUDY
 CRA - BLOW-OFF VALVES PHASE 4
 CRA - CIRCULATING WATER SYSTEM STRAINER REPLACEMENT
 CRA - CONTROL SYSTEM IMPLEMENTATION PHASE CLOSE OUT
 CRA - CONVEYANCE RELIABILITY PROGRAM PART 1 & PART 2
 CRA - COPPER BASIN OUTLET, AND COPPER BASIN & GENE WASH SLUICWAYS REHABILITATION
 CRA - COPPER BASIN POWER & PHONE LINES REPLACEMENT
 CRA - CUT & COVER FORNAT WASH EXPOSURE STUDY
 CRA - CUT AND COVER FORNAT WASH EXPOSURE STUDY
 CRA - DANBYTOWER FOOTER REPLACEMENT
 CRA - DELIVERY LINE NO. 1 SUPPORTS REHAB - FIVE PUMPING PLANTS
 CRA - DELIVERY LINES 2&3 SUPPORTS REHAB - GENE & INTAKE
 CRA - DELIVERY LINES 2&3 SUPPORTS REHAB - IRON, EAGLE, & HINDS
 CRA - DESERT PUMP PLANT OIL CONTAINMENT
 CRA - DESERT SEWER SYSTEM REHABILITATION
 CRA - DESERT SEWER SYSTEM REHABILITATION PROJECT
 CRA - DESERT WATER TANK ACCESS & SAFETY IMPROVEMENTS
 CRA - DISCHARGE CONTAINMENT PROGRAM - INVESTIGATION
 CRA - DISCHARGE LINE ISOLATION GATES

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Conveyance and Aqueduct Facilities

- CRA - DWCV-4 VALVE REPLACEMENT
- CRA - EAGLE MOUNTAIN SAND TRAPS INFLOW STUDY
- CRA - ELECTRICAL/ POWER SYST REL. PROG. - IRON MTN - 230KV BREAKER SWITC. INST.
- CRA - GENE PUMPING PLANT MAIN TRANSFORMER AREA
- CRA - HINDS PUMP UNIT NO. 8 REFURBISHMENT
- CRA - INTAKE PUMPING PLANT - COOLING AND REJECT WATER DISCHARGE TO LAKE HAVASU
- CRA - INTAKE PUMPING PLANT AUTOMATION PROGRAMMING
- CRA - INVESTIGATION OF SIPHONS AND RESERVOIR OUTLETS
- CRA - IRON MTN. TUNNEL REHABILITATION
- CRA - LAKEVIEW SIPHON FIRST BARREL - REPAIR DETERIORATED JOINTS
- CRA - MAIN PUMP MOTOR EXCITERS
- CRA - MAIN PUMP STUDY
- CRA - MOUNTAIN SIPHONS SEISMIC VULNERABILITY STUDY
- CRA - PUMPING PLANT RELIABILITY PROGRAM CONTINGENCY
- CRA - PUMPING PLANTS VULNERABILITY ASSESSMENT
- CRA - PUMPING WELL CONVERSION
- CRA - QUAGGA MUSSEL BARRIERS
- CRA - REAL PROPERTY - BOUNDARY SURVEYS
- CRA - RELIABILITY PROGRAM 230 KV & 69 KV DISCONNECTS REPLACEMENT STUDY (5 PLANTS)
- CRA - RELIABILITY PROGRAM INVESTIGATION
- CRA - RELIABILITY PROGRAM PHASE 6 (AQUEDUCT PHASE 6 REHAB.) - SPEC 1568
- CRA - RELIABILITY PHASE II CONTINGENCY
- CRA - SAND TRAP CLEANING EQUIPMENT AND TRAVELING CRANE
- CRA - SERVICE CONNECTION DWCV-2T VALVES REPLACEMENT AND STRUCTURE CONSTRUCTION
- CRA - SERVICE CONNECTION DWCV-4 A, B, C, & D PLUG VALVES REPLACEMENT
- CRA - SIPHONS, TRANSITIONS, CANALS, AND TUNNELS REHABILITATION AND IMPROVEMENTS
- CRA - SUCTION & DISCHARGE LINES EXPANSION JOINT REHAB
- CRA - SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM
- CRA - SWITCHYARDS AND HEAD GATES REHAB
- CRA - SWITCHYARDS AND HEAD GATES REHABILITATION
- CRA - TRANSFORMER OIL & CHEMICAL UNLOADING PAD CONTAINMENT
- CRA - TUNNELS VULNERABILITY STUDY - REPAIRS TO TUNNELS
- CRA - WEST PORTAL UPGRADE - REHAB OF STILLING WELL, SLIDE GATE OPERATORS AND RADIAL GATES
- CRA 2.4 KV STANDBY DIESEL ENGINE GENERATORS REPLACEMENT
- CRA 230 KV & 69 KV DISCONNECTS SWITCH REPLACEMENT
- CRA 230 KV SYSTEM INTER-AGENCY OPERABILITY UPGRADES
- CRA 230KV & 69KV PROTECTION PANEL UPGRADE
- CRA 6.9 KV LEAD JACKETED CABLES
- CRA 69KV PANEL UPGRADE
- CRA ACCESS STRUCTURE, TRANSITION STRUCTURE AND MANHOLE COVERS REPLACEMENT
- CRA ALL PUMPING PLANTS - FLOW METER UPGRADES
- CRA AQUEDUCT BLOCKER GATE REPLACEMENT
- CRA AQUEDUCT ISOLATION GATES REPLACEMENT
- CRA BLACK METAL COMMUNICATION SITE II UPGRADE
- CRA CANAL CRACK REHAB AND EVALUATION
- CRA CANAL CRACK REHABILITATION
- CRA CANAL IMPROVEMENTS
- CRA CIRCULATING WATER SYSTEM STRAINER REPLACEMENT
- CRA CONDUIT FORMAT WASH EROSION REPAIRS
- CRA CONVEYANCE RELIABILITY PROGRAM (CCRP) - BLOW-OFF REPAIR
- CRA CONVEYANCE RELIABILITY PROGRAM PART 1 & PART 2
- CRA COPPER BASIN AND GENE WASH DAM SLUICWAYS
- CRA COPPER BASIN OUTLET GATES RELIABILITY STUDY
- CRA DESERT AIRFIELDS IMPROVEMENT
- CRA DISCHARGE CONTAINMENT PROGRAM - CONTINGENCY
- CRA DISCHARGE CONTAINMENT PROGRAM - GENE & IRON DRAIN SYSTEMS
- CRA DISCHARGE CONTAINMENT PROGRAM - INVESTIGATION
- CRA DISCHARGE CONTAINMENT PROGRAM - OIL & CHEMICAL UNLOADING PAD CONTAINMENT
- CRA ELECTRICAL / POWER SYSTEM RELIABILITY PROGRAM (CEPSRP)
- CRA ENERGY EFFICIENCY IMPROVEMENTS
- CRA GENE PUMPING PLANT HEAVY EQUIPMENT SERVICE PIT
- CRA GENE STORAGE WAREHOUSE REPLACEMENT
- CRA HINDS PUMPING PLANT - WASH AREA UPGRADE
- CRA INTAKE PPLANT - POWER & COMMUNICATION LINE REPLACEMENT
- CRA IRON GARAGE HEAVY EQUIPMENT SERVICE PIT REPLACEMENT
- CRA IRON HOUSING REPLACEMENT
- CRA IRON MOUNTAIN SUCTION JOINT REFURBISHMENT PILOT
- CRA MAIN PUMP & MOTOR REFURISHMENT
- CRA MAIN PUMP CONTROLS & INSTRUMENTATION
- CRA MAIN PUMP DISCHARGE VALVE REFURBISHMENT
- CRA MAIN PUMP MOTOR EXCITERS ASSESSMENT
- CRA MAIN PUMP MOTOR EXCITERS REHABILITATION
- CRA MAIN PUMP STUDY
- CRA MAIN PUMP SUCTION AND DISCHARGE LINES, EXPANSION JOINT REPAIRS
- CRA MAIN PUMPING PLANT DISCHARGE LINE ISOLATION BULKHEAD COUPLING CONSTRUCTION
- CRA MAIN PUMPING PLANT UNIT COOLERS & HEAT ESCHANGERS
- CRA MAIN PUMPING PLANTS LUBRICATION SYSTEM
- CRA MAIN PUMPING PLANTS SERVICE WATER & SAND REMOVAL SYSTEM
- CRA MAIN TRANSFORMER REPLACEMENT/REHAB.

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Conveyance and Aqueduct Facilities

CRA MILE 12 POWER LINE & FLOW MONITORING EQUIP. STUDY
 CRA PROTECTIVE SLABS
 CRA PUMP PLANT FLOW METER UPGRADE
 CRA PUMP PLANT SUMP PIPING REPLACEMENT STUDY
 CRA PUMP PLANT UNINTERRUPTABLE POWER STUDY (UPS) UPGRADE
 CRA PUMP PLANTS 2300KV & 480 V SWITCHRACK REHAB
 CRA PUMP WELLS CONVERSION AND BLOW-OFF REPAIR
 CRA PUMPING PLANT REHABILITATION STUDY
 CRA PUMPING PLANT RELIABILITY PROGRAM - HIGH PRESSURE COMPRESSOR REPLACEMENT
 CRA PUMPING PLANT RELIABILITY PROGRAM - SUCTION & DISCHARGE LINES EXPANSION JOINT STUDY
 CRA PUMPING PLANT SUMP SYSTEM REHABILITATION
 CRA PUMPING PLANT WASTEWATER SYSTEM - GENE & IRON MTN.
 CRA PUMPING PLANT WASTEWATER SYSTEM - INTAKE
 CRA PUMPING PLANT WASTEWATER SYSTEM REPLACEMENT - HINDS & EAGLE MTN.
 CRA PUMPING PLANTS - AUXILIARY POWER SYSTEM REHABILITATE/UPGRADES
 CRA PUMPING PLANTS 230KV & 69K DISCONNECT SWITCH REPLACEMENT
 CRA PUMPING PLANTS ASPHALT REPLACEMENT
 CRA PUMPING PLANTS CRANE IMPROVEMENTS
 CRA PUMPING PLANTS SWITCH HOUSE FAULT CURRENT PROTECTION
 CRA PUMPING PLANTS VULNERABILITY ASSESSMENT
 CRA PUMPING PLANTS WATER TREATMENT SYSTEMS REPLACEMENT
 CRA PUMPING PLT RELIABILITY PROGRAM, DISCHARGE LINE COUPLING INSTALLATION
 CRA PUMPING WELL CONVERSION
 CRA QUAGGA MUSSEL BARRIERS
 CRA RADIAL GATES AND SLIDE GATE REHABILITATION
 CRA RADIAL GATES REPLACEMENT
 CRA RELIABILITY PHASE II - PUMPING PLANTS 230KV & 69KV DISCONNECT SWITCH REPLACEMENT
 CRA RELIABILITY PROGRAM - DISCHARGE VALVE LUBRICATORS
 CRA RELIABILITY PROGRAM - MOTOR BREAKER FAULTY CURRENT STUDY (5 PLANTS)
 CRA RELIABILITY PROGRAM PHASE 6 (AQUEDUCT PHASE 6 REHAB.) - SPEC 1568
 CRA RELIABILITY PHASE II - PUMPING PLANT SWITCH HOUSE FAULT CURRENT PROTECTION
 CRA SAND TRAP EQUIPMENT UPGRADES
 CRA SEISMIC EVALUATION - SWITCH HOUSE AND PUMP ANCHORAGE
 CRA SEISMIC UPGRADE OF 6.9KV SWITCH HOUSES
 CRA SERVICE CONNECTION DWCV-2T VALVES REPLACEMENT AND STRUCTURE CONSTRUCTION
 CRA SERVICE CONNECTION DWCV-4 VALVES REPLACEMENT
 CRA SIPHON REHAB
 CRA SIPHONS, TRANSITIONS, CANALS, AND TUNNELS REHABILITATION AND IMPROVEMENTS
 CRA SWITCHRACKS & ANCILLARY STRUCTURES EROSION CONTROL
 CRA TRANSFORMER OIL AND SODIUM HYPOCHLORITE CONTAINMENT
 CRA TRANSITION STRUCTURE AND MANHOLE COVERS REPLACEMENT
 CRA VILLAGES DOMESTIC WATER MAIN DISTRIBUTION REPLACEMENT STUDY
 CUF DECHLORINATION SYSTEM
 DAM SLUICWAYS AND OUTLETS REHABILITATION
 DANBY TOWER FOOTER REPLACEMENT
 DANBY TOWERS FOUNDATION REHABILITATION
 DESERT FACILITIES FIRE PROTECTION SYSTEMS UPGRADE
 DESERT LAND ACQUISITIONS
 DESERT PUMP PLANT OIL CONTAINMENT
 DESERT ROADWAY IMPROVEMENT
 DESERT SEPTIC SYSTEM
 DESERT SEWER SYSTEM REHABILITATION
 DESERT WATER TANK ACCESS - FIRE WATER, CIRCULATING WATER, DOMESTIC WATER- STUDY
 DISCHARGE LINE ISOLATION BULKHEAD COUPLINGS
 DISTRIBUTION SYSTEM FACILITIES - REHABILITATION PROGRAM
 DISTRIBUTION SYSTEM FACILITIES REHABILITATION PROGRAM - MAINTENANCE & STORAGE SHOP (PC-1)
 DISTRIBUTION SYSTEM RELIABILITY PROGRAM - PHASE 2
 DVL INLET / OUTLET TOWER FISH SCREENS REPLACEMENT
 DVL TO SKINNER TRANSMISSION LINE STUDY
 E. THORNTON IBBETSON GUEST QUARTERS
 EAGLE AND HINDS EQUIPMENT WASH AREA UPGRADE
 EAGLE KITCHEN UPGRADE
 EAGLE MOUNTAIN PUMPING PLANT SCADA SYSTEM
 EAGLE MOUNTAIN SAND TRAPS STUDY
 EAGLE MOUNTAIN SIPHONS SEISMIC VULNERABILITY STUDY
 EAGLE MTN SAND TRAPS STUDY
 EAGLE ROCK ASPHALT REPAIR PROJECT
 EAGLE ROCK MAIN ROOF REPLACEMENT
 ENHANCED VAPOR RECOVERY UPGRADES FOR GASOLINE DISPENSERS
 ENVIRONMENTAL MITIGATION
 ETIWANDA PIPELINE LINER REPAIR
 ETIWANDA RESERVOIR LINER REPAIR
 FUTURE SYSTEM RELIABILITY PROJECTS
 GARVEY RESERVOIR - AUTOMATED DATA ACQUISITION SYSTEM
 GARVEY RESEVOIR AUTOMATED DATA ACQUISITON SYSTEM REPLACEMENT
 GENE & INTAKE P.P. - FREQUENCY PROTECTION RELAY REPLACEMENT
 GENE & INTAKE PUMPING PLANT SURGE CHAMBER OUTLET GATES RE-COATING
 GENE & INTAKE PUMPING PLANTS - REPLACE UNDER FREQUENCY PROTECTION RELAY
 GENE AIR CONDITION
 GENE CAMP STATION SERVICE TRANSFORMER REPLACEMENT
 GENE PUMPING PLANT - AIR STRIP EXTENSION PROJECT

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Conveyance and Aqueduct Facilities

GENE PUMPING PLANT - HEAVY EQUIPMENT SERVICE PIT
 GENE PUMPING PLANT - PEDDLER SUBSTATION REPLACEMENT
 GENE PUMPING PLANT - SCADA SYSTEM
 GENE PUMPING PLANT EXPANSION JOINT REHABILITATION
 GENE PUMPING PLANT MAIN TRANSFORMER AREA
 GENE PUMPING PLANT STANDBY GENERATOR REPLACEMENT
 GENE STORAGE BUILDING REPLACEMENT
 GENE STORAGE WAREHOUSE REPLACEMENT
 HEADGATE OPERATORS & CIRCUIT BREAKERS REHAB.
 HIGHLAND PIPELINE CONSTRUCTION
 HINDS EAGLE & IRON MOUNTAINS STORAGE BUILDINGS
 HINDS PUMPING PLANT EQUIPMENT WASH AREA UPGRADES
 HINDS PUMPING PLANT SCADA SYSTEM
 HINDS PUMPING PLANT STANDBY GENERATOR REPLACEMENT
 INLAND FDR, ARROWHEAD TUNNELS REDESIGN
 INLAND FDR, ARROWHEAD WEST TUNNEL CONSTRUCTION
 INLAND FDR, CONTRACT 9, CONSTRUCTION OF RIVERSIDE PPLN SOUTH
 INLAND FDR, OWNER CONTROLLED INSURANCE PROGRAM
 INLAND FDR, REACH 4, RUSD PPLN
 INLAND FDR-CNTR #1/DEVIL CYN-WATERMAN RD
 INLAND FDR-CNTR #4-SOFT GRND TNL/SANTA ANA
 INLAND FDR-CONT #8-PIPEL PARALLEL TO DAVIS RD
 INLAND FDR-ENVIRON. MITIG.
 INLAND FEEDER - RIGHT OF WAY AND EASEMENT PROCUREMENT
 INLAND FEEDER CONTINGENCY
 INLAND FEEDER COST OF LAND AND RIGHT OF WAY
 INLAND FEEDER ENVIRONMENTAL MITIGATION
 INLAND FEEDER GROUNDWATER MONITORING
 INLAND FEEDER HIGHLAND PIPELINE CLAIMS COST
 INLAND FEEDER HIGHLAND PIPELINE CONSTRUCTION
 INLAND FEEDER HIGHLAND PIPELINE DESIGN
 INLAND FEEDER MENTONE PIPELINE CONSTRUCTION
 INLAND FEEDER MENTONE PIPELINE DESIGN
 INLAND FEEDER MENTONE PIPELINE RUSD CONSTRUCTION
 INLAND FEEDER OWNER CONTROLLED INSURANCE PROGRAM
 INLAND FEEDER PROGRAM REMAINING BUDGET/CONTINGENCY
 INLAND FEEDER PROJECT MANAGEMENT SUPPORT
 INLAND FEEDER PURCHASE OF LAND AND RIGHT OF WAY
 INLAND FEEDER RAISE BURIED STRUCTURES AND REALIGN DAVIS RD.
 INLAND FEEDER REVERSE OSMOSIS PLANT
 INLAND FEEDER RIVERSIDE BADLANDS TUNNEL CONSTRUCTION
 INLAND FEEDER RIVERSIDE NORTH PIPELINE DESIGN
 INLAND FEEDER RUSD CLAIMS DEFENSE
 INLAND FEEDER STUDIES
 INLAND FEEDER UNDERGROUND STORAGE TANK REMOVAL & ABOVEGROUND STORAGE TANK INSTALLATION
 INLAND FEEDER, ARROWHEAD EAST TUNNEL
 INLAND FEEDER, ARROWHEAD TUNNELS CONSTRUCTION
 INLAND FEEDER, CONTRACT #5, OPAL AVENUE PORTAL / BADLANDS TUNNEL
 INLAND FEEDER, CONTRACT #7, RIVERSIDE NORTH PIPELINE CONSTRUCTION
 INLAND FEEDER, PROGRAM MANAGEMENT
 INLAND FEEDER/SBMWD HIGHLAND INTERTIE BYPASS LINE REHAB
 INSULATION JOINT TEST STATIONS
 INTAKE POWER AND COMMUNICATIONS LINE RELOCATION
 INTAKE PPLANT - POWER & COMMUNICATION LINE REPLACEMENT
 INTAKE PUMPING PLANT - COOLING AND REJECT WATER DISCHARGE TO LAKE HAVASU
 INTAKE PUMPING PLANT AUTOMATION PROGRAMMING
 INTAKE PUMPING PLANT INSTRUMENTATION REPLACEMENT
 INTAKE PUMPING PLANT INSTRUMENTATION REPLACEMENT & AUTOMATION
 INTAKE PUMPING PLANT INSTRUMENTATION REPLACEMENT & AUTOMATION (4 PLANTS)
 INTAKE PUMPING PLANT POWER & COMMUNICATION LINE REPLACEMENT
 INTAKE PUMPING PLANT SCADA SYSTEM
 INTAKE PUMPING PLANT STANDBY GENERATOR REPLACEMENT
 IRON MOUNTAIN GENERATOR REPLACEMENT
 IRON MOUNTAIN PUMPING PLANT
 IRON MOUNTAIN PUMPING PLANT DELIVERY LINE NO. 1 RELINING
 IRON MOUNTAIN PUMPING PLANT HOUSING REPLACEMENT
 IRON MOUNTAIN PUMPING PLANT SCADA SYSTEM
 IRON MOUNTAIN SERVICE PIT REHABILITATION
 JULIAN HINDS PUMPING PLANT DELIVERY PIPE EXPANSION JOINT PHASE 2 REPAIRS
 JULIAN HINDS PUMPING PLANT DELIVERY PIPE EXPANSION JOINT PHASE 1 REPAIR
 LAKE MATHEWS FOREBAY & HEADWORK FACILITY & EQUIPMENT
 LAKE MATHEWS FOREBAY WALKWAY REPAIRS
 LAKE MATHEWS ICS
 LAKE MATHEWS INTERIM CHLORINATION SYSTEM
 LAKE SKINNER - OUTLET CONDUIT FLOWMETER INSTALLATION
 LAKE SKINNER BYPASS PIPELINE NO. 2 CATHODIC PROTECTION
 LAKE SKINNER OUTLET CONDUIT
 LAKEVIEW PIPELINE LEAK REPAIR AT STA. 2510+49

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Conveyance and Aqueduct Facilities

LAVERNE FACILITIES - EMERGENCY GENERATOR
 LAVERNE FACILITIES - MATERIAL TESTING
 LOWER FEEDER EROSION PROTECTION
 MAGAZINE CANYON - VALVE REPLACEMENT FOR SAN FERNADO TUNNEL (STATION 778+80)
 MAGAZINE CANYON OIL & WATER SEPARATOR
 MAGAZINE CANYON OIL/WATER SEPARATOR
 MAPES LAND ACQUISITION
 MENTONE PPLN, RUSD, DEFENSE OF CLAIM
 MILE 12 FLOW AND CHLORINE MONITORING STATION UPGRADES
 MILE 12 POWER LINE & FLOW MONITORING EQUIPMENT STUDY
 MILLS PLANT SUPPLY PUMP STATION STUDY
 MINOR CAP FY 2011/12
 MOTOR BREAKER FAULTY (5 PPLANTS)
 NEWHALL TUNNEL - REPAIR STEEL LINER
 NEWHALL TUNNEL - UPGRADE LINER SYSTEM
 NITROGEN STORAGE STUDY AT DVL, INLAND FEEDER PC-1, AND LAKE MATHEWS
 OC 44 SERVICE CONNECTIONS & EOC#2 METER ACCESS ROAD REPAIR
 OC 88 PUMP PLANT FIRE PROTECTION STUDY
 OC-71 SERVICE CONNECTION REPAIRS
 OLINDA PCS FACILITY REHABILITATION AND UPGRADE
 OLINDA PRESSURE CONTROL STRUCTURE FACILITY REHABILITATION AND UPGRADE
 ORANGE COUNTY 44 SERVICE CONNECTIONS & EOC#2 METER ACCESS ROAD REPAIR
 ORANGE COUNTY 88 PUMP PLANT FIRE PROTECTION STUDY
 OWNER CONTROLLED INSURANCE PROGRAM
 PALO VERDE VALLEY LAND PURCHASE - 16,000 ACRES
 PALOS VERDES FEEDER REHABILITATION OF DOMINGUEZ CHANNEL
 PALOS VERDES RESERVOIR SPILLWAY MODIFICATION
 PROJECT MANAGEMENT SUPPORT
 PUDDINGSTONE RADIAL GATE REHABILITATION
 PURCHASE OF LAND AND RIGHT OF WAY
 QUAGGA MUSSEL STUDY
 R&R FOR CRA
 REPAIR UPPER FEEDER LEAKING EXPANSION JOINT
 REPAIRS TO TUNNELS
 RIALTO FEEDER REPAIR @ STA. 3662+23
 RIALTO FEEDER REPAIR OF ANOMALOUS PIPE SECTION
 RIVERSIDE BADLANDS TUNNEL CONSTRUCTION
 RIVERSIDE BRANCH - ALESSANDRO BLVD. LEFT LAND TURN LANE
 RIVERSIDE BRANCH - CONSTRUCTION OF CONTROL PANEL DISPLAY WALL
 RIVERSIDE NORTH PIPELINE DESIGN & CONSTRUCTION
 RIVERSIDE SOUTH PIPELINE CONSTRUCTION
 SAN DIEGO PIPELINE REPAIR AT STATION 1268+57
 SAN FERNANDO TUNNEL STATION 778+80 VALVE REPLACEMENT
 SAN GABRIEL TOWER SEISMIC ASSESSMENT
 SAN GABRIEL TOWER SLIDE GATE REHABILITATION
 SAN JACINTO TUNNEL EAST ADIT REHABILITATION
 SAN JACINTO TUNNEL, WEST PORTAL
 SAN JOAQUIN RESERVOIR - NEW DESIGN
 SAN JOAQUIN RESERVOIR IMPROVEMENT- FLOATING COVER
 SAN JOAQUIN RESERVOIR IMPROVEMENTS
 SAN JOAQUIN RESERVOIR IMPROVEMENTS STUDY
 SAND TRAP CLEANING EQUIPMENT AND TRAVELING CRANE STUDY
 SANTA ANA RIVER BRIDGE SEISMIC RETROFIT
 SANTIAGO TOWER ACCESS ROAD UPGRADE
 SANTIAGO TOWER PATROL ROAD REPAIR
 SD5 REPAIR
 SECOND LOWER FEEDER CARBON FIBER REPAIRS
 SECOND LOWER FEEDER STRAY CURRENT MITIGATION SYSTEMS REFURBISHMENT
 SECURITY FENCING AT OC-88 PUMPING PLANT
 SEISMIC EVALUATION OF CRA STRUCTURES
 SEISMIC PROGRAM
 SEISMIC UPGRADE OF 11 FACILITIES OF THE CONVEYANCE & DISTRIBUTION SYSTEM
 SEPULVEDA FEEDER CORROSION INTERFERENCE MITIGATION
 SEPULVEDA FEEDER REPAIR AT STATION 1099
 SEPULVEDA FEEDER STRAY CURRENT MITIGATION SYSTEM REFURBISHMENT
 SERVICE CONNECTION & EOC# 2 METER ACCESS ROAD UPGRADE & BETTERMENT
 SERVICE CONNECTION DWCV-2T VALVES REPLACEMENT AND STRUCTURE CONSTRUCTION
 SKINNER BR - IMPROVE CABAZON RADIAL GATE FACILITY
 SKINNER FILTRATION PLANT HELIPAD UPGRADE
 SUCTION & DISCHARGE LINES EXPANSION JOINT STUDY
 SWITCHYARDS AND HEAD GATES REHAB
 TEMESCAL HYDRO-ELECTRIC PLANT ACCESS ROAD UPGRADE
 TEMESCAL POWER PLANT ACCESS ROAD PAVING
 TRANSFORMER OIL & CHEMICAL UNLOADING PAD CONTAINMENT
 TRANSFORMER OIL AND SODIUM HYPOCHLORITE CONTAINMENT PROJECT
 U.S. BUREAU OF LAND MANAGEMENT LAND ACQUISITION
 UPPER FEEDER CATHODIC PROTECTION SYSTEM
 UPPER FEEDER GATES REHABILITATION PROJECTS
 UPPER FEEDER LEAKING EXPANSION JOINT REPAIR
 UPPER FEEDER SCHEDULES 2S

TABLE 3 CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS	
Description	
Conveyance and Aqueduct Facilities	
VALLEY BRANCH - PIPELINE CORROSION TEST STATION	
WEST VALLEY FEEDER #2 CATHODIC PROTECTION SYSTEM REHABILITATION	
WEYMOUTH WATER TREATMENT PLANT - NORTH PERIMETER WALL	
WHITE WATER SIPHON PROTECTION	
WHITEWATER SIPHON PROTECTION STRUCTURE	
WHITEWATER SIPHONS EROSION PROTECTION	
Sub-total Conveyance and Aqueduct facilities benefits	\$83,703,336

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

42" CONICAL PLUG VALVE REPLACEMENT
 ACCUSONIC FLOW METER UPGRADE
 ACCUSTIC FIBER OPTIC MONITORING OF PCCP LINES
 ALAMEDA CORRIDOR PIPELINE
 ALL FACILITIES - WATER DISCHARGE ELIMINATION
 ALL FACILITIES INSPECTION AND REPLACEMENT OF CRITICAL VACUUM VALVES
 ALL FACILITIES, INSPECTION AND REPLACEMENT OF CRITICAL VACUUM VALVES
 ALL FEEDERS - MANHOLE LOCKING DEVICE RETROFIT
 ALL PUMPING PLANTS - INSTALL HYPOCHLORINATION STATIONS
 ALLEN MCCOLLOCH PIPELINE 2010 REFURBISHMENT
 ALLEN MCCOLLOCH PIPELINE CATHODIC PROTECTION
 ALLEN MCCOLLOCH PIPELINE INTERCONNECTIONS
 ALLEN MCCOLLOCH PIPELINE LOCAL CONTROL MODIFICATIONS
 ALLEN MCCOLLOCH PIPELINE REPAIR
 ALLEN MCCOLLOCH PIPELINE REPAIR - CARBON FIBER LINING REPAIR
 ALLEN MCCOLLOCH PIPELINE REPAIR - SERVICE CONNECTIONS UPGRADES
 ALLEN MCCOLLOCH PIPELINE REPAIR - STATION 276+63
 ALLEN MCCOLLOCH PIPELINE REPAIR - SURGE SUPPRESSION SYSTEM AT OC88A
 ALLEN MCCOLLOCH PIPELINE REPAIR - VALVE ACTUATOR REPLACEMENTS
 ALLEN MCCOLLOCH PIPELINE REPAIR SERVICE CONNECTIONS SIMPLIFICATION
 ALLEN MCCOLLOCH PIPELINE STRUCTURE - ROOF SLAB REPAIRS
 ALLEN MCCOLLOCH PIPELINE VALVE VAULT REPAIRS
 ALLEN-MCCOLLOCH CORROSION/INTERFERENCE MITIGATION, STATION 719+34 TO 1178+02
 ALLEN-MCCOLLOCH PIPELINE
 ALLEN-MCCOLLOCH PIPELINE PCCP REHABILITATION
 ALLEN-MCCOLLOCH PIPELINE REFURBISHMENT - STAGE 2
 ALLEN-MCCOLLOCH PIPELINE VALVE AND SERVICE CONNECTION VAULT REPAIRS
 AMP -SERVICE CONNECTIONS UPGRADES
 AMP -VALVE ACTUATOR REPLACEMENTS
 AMP COMPLETION RESOLUTION RIGHT OF WAY ISSUES
 AMR - RTU UPGRADE - PHASE 2
 ANODE WELL REPLACEMENT FOR ORANGE COUNTY AND RIALTO FEEDERS
 ARROW HIGHWAY PROPERTY DEVELOPMENT
 ASPHALT REPAIRS TO PERIMETER OF SEPULVEDA PCS
 ASSESS THE CONDITION OF METROPOLITAN'S PRESTRESSED CONCRETE CYLINDER PIPE
 ASSESS THE CONDITIONS OF MET'S
 ASSESSMENT OF PRESTRESSED CONCRETE CYLINDER PIPELINES - PHASE 3
 AULD VALLEY CONTROL STRUCTURE AREA FACILITIES
 AUTOMATED RESERVOIR WATER QUALITY MONITORING
 AUTOMATIC METER READING SYSTEM - RTU UPGRADE PHASE 2
 AUTOMATIC METER READING SYSTEM UPGRADE
 AUTOMATION COMMUNICATION UPGRADE
 AUTOMATION DOCUMENTATION SURVEY F/A
 BAR 97- ENHANCED AREA VEHICLE TESTING
 BATTERY MONITORING SYSTEM FOR AUTOMATIC METER READING SYSTEM
 BIXBY VALVE REPLACEMENT
 BLACK METAL MOUNTAIN ELECTRICAL TRANSFORMER
 BOX SPRINGS FEEDER BROKEN BACK REPAIR
 BOX SPRINGS FEEDER BROKEN BACK REPAIR PHASE I
 BOX SPRINGS FEEDER PHASE 3 AND 4 ENVIRONMENTAL MONITORING
 BOX SPRINGS FEEDER REPAIR - PHASE II
 BOX SPRINGS FEEDER REPAIRS PHASE 3 AND PHASE 4
 BUDGET ADJUSTMENT
 C&D CRANE INSTALLATION AT OC-88 PUMPING PLANT
 CAJALCO CREEK DAM MANHOLE COVER RETROFIT
 CAJALCO CREEK DETENTION DAM SPILLWAY ACCESS ROAD
 CALABASAS FEEDER CARBON FIBER /BROKEN BACK REPAIR
 CALABASAS FEEDER INTERFERENCE MITIGATION
 CALABASAS FEEDER PCCP REHABILITATION
 CALABASAS FEEDER REPAIR, STUDY
 CAPITAL PROGRAM FOR PROJECTS COSTING LESS THAN \$250,000 FOR FY 2010/11
 CAPITAL PROJECTS COSTING LESS THAN \$250,000 FOR FY2008-09
 CASA LOMA AND SAN DIEGO CANAL LINING STUDY - PART 2
 CASA LOMA SIPHON BARREL 1 & 2 DVL AND SD CANAL FLOW METER REPLACEMENT
 CATHODIC PROTECTION FOR THE FOOTHILL FEEDER
 CATHODIC PROTECTION SYSTEM UPGRADES
 CCP-PHASE 2 CONSTRUCTION
 CDSRP - DISCHARGE ELIMINATION
 CDSRP - ENTRAINED AIR IN UPPER FEEDER PIPELINE STUDY
 CDSRP - SEPULVEDA FEEDER REPAIRS
 CDSRP - SEPULVEDA TANKS RECOATING
 CENTRAL POOL AUGMENTATION - TUNNEL AND PIPELINE & RIGHT-OF-WAY ACQUISITION
 CENTRAL POOL AUGMENTATION (CPA) PROGRAM - PIPELINE AND TUNNEL ALIGNMENT
 CENTRAL POOL AUGMENTATION AND WATER QUALITY PROJECT (CPAWQP)
 CHEMICAL INVENTORY AND USAGE REWRITE AND ELECTRICAL. SYSTEM LOG
 CHEMICAL UNLOADING FACILITY RETROFIT
 CHEVALIER FALCON MILLING MACHINE
 COASTAL JUNCTION REVERSE FLOW BYPASS
 COASTAL PRESSURE CONTROL STRUCTURE ROOF REPLACEMENT
 COLLIS VALVE REPLACEMENT

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

COMMUNICATIONS STRUCTURE ALARM MONITORING
 COMPREHENSIVE INFORMATION SECURITY ASSESSMENT PHASE III
 CONSTRUCTION PHASE 2
 CONTRACT & LITIGATION TASKS -CONTRACT # 1396
 CONTROL SYSTEM DATA STORAGE AND REPORTING
 CONTROL SYSTEM DRAWING & DOCUMENTATION UPDATE
 CONTROL SYSTEM ENHANCEMENT PROGRAM (CSEP) - DIGITAL SUBNET STANDARDIZATION
 CONTROL SYSTEMS AUTOMATION COMMUNICATION UPGRADE
 CONTROLS COMMUNICATIONS FRAME RELAY CONVERSION - APPROPRIATED
 CONVERSION OF DEFORMATION SURVEY MONITORING AT GENE WASH, COPPER BASIN, AND DIEMER BASIN 8
 CONVEYANCE AND DISTRIBUTION SYSTEM REHABILITATION PROGRAM (CDSRP) - CURRENT DRAIN STATIONS
 COPPER BASIN ICS
 COPPER BASIN SEWER SYSTEM
 CORONA POWER PLANT REPLACE EMERGENCY GENERATOR
 CORROSION MATERIALS TESTING FACILITY SCADA UPGRADE
 COVINA PRESSURECONTROL FACILITY
 COYOTE CREEK NORTHERN PERIMETER LANDSCAPING
 COYOTE PRESSURE CONTROL STRUCTURE ROOF REPLACEMENT
 CPA PIPELINE & TUNNEL ALIGNMENT
 CPA PIPELINE & TUNNEL ALIGNMENT - NON FUNDED PORTION
 CPA PIPELINE & TUNNEL ALIGNMENT - STUDY
 CPA WATER TREATMENT PLANT - NON FUNDED PORTION
 CPA WATER TREATMENT PLANT - RIGHT OF WAY - PHASE 2
 CPA WATER TREATMENT PLANT - STUDY
 CPAWQP - PHASE 2
 CPAWQP - STUDY AND LAND ACQUISITION - CONTINGENCY
 CPAWQP - STUDY AND LAND ACQUISITION - PIPELINE & TUNNEL ALIGNMENT - STUDY
 CPAWQP - STUDY AND LAND ACQUISITION - RIGHT-OF-WAY-ACQUISITION
 CPAWQP - STUDY AND LAND ACQUISITION - WATER TREATMENT PLANT - RIGHT OF WAY - PHASE 2
 CPAWQP - STUDY AND LAND ACQUISITION - WATER TREATMENT PLANT - STUDY
 CRA - PC-1 EFFLUENT OPEN CHANNEL TRASH RACK
 CRA CABAZON & POTRERO SHAFT COVERS
 CRA CONTROL INTEGRATION
 CRA PROTECTIVE SLAB AT STATION 9704+77
 CROSS CONNECTION PREVENTION PROGRAM - PHASE II CONSTRUCTION
 CROSS CONNECTION PREVENTION PROJECT, COMPLETE PRELIMINARY DESIGN AND CEQA DOCUMENTATION
 CSEP - ELECTRONIC SYSTEM LOG (ESL)
 CSEP - ENERGY MANAGEMENT SYSTEM PHASE II
 CSEP - ENHANCED DISTRIBUTION SYSTEM CONTROL PROJECT
 CSEP - IMPLEMENTATION
 CSEP - OPERATIONS & BUSINESS DATA INTEGRATION PILOT
 CSEP - PLANT INFLUENT REDUNDANT FLOW METERING AND SPLITTING
 CSEP - PLC PHASE 2 - LIFE-CYCLE REPLACEMENT
 CSEP - PLC STANDARDIZATION
 CSEP - PLC STANDARDIZATION PHASE II
 CSEP - POWER MANAGEMENT SYSTEM
 CSEP - WATER PLANNING APPLICATION
 CSEP IMPLEMENTATION
 CSEP- SMART OPS (FORMERLY REAL TIME OPERATIONS SIMULATION)
 CURRENT DRAIN STATIONS
 DAM REHABILITATION & SAFETY IMPROVEMENTS ST. JOHN'S CANYON CHANNEL EROSION MITIGATION
 DANBY TOWER FOUNDATION INVESTIGATION AND SHORT TERM MITIGATION
 DEODERA PCS PAVEMENT UPGRADE & BETTERMENT
 DESERT BRANCH - REPLACE STOLEN COPPER GROUND WIRE FOOTINGS/GROUNDING, AND COPPER PIPING
 DESERT BRANCH PUMP PLANT AUXILIARY (STATION SERVICE)
 DESERT BRANCH, PURCHASE & INSTALL 5 PORT VIDEO CONFERENCING
 DESERT FACILITIES DOMESTIC WATER GAC SYSTEM INSTALLATION
 DESERT HIGH VOLTAGE TRANSMISSION TOWERS - REPLACE COPPER GROUND WIRES ON
 DETAIL SEISMIC EVALUATION OF WATER STORAGE TANK
 DFP - ELIMINATE BACKUP GENERATOR TIE-BUS & INSTALL MANUAL TRANSFER SWITCH FOR CHLORINE SCRUBBER
 DIEMER FILTRATION PLANT - SLOPE REPAIR
 DIEMER IRRIGATION RAW WATER CONVERSION TO INDUSTRIAL WATER
 DISCHARGE ELIMINATION
 DIST SYS-AIR RELEASE & VAC VALVE MODS
 DISTRIBUTION SYSTEM - CAPP CONSTRUCTION PACKAGES 9,11,12
 DISTRIBUTION SYSTEM - STANDPIPE STRENGTHENING PROGRAM
 DISTRIBUTION SYSTEM - STATIONARY CORROSION REFERENCE
 DISTRIBUTION SYSTEM - TREATED WATER CROSS CONNECTION PREVENTION PROJECT - FINAL DESIGN & CONSTRUCTION
 DISTRIBUTION SYSTEM ASSESSMENTS/UPGRADES OF LOS ANGELES COUNTY
 DISTRIBUTION SYSTEM ASSESSMENTS/UPGRADES OF RIVERSIDE AND SAN DIEGO COUNTY
 DISTRIBUTION SYSTEM ASSESSMENTS/UPGRADES OF SAN BERNARDINO COUNTY
 DISTRIBUTION SYSTEM CONTROL & EQUIP UPGRADE - ENHANCED DISTRIB. SYSTEM AUTOMATION PHASE I
 DISTRIBUTION SYSTEM EQUIPMENT & INSTRUMENTATION UPGRADES
 DISTRIBUTION SYSTEM INFRASTRUCTURE PROTECTION IMPROVEMENTS FOR ORANGE COUNTY
 DISTRIBUTION SYSTEM REHABILITATION PROGRAM - ASSESS THE STATE OF MWD'S DISTRIBUTION SYSTEM
 DISTRIBUTION SYSTEM REPLACEMENT OF AREA CONTROL SYSTEMS - WILLOWGLEN RTUS ADMINISTRATION
 DISTRIBUTION SYSTEM REPLACEMENT OF AREA CONTROL SYSTEMS (DSRACS)
 DISTRICT WIDE - ENHANCED VAPOR RECOVERY PHASE 2 GASOLINE DISPENSING
 DSRACS - OPERATIONS CONTROL CENTER - CONTRACT #1396
 DSRACS - SKINNER AREA

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

DSRACS - SOFTWARE DEVELOPMENT COST
DSRACS - WEYMOUTH
DVL & CONTROL SYSTEM REPLACEMENT INVESTIGATION & PREPARATION FOR PRELIMINARY DESIGN
EAGLE EQUIPMENT WASH AREA UPGRADE
EAGLE ROCK - ASPHALT REHABILITATION
EAGLE ROCK - FIRE PROTECTION AT THE WESTERN AREA OF THE EAGLE ROCK CONTROL CENTER PERIMETER GROUNDS
EAGLE ROCK CONTROL CENTER FIREHYDRANT
EAGLE ROCK LATERAL INTERCONNECTION REPAIR
EAGLE ROCK MAIN BUILDING ROOF REPLACEMENT - STUDY
EAGLE ROCK OCC - REHAB CONTROL ROOM
EAGLE ROCK OPERATIONS CONTROL CENTER
EAGLE ROCK RESIDENCE CONVERSION
EAGLE ROCK TOWER AND PUDDINGSTONE SPILLWAY GATES REHABILITATION
EAGLE ROCK TOWER SLIDEGATE REHABILITATION
EAST INFLUENT CHANNEL REPAIR PROJECT
EAST ORANGE COUNTY FEEDER #2 REPAIR
EASTERN AND DESERT REGIONS PLUMBING RETROFIT
EASTERN REGION PCCP JOINT MODIFICATION 2012
E-DISCOVERY STORAGE MANAGEMENT SYSTEM UPGRADE
ELECTRIC CURRENT DRAIN STATION INSTALLATIONS
ELECTROMAGNETIC INSPECTION OF PCCP LINES
ELECTRONIC SYSTEM LOG (ESL)
ENERGY MANAGEMENT SYSTEM - PHASE 2
ENHANCED DISTRIBUTION SYSTEM AUTOMATIC FLOW TRANSFERS SOFTWARE REDEVELOPMENT
ENHANCED DISTRIBUTION SYSTEM AUTOMATION PHASE I
ENHANCED DISTRIBUTION SYSTEM AUTOMATION PHASE II
EQUIPMENT UPGRADE AT THE NORTH PORTAL OF THE HOLLYWOOD TUNNEL
ETIWANDA / RIALTO PIPELINE INTER-TIE CATHODIC PROTECTION
ETIWANDA CAVITATION FACILITY INFRASTRUCTURE REHABILITATION
ETIWANDA CAVITATION TEST FACILITY COMMUNICATION AND CONTROL SYSTEM REPLACEMENT
ETIWANDA HEP NEEDLE VALVE OPERATORS
ETIWANDA PIPELINE - LINING REPLACEMENT
ETIWANDA PIPELINE AND CONTROL FACILITY - RIGHT OF WAY
ETIWANDA PIPELINE AND CONTROL FACILITY - AS BUILTS
ETIWANDA PIPELINE AND CONTROL FACILITY - CATHODIC PROTECTION
ETIWANDA PIPELINE AND CONTROL FACILITY - EMERGENCY DISCHARGE CONDUITS
ETIWANDA PIPELINE AND CONTROL FACILITY - LANDSCAPING AND IRRIGATION
ETIWANDA PIPELINE AND CONTROL FACILITY - RESIDENCES
ETIWANDA PIPELINE AND CONTROL FACILITY - RIALTO FEEDER TO UPPER PIPELINE
ETIWANDA RESERVOIR - EXTEND OUTLET STRUCTURE
FACILITY AND PROCESS RELIABILITY ASSESSMENT
FILTER ISOLATION GATE AND BACKWASH CONTROL WEIR COVERS MODULES 1-6
FLOWMETER MODIFICATION - LAKE SKINNER INLET, ETIWANDA EFFLUENT & WADSWORTH CROSS CHANNEL
FOOTHILL & SEPULVEDA FEEDER PCCP CARBON FIBER JOINT REPAIRS
FOOTHILL FEEDER ADEN AVE. REHABILITATION
FOOTHILL FEEDER CARBON FIBER REPAIR
FOOTHILL FEEDER CATHODIC PROTECTION
FOOTHILL FEEDER PIPELINE REPLACEMENT PROJECT
FOOTHILL FEEDER POWER PLANT EXPANSION
FOOTHILL FEEDER REPAIR @ SANTA CLARITA RIVER
FOOTHILL FEEDER, CARBON FIBER REPAIRS
FOOTHILL HYDROELECTRIC RUNNER REPLACEMENT
FOOTHILL PCS - UNINTERRUPTIBLE POWER SOURCE SYSTEMS INSTALLATION
FOOTHILL PCS FLOOD PUMP INSTALLATION DESIGN DOCUMENTATION
FOOTHILL PCS INTERNAL VALVE LINERS UPGRADE
FUTURE SYSTEM RELIABILITY PROGRAM
GARVEY RESERVOIR - HYPOCHLORITE FEED SYSTEM
GARVEY RESERVOIR - INSTALL HYPOCHLORINATION STATIONS
GARVEY RESERVOIR - LOWER ACCESS PAVING ROAD & DRAINS
GARVEY RESERVOIR HYPOCHLORITE FEED SYSTEM
GARVEY RESERVOIR SITE DRAINAGE REPAIRS AND MODIFICATIONS
GENE & IRON POOLS
GENE AIR CONDITIONING SYSTEM REPLACEMENT
GENE MESS HALL AIR CONDITIONING UNIT
GENE SPARE PARTS WAREHOUSE IMPROVEMENTS
GLENDALE 01 SERVICE CONNECTION REHAB
GLENDALE-01 SERVICE CONNECION REHABILITATION AND UPGRADE
GREG AVE PCS FACILITY REHABILITATION
GREG AVENUE CONTROL STRUCTURE VALVE REPLACEMENT
GREG AVENUE PCS CONTROL BUILDING INTERIOR REHABILITATION
HINDS GARAGE ASBESTOS SHEETING REPLACEMENT
HVAC MODIFICATIONS FOR ELECTRICAL SAFETY AND RELIABILITY
HYDRAULIC MODELING PROJECT
HYDROELECTRIC PLANT CARBON DIOXIDE (CO2) FIRE SUPPRESSION SYSTEM MODIFICATIONS
IAS PROJECTS - CPA
IAS PROJECTS - DVL-SKINNER
IAS PROJECTS - MILLS SUPPLY RELIABILITY
INLAND PCSUST REMOVAL & AST INSTALLATION
INSTALL MOTION SENSORS IN NEW EXPANSION
INSTALL TEST LEADS AT FOUR LOCATIONS

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

INSULATION JOINT TEST STATIONS
 INTAKE PUMPING PLANT - UNDER FREQUENCY PROTECTION RELAY UPGRADE
 IRON MOUNTAIN - TRANSFORMER OIL TANK RELOCATION
 JENSEN DISTRIBUTION SYSTEM - REPLACEMENT OF AREA CONTROL SYSTEMS - CONTRACT # 1396
 JENSEN FILTRATION PLANT - REPLACE ADMINISTRATION BUILDING AIR CONDITIONING
 JENSEN FILTRATION PLANT - ROAD RECONSTRUCTION
 JENSEN FILTRATION PLANT - SANDBLASTING BOOTH PURCHASE & INSTALLATION
 JENSEN FILTRATION PLANT - TRAVELING BRIDGE RETROFIT MODULE 2 & 3
 LA VERNE FACILITIES - BRIDGEPORT E-2-PATH
 LA VERNE FACILITIES - ENERGY CONSERVATION ECM1 - 10
 LA VERNE FACILITIES - EXPANSION OF THE SANITARY SEWER
 LA VERNE FACILITIES - HAZARDOUS WASTE STORAGE
 LA VERNE FACILITIES - MAIN TRANSFORMERS REPLACEMENT
 LA VERNE FACILITIES - MATERIALS TESTING LABORATORY
 LA VERNE FACILITIES - REPLACEMENT OF FLOCCULATOR STUB SHAFT - BASINS 1 & 2
 LA VERNE MACHINE SHOP - AIR CONDITIONING UNIT REPLACEMENT
 LA VERNE MACHINE SHOP - REPAIR HORIZONTAL BORING MILL
 LA-35 DISCHARGE STRUCTURE REPAIRS
 LAKE MATHEWS - CONSTRUCTION OF BACKUP COMPUTER FACILITIES
 LAKE MATHEWS - DIVERSION TUNNEL WALKWAY REPAIR
 LAKE MATHEWS - FACILITY WIDE EMERGENCY WARNING AND PAGING SYSTEM
 LAKE MATHEWS - FOREBAY MCC ROOF IMPROVEMENT
 LAKE MATHEWS - MAIN DAM TOE SEEPAGE COLLECTION
 LAKE MATHEWS - MULTIPLE SPECIES MANAGER'S OFFICE & RESIDENCE
 LAKE MATHEWS - RENOVATION OF BLDGS. 8 & 15, GENERAL ASSEMBLY & ADMIN. BLDG. OFFICE AREAS
 LAKE MATHEWS - RETROFIT LOWER ENTRANCE GATE SWING ARM
 LAKE MATHEWS FOREBAY MCC ROOF IMPROVEMENT
 LAKE MATHEWS MAIN DAM TOE SEEPAGE COLLECTION
 LAKE MATHEWS RETROFIT LOWER ENTRANCE GATE SWING ARM
 LAKE PERRIS BYPASS PIPELINE EXPLORATION
 LAKE PERRIS EMERGENCY STANDBY GENERATOR AND TRANSFER SWITCH REPLACEMENT
 LAKE SKINNER - AERATOR AIR COMPRESSOR REPLACEMENT
 LAKE SKINNER - OUTLET TOWER VALVE REHABILITATION
 LAKE SKINNER - REPLACEMENT AERATOR RING
 LAKE SKINNER AERATOR AIR COMPRESSOR REPLACEMENT
 LAKE SKINNER DAM ROAD REHAB
 LAKE SKINNER EAST BYPASS SCREENING STRUCTURES
 LAKE SKINNER OUTLET TOWER CHLORINE SYSTEM MODIFICATION
 LAKE SKINNER WEST BYPASS SCREENING STRUCTURE
 LAKE SKINNER WEST BYPASS SCREENING STRUCTURE REHABILITATION
 LAKE VIEW PIPE LINE REPAIRS
 LAKEVIEW PIPELINE - REPLACE VACUUM/AIR RELEASE
 LAKEVIEW PIPELINE CATHODIC PROTECTION SYSTEM
 LOWER FEEDER - CATHODIC PROTECTION
 LOWER FEEDER WR 33 - AREA REPAIR AND REMEDIATION
 MAGAZINE CANYON CANOPY
 MAGAZINE CANYON-ISOLATION GATE JACKING FRAME
 MAPES LAND ACQUISITION
 MICROWAVE COMMUNICATION SITES BUILDING UPGRADE
 MIDDLE CROSS FEEDER CATHODIC PROTECTION
 MIDDLE FEEDER - CATHODIC PROTECTION SYSTEMS
 MIDDLE FEEDER - NORTH CATHODIC PROTECTION SYSTEM
 MIDDLE FEEDER NORTH CATHODIC PROTECTION SYSTEM
 MILLS FILTRATION PLANT - INVESTIGATION TO RELOCATE ACCESS ROAD
 MINOR CAP 08/09 PLACEHOLDER
 MINOR CAP FY 2009/10
 MINOR CAP FY 2012/13
 MINOR CAP FY 2014/16
 MINOR CAPITAL PROJECTS PROGRAM 07/08 - REMAINING FUNDS
 MOUNT OLYMPUS TUNNEL COST RIGHT-OF-WAY (ROW)
 MWD ROAD GUARDRAIL
 NITROGEN STORAGE COMPLIANCE AT DVL, INLAND FEEDER PCS, AND LAKE MATHEWS
 NITROGEN STORAGE STUDY
 NON PCCP LINES CONDITION INSPECTION AND ASSESSMENT
 NORTH PORTAL OF HOLLYWOOD TUNNEL
 NORTH REACH CONSTRUCTION / INSPECTION / CM
 NORTH REACH CONSTRUCTION/ASBUILT
 NORTH REACH ENVIRONMENTAL - CONSTRUCTION
 NORTH REACH FINAL DESIGN & ADV/NTP
 NORTH REACH POST DESIGN / ASBUILT
 NORTH REACH PROGRAM MANAGEMENT - CONSTRUCTION
 NORTHERN PIPELINE ENVIRONMENTAL FINAL DESIGN
 NORTHERN PIPELINE RIGHT OF WAY FINAL DESIGN
 OAK ST. PCS ROOF REPLACEMENT
 OAK STREET PRESSURE CONTROL STRUCTURE ROOF REPLACEMENT - CONSTRUCTION
 OC 44 SERVICE CONNECTIONS & EOC#2 METER ACCESS ROAD REHAB
 OC FEEDER STA 1920+78 BLOWOFF STRUCTURE & RIP-RAP REPAIRS
 OC RESERVOIR SODIUM HYPOCHLORITE PUMP AND PIPING REPLACEMENT
 OC-71 FLOW CONTROL FACILITY
 OC-88 - SECURITY FENCING AT PUMP PLANT

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

OC-88 EMERGENCY STANDBY GENERATOR UPGRADE STUDY
 OC-88 PUMP PLANT AIR COMPRESSOR UPGRADE
 OC-88 PUMP STATION FLOW METER UPGRADE
 OC-88 PUMPING PLANT SURGE TANKS UPGRADES
 OLINDA PCS AND SANTIAGO TOWER EMERGENCY GENERATORS
 OLINDA PRESSURE CONTROL STRUCTURE
 ON-CALL RESOURCES MANAGEMENT APPLICATION
 OPERATIONS CONTROL CENTER AT EAGLE ROCK
 OPERATIONS CONTROL CENTER UPS REPLACEMENT
 OPERATIONS SCOPING STUDY
 ORANGE CO FDR, BLOW-OFF STRUCTURE AND ACCESS ROAD REPAIR
 ORANGE COUNTY - 88 PUMP PLANT AIR COMPRESSOR UPGRADE
 ORANGE COUNTY - 88 SECURITY FENCING AT PUMP PLANT
 ORANGE COUNTY C & D ELECTRICAL IMPROVEMENTS - STUDY
 ORANGE COUNTY C&D INSTRUMENTATION PANEL IMPROVEMENTS
 ORANGE COUNTY CONVEYANCE AND DISTRIBUTION SERVICE CENTER
 ORANGE COUNTY FEEDER CATHODIC PROTECTION
 ORANGE COUNTY FEEDER EXTENSION LINING REPAIR
 ORANGE COUNTY FEEDER INSPECTION
 ORANGE COUNTY FEEDER INTERNAL INSPECTION STUDY
 ORANGE COUNTY FEEDER LINING REPAIR
 ORANGE COUNTY FEEDER PRESSURE CONTROL STRUCTURES
 ORANGE COUNTY FEEDER RELOCATION IN FULLERTON
 ORANGE COUNTY FEEDER SCHEDULE 37SC CATHODIC PROTECTION
 ORANGE COUNTY FEEDER STA 1920+78 BLOWOFF STRUCTURE & RIP-RAP REPAIRS
 ORANGE COUNTY RESERVOIR - INSTALL HYPOCHLORINATION STATIONS
 ORANGE COUNTY RESERVOIR - PIEZOMETERS & SEEPAGE MONITORING AUTOMATION
 OXIDATION DEMONSTRATION PLANT CONTROL SYSTEM REPLACEMENT
 PALOS ALTOS FEEDER - 108TH ST.
 PALOS VERDES FEEDER PCS - VALVE REPLACEMENT
 PALOS VERDES RESERVOIR - INSTALL HYPOCHLORINATION STATIONS
 PC-1 EFFLUENT OPEN CHANNEL TRASH RACK
 PC-1 EFFLUENT OPEN CHANNEL TRASH RACK PROJECT
 PCCP HYDRAULIC ANALYSES
 PERIMETER FENCING AT PLACERITA CREEK
 PERMANENT LEAK DETECTION/PIPELINE MONITORING SYSTEM
 PERRIS PCS - UNINTERRUPTIBLE POWER SOURCE SYSTEMS INSTALLATION
 PERRIS PCS ROOF REHAB
 PERRIS PRESSURE CONTROL STRUCTURE ROOF REPLACEMENT
 PERRIS PUMPBACK COVER
 PERRIS VALLEY PIPELINE - DESIGN-BUILD (EMWD)
 PERRIS VALLEY PIPELINE - GENERAL
 PERRIS VALLEY PIPELINE - NORTH REACH
 PERRIS VALLEY PIPELINE - RESERVED FOR STAGE II DESIGN / BUILD
 PERRIS VALLEY PIPELINE - SOUTH REACH
 PERRIS VALLEY PIPELINE - STUDY
 PERRIS VALLEY PIPELINE - TIE-IN (WMWD)
 PERRIS VALLEY PIPELINE - VALVES
 PERRIS VALLEY PIPELINE DESIGN-BUILD (EMWD)
 PERRIS VALLEY PIPELINE NORTH REACH
 PERRIS VALLEY PIPELINE SOUTH REACH
 PERRIS VALLEY PIPELINE TIE-IN (WMWD)
 PERRIS VALLEY PIPELINE VALVES
 PLACENTIA RAILROAD LOWERING PROJECT
 PLACERITA CREEK PERIMETER FENCING
 PLANT INFLUENT REDUNDANT FLOW METERING AND SPLITTING
 PLC REPLACEMENT PHASE II
 PRESTRESSED CONCRETE CYLINDER PIPE - PHASE 2
 PRESTRESSED CONCRETE CYLINDER PIPE -PHASE 3
 PROGRAMATTIC ENVIRONMENTAL DOCUMENTATION OF ORANGE COUNTY
 PROGRAMATTIC ENVIRONMENTAL DOCUMENTATION OF SAN BERNARDINO COUNTY
 PROGRAMMABLE LOGIC CONTROLLER (PLC) STANDARDIZATION
 PUDDINGSTONE SPILLWAY CROSS CONNECTION
 PV RESERVOIR HYPOCHLORITE PUMP AND PIPING REPLACEMENT
 R&R FOR DISTRIBUTION
 RED MOUNTAIN - OCT. 2007 FIRE DAMAGE - COMMUNICATION POWER TOWERS & METER STRUCTURES REPAIR/REPLACE (INCIDENT NO. 2007-1023-0271)
 RED MOUNTAIN HEP FLOOD DAMAGE
 RED MTN COMM. TOWER & METER STRUCTURE
 REHABILITATION OF THE GREG AVE PCS CONTROL BUILDING INTERIOR
 RELOCATION OF ORANGE COUNTY FEEDER
 RELOCATION OF PORTION OF ORANGE COUNTY FEEDER (MWD'S SHARE)
 REMAINING PORTIONS
 REPAIRS TO THE LA-35 DISCHARGE STRUCTURE
 REPLACE 2 FIRE & DOMESTIC WATER SYSTEM
 REPLACE COMMUNICATION LINE TO THE SAN GABRIEL CONTROL TOWER
 REPLACE COPPER GROUNDWIRES ON DESERT HIGH VOLTAGE TRANSMISSION TOWERS
 REPLACE VALVE POSITION INDICATORS
 REPLACEMENT OF COMMUNICATION LINE AT SAN GABRIEL TOWER
 REPLACEMENT/ RELINE AT-RISK PCCP LINES - STAGE 1
 RIALTO FEEDER BROKEN BACK REPAIR

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

RIALTO FEEDER VALVE STRUCTURE
 RIALTO FEEDER, REPAIRS AT SELECT LOCATIONS, STUDY
 RIALTO PIPELINE - CONSTRUCTION PHASE 1
 RIALTO PIPELINE - CONSTRUCTION PHASE 2
 RIALTO PIPELINE IMPROVEMENTS
 RIALTO PIPELINE IMPROVEMENTS - CONSTRUCTION
 RIALTO PIPELINE IMPROVEMENTS - CONSTRUCTION PHASE III
 RIALTO PIPELINE IMPROVEMENTS - DESIGN PHASE 2
 RIALTO PIPELINE IMPROVEMENTS - DESIGN PHASE 3
 RIALTO PIPELINE IMPROVEMENTS - FINAL DESIGN
 RIALTO PIPELINE IMPROVEMENTS - VALVE PROCUREMENT
 RIALTO PIPELINE IMPROVEMENTS PHASE 1 FINAL DESIGN
 RIALTO PIPELINE PCCP REHABILITATION
 RIALTO PIPELINE REPAIR @ STA 3196+44
 RIALTO PIPELINE REPAIR AT THOMPSON CREEK
 RIALTO PIPELINE REPAIRS AT STATION 3198+44
 RIALTO PIPELINE VALVE PROCUREMENT
 ROBERT B. DIEMER FILTRATION PLANT - LAND ACQUISITION
 ROOF REPLACEMENT AT SOTO ST. FACILITY
 SAN DIEGO #3 BLOWOFF TO PUMPWELL CONVERSION
 SAN DIEGO CANAL - EAST & WEST BYPASS SCREENING STRUCTURES STUDY
 SAN DIEGO CANAL - ELECTRICAL VAULT & CONDUCTOR REPLACEMENT
 SAN DIEGO CANAL - FENCING
 SAN DIEGO CANAL - INSTALL ACOUSTIC FLOW METER
 SAN DIEGO CANAL - PIEZOMETER
 SAN DIEGO CANAL - REPLACE SODIUM BISULFATE TANK
 SAN DIEGO CANAL - SEEPAGE STUDY
 SAN DIEGO CANAL BISULFITE TANK REPLACEMENT
 SAN DIEGO CANAL LINER REPAIR
 SAN DIEGO CANAL RADIAL GATE REHAB
 SAN DIEGO CANAL SEEPAGE STUDY
 SAN DIEGO CANAL WEST BYPASS TRASH RACK
 SAN DIEGO PIPELINE #4 VALVE REPLACEMENT
 SAN DIEGO PIPELINE 1 BLOW-OFF VALVE REPLACEMENT
 SAN DIEGO PIPELINE 3 & 5 REMOTE CONTROL OF BYPASS
 SAN DIEGO PIPELINE 4 AND AULD VALLEY PIPELINE CARBON FIBER REPAIRS
 SAN DIEGO PIPELINE 5 & LAKE SKINNER OUTLET REPAIR
 SAN DIEGO PIPELINE 6 - PRESSURE CONTROL STRUCTURE/HYDROELECTRIC PLANT - FEASIBILITY STUDY
 SAN DIEGO PIPELINE 6 NORTH REACH, ENVIRONMENTAL MONITORING DURING CONSTRUCTION
 SAN DIEGO PIPELINE NO. 3 BYPASS
 SAN DIEGO PIPELINE NO. 5 - OCT. 2007 FIRE DAMAGE - REPLACE ABOVE GROUND CORROSION CONTROL SYSTEM EQUIPMENT, AND STRUCTURAL
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE BRANCH - ETIWANDA FACILITY/DROP INLET STRUCTURE
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE BRANCH - PLEASANT PEAK, COMMUNICATIONS
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL CONSTRUCTION - AS BUILT
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL COST OF RIGHT OF WAY (OPTIONAL PORTAL SITE)
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL ENVIRONMENTAL CONSTRUCTION
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL ENVIRONMENTAL PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL PROGRAM MANAGEMENT
 SAN DIEGO PIPELINE NO. 6 - RIVERSIDE TUNNEL RIGHT OF WAY PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - CONTRACT NO.1 SAN DIEGO CANAL TO MOUNT OLYMPUS
 SAN DIEGO PIPELINE NO. 6 - CONTRACT NO.2 MOUNT OLYMPUS TUNNEL & PORTALS
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH CONSTRUCTION - AS BUILT
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH ENVIRONMENTAL - CONSTRUCTION
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH ENVIRONMENTAL PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH FINAL DESIGN & ADV/NTP
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH POST DESIGN
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH PROGRAM MANAGEMENT - CONSTRUCTION
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH PROGRAM MANAGEMENT - DESIGN
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH RIGHT OF WAY FINAL DESIGN
 SAN DIEGO PIPELINE NO. 6 - NORTH REACH RIGHT OF WAY PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - NORTHERN PIPELINE COST OF RIGHT OF WAY
 SAN DIEGO PIPELINE NO. 6 - NORTHERN REACH ENVIRONMENTAL FINAL DESIGN
 SAN DIEGO PIPELINE NO. 6 - OPERATIONS SCOPING STUDY
 SAN DIEGO PIPELINE NO. 6 - PIPELINE/TUNNEL STUDY - DESIGN
 SAN DIEGO PIPELINE NO. 6 - PIPELINE/TUNNEL STUDY - ENVIRONMENTAL
 SAN DIEGO PIPELINE NO. 6 - PIPELINE/TUNNEL STUDY - PROJECT MANAGEMENT
 SAN DIEGO PIPELINE NO. 6 - PIPELINE/TUNNEL STUDY - RIGHT OF WAY
 SAN DIEGO PIPELINE NO. 6 - PROJECT MANAGEMENT
 SAN DIEGO PIPELINE NO. 6 - RIGHT OF WAY
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH - PROGRAM MANAGEMENT
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH / TUNNEL STUDY
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH CONSTRUCTION / AS BUILT
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH COST OF RIGHT OF WAY
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH ENVIRONMENTAL - CONSTRUCTION
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH ENVIRONMENTAL FINAL DESIGN
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH ENVIRONMENTAL PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH FINAL DESIGN/ADV
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH PRELIMINARY DESIGN

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

SAN DIEGO PIPELINE NO. 6 - SOUTH REACH RIGHT OF WAY FINAL DESIGN
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH RIGHT OF WAY PRELIMINARY DESIGN
 SAN DIEGO PIPELINE NO. 6 - SOUTH REACH TUNNEL ALIGNMENT ANALYSIS
 SAN DIEGO PIPELINE NO. 6 AREA STUDY
 SAN DIEGO PIPELINE NO. 6 ENVIRONMENTAL MITIGATION
 SAN DIEGO PIPELINE NO.4 & AULD VALLEY PIPELINE CARBON FIBER REPAIR STUDY
 SAN DIEGO PIPELINE NOS. 1AND 3 - VALVE REPLACEMENT
 SAN DIMAS CONTROL STRUCTURE 500 GALLONS DIESEL TANK REPLACEMENT
 SAN DIMAS HEP BATTERY BANK AND GENERATOR BREAKER
 SAN DIMAS PCS - UNINTERRUPTIBLE POWER SOURCE SYSTEMS INSTALLATION
 SAN FRANCISQUITO PIPELINE BLOW OFF STRUCTURE, STA 287+70, ACCESS ROAD CONSTRUCTION
 SAN GABRIEL TOWER SEISMIC UPGRADE
 SAN GABRIEL TOWER SLIDE GATE REHABILITATION
 SAN JACINTO #1 AND #2 CASA LOMA FAULT CROSSING STRUCTURE UPGRADE
 SAN JOAQUIN RELIEF STRUCTURE FOR EASTERN ORANGE COUNTY FEEDER #2
 SAN JOAQUIN RELIEF STRUCTURE FOR EASTR OC FDR #2
 SAN JOAQUIN RESERVOIR, INSTALL BULKHEAD
 SANTA ANA RIVER BRIDGE SEISMIC RETROFIT
 SANTA ANA RIVER BRIDGE SEISMIC UPGRADE
 SANTA MONICA FEEDER RELOCATION
 SANTA MONICA FEEDER STATION 495+10 REHABILITATION
 SANTIAGO CONTROL TOWER CATHODIC PROTECTION
 SANTIAGO LATERAL REPLACE MOTOR - OPERATED VALVE
 SANTIAGO LATERAL SECTIONALIZATION VALVE REPLACEMENT
 SANTIAGO LATERAL STA 216+40 BUTTERFLY VALVE REPLACEMENT
 SANTIAGO PRESSURE CONTROL STRUCTURE
 SANTIAGO TOWER ACCESS ROAD IMPROVEMENT
 SCADA COMMUNICATIONS MPLS UPGRADE - AT&T REGION (MINOR CAP)
 SCADA COMMUNICATIONS MPLS UPGRADE - VERIZON REGION (MINOR CAP)
 SCADA SYSTEM HARDWARE UPGRADE
 SCADA SYSTEM NT SOFTWARE UPGRADE
 SCADA SYSTEM SUPPORT PROGRAMS
 SD AND CASA LOMA CANALS LINING
 SD CANAL EAST & WEST BYPASS SCREENING STRUCTURES STUDY
 SD CANAL REPLACE SODIUM BISULFITE TANK
 SD PIPELINE 3 CULVERT ROAD REHAB
 SD PIPELINE 3,4, AND 5 PROTECTIVE COVER
 SD PIPELINE 4 EXPLORATORY EXCAVATION
 SD PIPELINE 5 EXPLORATORY EXCAVATION
 SD PIPELINES 3 AND 5 REMOTE CONTROL BYPASS STRUCTURE GATES AND ISOLATION VALVES
 SECOND LOWER & SEPULVEDA FEEDERS SCI DRAIN STATIONS
 SECOND LOWER CROSS FEEDER - VALVE PROCUREMENT
 SECOND LOWER CROSS FEEDER CONSTRUCTION
 SECOND LOWER CROSS FEEDER FINAL DESIGN
 SECOND LOWER FEEDER - INSTALL LINER
 SECOND LOWER FEEDER CATHODIC PROTECTION SYSTEM
 SECOND LOWER FEEDER CURRENT MITIGATION REFURBISHMENT
 SECOND LOWER FEEDER PCCP REHABILITATION
 SECOND LOWER FEEDER PCCP REPAIRS
 SECOND LOWER FEEDER RELIABILITY AT 3 LOCATIONS - SEISMIC STUDY
 SEISMIC UPGRADE OF 11 FACILITIES ON THE ALLEN MCCOLLOCH PIPELINE
 SELECTED PRESSURE REPLACE VALVE POSITION INDICATORS
 SEPULVEDA CANYON CONTROL FACILITY WATER STORAGE TANKS SEISMIC UPGRADE
 SEPULVEDA CANYON POWER PLANT TAIL RACE COATINGS
 SEPULVEDA CANYON TANKS EXTERIOR AND INTERIOR RECOATING
 SEPULVEDA FEEDER - CARBON FIBER LINER REPAIRS
 SEPULVEDA FEEDER CATHODIC PROTECTION SYSTEM
 SEPULVEDA FEEDER CORROSION/INTERFERENCE MITIGATION, STATION 950+00 TO 1170+00
 SEPULVEDA FEEDER HEP AUTO PILOT
 SEPULVEDA FEEDER REPAIRS AT 3 SITES
 SEPULVEDA FEEDER SOUTH CATHODIC PROTECTION SYSTEM
 SEPULVEDA FEEDER STATION 2002+02 TO 2273+28 STRAY CURRENT INTERFERENCE MITIGATION
 SEPULVEDA FEEDER STRAY CURRENT MITIGATION REFURBISHMENT
 SEPULVEDA PCS - PERIMETER ASPHALT REPAIRS
 SEPULVEDA PIPELINE PCCP REHABILITATION
 SERVICE CONNECTION LV-01 UPGRADES
 SERVICE CONNECTION OC-26 - RELOCATION OF METER CABINET, INSTRUMENT HOUSING & AIR VENT STACK
 SIMULATION AND MODELING APPLICATION FOR REAL TIME OPERATIONS SMART OPS
 SITE 3 SECOND LOWER FEEDER URGENT REPAIRS - FINAL DESIGN
 SITES 1 & 2 SECOND LOWER FEEDER URGENT REPAIRS - FINAL DESIGN & PIPE FABRICATION
 SKINNER BRANCH - AIR INJECTION MODIFICATIONS TO RED MOUNTAIN POWER PLANT
 SKINNER BRANCH - CASA LOMA CANAL
 SKINNER BRANCH - CASA LOMA SIPHON BARREL ONE
 SKINNER BRANCH - CATWALK FOR TRAVELING MAINTENANCE BRIDGE FOR
 SKINNER BRANCH - FABRICATE & REPLACE THE STEMS, NUTS & KEYS
 SKINNER BRANCH - REPAIR MODULE 1 AND 2 FLOCCULATORS BRIDGES
 SKINNER DAM REMEDIATION
 SKINNER DISTRIBUTION SYSTEM - CONTRACT # 1396
 SKINNER ELECTRICAL BUILDING HVAC UPGRADE
 SKINNER FILTRATION PLANT - ELEVATED SLAB IN SERVICE BLDG 1

**TABLE 3
CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS**

Description

Distribution Facilities

SKINNER HELIPAD REHAB
 SKINNER INSULATING FLANGES AT PLANT 1 BUTTERFLY VALVES
 SKINNER REPLACEMENT FOR WETCELL BATTERY AND INVERTER
 SKINNER SCADA SERVERS RELOCATION
 SMART-OPS (FORMERLY RTOS)
 SOTO STREET FACILITY - BUILDING SEISMIC UPGRADE
 SOTO STREET FACILITY - REPLACE HEATING
 SOTO STREET FACILITY - ROOF REPLACEMENT
 SOUTH COUNTY PIPELINE PROTECTION AT SAN JUAN CREEK CROSSING
 SOUTH REACH / TUNNEL STUDY
 SOUTH REACH CONSTRUCTION/ASBUILT - FUTURE UNAPPROPRIATED
 SOUTH REACH DESIGN - FUTURE/UNAPPROPRIATED
 SOUTH REACH ENVIRONMENTAL - FUTURE/UNAPPROPRIATED
 SOUTH REACH FEASIBILITY STUDY
 SOUTH REACH PROJECT MANAGEMENT - FUTURE/UNAPPROPRIATED
 SOUTH REACH RIGHT OF WAY - FUTURE/UNAPPROPRIATED
 SPECIAL SERVICE BRANCH - REPLACE PLATE BENDING
 ST. JOHN'S CANYON CHANNEL EROSION MITIGATION
 SYSTEM RELIABILITY PROGRAM
 TEMESCAL POWER PLANT REPLACE EMERGENCY GENERATOR
 TREATED WATER CROSS CONNECTION PREVENTION - FINAL DESIGN & CONSTRUCTION
 TREATED WATER CROSS CONNECTION PREVENTION - UNFUNDED WORK
 TWO-WAY RADIO ENHANCEMENT - EMERGENCY SERVICES, FIRE CONTROL, EVACUATION & BLDG. MAINT.
 TWO-WAY RADIO ENHANCEMENT FOR EMERGENCY SERVICES, FIRE CONTROL, EVACUATION AND BLDG. MAINTENANCE
 UNDER GROUND STORAGE TANK DISPENSER SPILL CONTAINMENT & REMEDIATION
 UNION STATION TWO-WAY RADIO ENHANCEMENT FOR EMERGENCY SERVICES, FIRE CONTROL, EVACUATION AND BUILDING MAINTENANCE
 UPGRADE CATHODIC PROTECTION RECTIFIERS
 UPGRADE HOLLYWOOD TUNNEL PORTAL SLEEVE VALVE EQUIPMENT
 UPGRADE SUNSET GARAGE
 UPPER FEEDER - SANTA ANA RIVER BRIDGE REPAIRS
 UPPER FEEDER AIR ENTRAINMENT
 UPPER FEEDER CATHODIC PROTECTION SYSTEM
 UPPER FEEDER GATE REHABILITATION
 UPPER FEEDER JUNCTION STRUCTURE SEISMIC UPGRADE
 UPPER FEEDER SANTA ANA RIVER DISCHARGE PAD
 UPPER FEEDER SERVICE CONNECTIONS UPGRADES
 UPPER NEWPORT BAY BLOW-OFF STRUCTURE REHABILITATION
 UPS SYSTEMS INSTALLATION AT FOOTHILL PCS
 UPS SYSTEMS INSTALLATION AT PERRIS CONTROL STRUCTURE
 UTILITY BUSINESS ARCHITECTURE (OBJECT MAPPING/MODELING)
 VACUUM AIR RELEASE VALVE RELOCATION PILOT PROGRAM
 VALLEY & LOS ANGELES DISTRIBUTION VALVE POSITION DISPLAY UPGRADE
 VALVE PROCUREMENT
 VIDEO CONFERENCE SYSTEM UPGRADE
 VIDEOCONFERENCING UPGRADE
 WADSWORTH PUMPING PLANT - MODIFICATION/REPAIRS OF FIFTY-NINE 6.9KV BREAKERS/CABINETS
 WADSWORTH PUMPING PLANT CONDUIT REPAIR AND PROTECTION
 WADSWORTH PUMPING PLANT FOREBAY GANTRY CRANE UPGRADE
 WADSWORTH PUMPING PLANT RECOATING 144" YARD PIPING
 WADSWORTH PUMPING PLANT STOP LOGS ADDITION - STUDY
 WATER DELIVERY SYSTEM AUTOMATION
 WATER PLANNING APPLICATION
 WATER QUALITY - REMOTE MONITORING
 WATER QUALITY LABORATORY BUILDING EXPANSION
 WATER QUALITY MONITORING AND EVENT DETECTION SYSTEM
 WATER TREATMENT PROCESS OPTIMIZATION
 WEST COAST FEEDER - CATHODIC PROTECTION SYSTEMS
 WEST OC FEEDER VALVE REPLACEMENT
 WEST VALLEY AREA STUDY
 WEST VALLEY FEEDER # 1 STAGE 2 VALVE STRUCTURE MODIFICATIONS - CONSTRUCTION
 WEST VALLEY FEEDER NO. 1 ACCESS ROADS AND STRUCTURES IMPROVEMENTS
 WEST VALLEY FEEDER NO. 1 VALVE STRUCTURE MODIFICATIONS
 WESTERN REGION PLUMBING RETROFIT
 WEYM. PLT/LA VERNE FAC-BACKFLO PREV ASSY
 WEYMOUTH - BUILDING NO. 4 - HAND RAIL AND STAIRS ADDITION
 WEYMOUTH - FLAG POLE AREA LANDSCAPE UPGRADE
 WEYMOUTH ASPHALT REHABILITATION
 WEYMOUTH COMPRESSED AIR SYSTEM
 WEYMOUTH DISTRIBUTION SYSTEM - REPLACEMENT OF AREA CONTROL SYSTEMS - CONTRACT #1396
 WFP - ASPHALT REHABILITATION
 WFP - COMPRESSED AIR SYSTEM IMPROVEMENT
 WFP - LAND ACQUISITION
 WFP - PURCHASE OF REAL PROPERTY
 WFP - REPAIR TO BLDG # 1
 WFP - REPLACE ACTUATORS/OPERATORS/ MOTORS FOR EFFLUENT VALVE CONVERSION FILTER BEDS 1-24
 WFP - WASHWATER RECLAMATION (WWRP)
 YORBA LINDA FDR STA 924+11 PORTAL ACCESS
 YORBA LINDA FEEDER - STA 924+11 PORTAL ACCESS
 YORBA LINDA FEEDER BYPASS
 YORBA LINDA PORTAL STRUCTURE ACCESS/TELEGRAPH CREEK BRIDGE

TABLE 3 CONVEYANCE, DISTRIBUTION, AND STORAGE SYSTEM BENEFITS	
Description	
Distribution Facilities	
<i>Sub-total Distribution facilities benefits</i>	<i>\$73,926,253</i>
<i>Sub-total Conveyance and Distribution facilities benefits</i>	<i>\$157,629,589</i>

TABLE 4

**FISCAL YEAR 2018/19
ESTIMATED READINESS-TO-SERVE CHARGE REVENUE**

Member Agency	Rolling Ten-Year Average Firm Deliveries (Acre-Feet) FY2006/07 - FY2015/16	RTS Share	6 months @ \$140 million per year (7/18-12/18)	Rolling Ten-Year Average Firm Deliveries (Acre-Feet) FY2007/08 - FY2016/17	RTS Share	6 months @ \$133 million per year (1/19-6/19)	Total RTS Charge FY 2018/19
Anaheim	19,618.3	1.16%	812,457	18,523.8	1.14%	758,843	1,571,300
Beverly Hills	11,153.9	0.66%	461,919	10,823.4	0.67%	443,389	905,309
Burbank	12,756.9	0.75%	528,305	12,640.6	0.78%	517,833	1,046,137
Calleguas MWD	106,768.4	6.32%	4,421,625	103,113.8	6.35%	4,224,141	8,645,766
Central Basin MWD	50,174.4	2.97%	2,077,884	48,484.8	2.99%	1,986,219	4,064,104
Compton	1,643.5	0.1%	68,063	1,274.6	0.08%	52,215	120,278
Eastern MWD	96,442.1	5.71%	3,993,980	95,591.2	5.89%	3,915,972	7,909,951
Foothill MWD	9,486.7	0.56%	392,875	9,104.1	0.56%	372,957	765,832
Fullerton	9,108.7	0.54%	377,221	8,711.6	0.54%	356,878	734,099
Glendale	18,761.2	1.11%	776,962	17,789.4	1.1%	728,757	1,505,719
Inland Empire Utilities Agency	58,921.3	3.49%	2,440,122	58,419.2	3.6%	2,393,190	4,833,312
Las Virgenes MWD	22,211.6	1.31%	919,854	21,650.8	1.33%	886,943	1,806,797
Long Beach	33,531.9	1.98%	1,388,665	32,108.6	1.98%	1,315,355	2,704,020
Los Angeles	330,115.6	19.53%	13,671,157	322,746.6	19.88%	13,221,578	26,892,735
Municipal Water District of Orange County	217,138.4	12.85%	8,992,405	210,138.2	12.95%	8,608,483	17,600,888
Pasadena	20,644.9	1.22%	854,972	19,875.5	1.22%	814,216	1,669,188
San Diego County Water Authority	349,857.4	20.7%	14,488,728	318,873.9	19.64%	13,062,930	27,551,658
San Fernando	51.4	—%	2,129	35.7	—%	1,462	3,591
San Marino	876.1	0.05%	36,282	815.9	0.05%	33,424	69,706
Santa Ana	11,824.1	0.7%	489,674	11,210.7	0.69%	459,255	948,930
Santa Monica	8,243.9	0.49%	341,407	7,253.7	0.45%	297,154	638,560
Three Valleys MWD	64,315.1	3.8%	2,663,497	63,729.7	3.93%	2,610,739	5,274,236
Torrance	17,363.2	1.03%	719,066	16,891.1	1.04%	691,958	1,411,024
Upper San Gabriel Valley MWD	23,647.4	1.4%	979,315	24,161.1	1.49%	989,779	1,969,095
West Basin MWD	121,853.1	7.21%	5,046,332	118,121.7	7.28%	4,838,952	9,885,284
Western MWD	73,771.2	4.36%	3,055,104	71,214.9	4.39%	2,917,377	5,972,481
MWD Total	1,690,280.7	100%	\$ 70,000,000	1,623,304.6	100%	\$ 66,500,000	\$ 136,500,000
Totals may not foot due to rounding							

TABLE 5
FISCAL YEAR 2018/19
ESTIMATED STANDBY CHARGE REVENUE

Member Agencies	Total Parcel Charge	Number Of Parcels Or Acres	Gross Revenues (Dollars) ¹
Anaheim	\$ 8.55	68,217	\$ 583,256
Beverly Hills	—	—	—
Burbank	14.2	29,117	413,456
Calleguas MWD	9.58	259,253	2,483,640
Central Basin MWD	10.44	340,154	3,551,213
Compton	5	18,053	90,265
Eastern MWD	6.94	399,971	2,775,798
Foothill MWD	10.28	30,341	311,902
Fullerton	10.71	34,761	372,287
Glendale	12.23	44,887	548,973
Inland Empire Utilities Agency	7.59	248,919	1,889,292
Las Virgenes MWD	8.03	54,824	440,240
Long Beach	12.16	92,018	1,118,935
Los Angeles	—	—	—
Municipal Water District of Orange County	10.09	657,464	7,475,103
Pasadena	11.73	39,147	459,198
San Diego County Water Authority	11.51	1,106,178	12,732,108
San Fernando	—	5,118	—
San Marino	8.24	4,967	40,931
Santa Ana	7.88	54,454	429,101
Santa Monica	—	—	—
Three Valleys MWD	12.21	152,512	1,862,174
Torrance	12.23	40,569	496,163
Upper San Gabriel Valley MWD	9.27	212,506	1,969,928
West Basin MWD	—	—	—
Western MWD	9.23	386,522	3,567,599
MWD Total		4,279,952	\$ 43,611,561

(1) Estimates per FY2018/19 applied amounts

(2) Adjusted for inclusion of Coastal MWD

Note: Totals may not foot due to rounding

TABLE 6
PARCELS SUBJECT TO ANNEXATION STANDBY CHARGES
AS OF JULY 1, 2017

Annexation	Parcel Number	Acres	Proposed Standby Charge (FY 2018/19)
Calleguas MWD			
Calleguas Annexation No. 100	225-0-014-190	4.66	44.64
	225-0-014-235	1.08	10.35
	225-0-014-245	1.41	13.51
Eastern MWD			
105th Fringe Area	392-310-018	4.97	34.49
106th Fringe Area	Tribal Lands	—	—
107th Fringe Area	362-430-008	2.53	17.56
Western MWD			
41st Fringe (Murrieta)	909-130-039	1.71	15.77
	909-130-038	1.61	14.86
	909-040-001	1	9.23
	949-080-005	5.9	54.46
	949-080-006	5.51	50.86
	949-080-008	7.36	67.93
	949-080-010	6.15	56.76
	949-080-012	6.71	61.93
San Diego County:			
Campus Park West	108-121-14	6.08	69.98
	125-061-01	92.8	1,068.13
Greenwood Memorial Park	546-150-13	9.02	103.82
Island Reorganization	547-270-22	0.55	11.51
	547-270-13	0.31	11.51
	547-270-21	0.11	11.51
	546-150-10	90.28	1,039.12
	546-150-12	6.45	74.24
	547-270-04	0.04	11.51
	547-270-02	0.14	11.51
	546-150-04	0.52	11.51
	547-270-05	0.63	11.51
	547-270-03	0.1	11.51
	547-270-01	1	11.51
	547-280-25	2.62	30.16
	547-270-26	0.31	11.51
	547-270-24	0.55	11.51
	547-270-20	0.15	11.51
	547-270-27	1.84	21.18
	547-270-08	0.21	11.51
	546-150-05	0.5	11.51

**THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA**

RESOLUTION 9236

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
FIXING AND ADOPTING
A CAPACITY CHARGE
EFFECTIVE JANUARY 1, 2019**

WHEREAS, the Board of Directors (“Board”) of The Metropolitan Water District of Southern California (“Metropolitan”), pursuant to Sections 133, 134 and 134.5 of the Metropolitan Water District Act (the “Act”), is authorized to fix such rate or rates for water as will result in revenue which, together with revenue from any water standby or availability of service charge or assessment, will pay the operating expenses of Metropolitan, provide for repairs and maintenance, provide for payment of the purchase price or other charges for property or services or other rights acquired by Metropolitan, and provide for the payment of the interest and principal of its bonded debt; and

WHEREAS, the amount of revenue to be raised by the Capacity Charge shall be as determined by the Board and allocation of such charges among member agencies shall be in accordance with the method established by the Board; and

WHEREAS, the Capacity Charge is a charge fixed and adopted by Metropolitan and charged to its member agencies, and is not a fee or charge imposed upon real property or upon persons as an incident of property ownership; and

WHEREAS, the Capacity Charge is intended to recover the debt service and other appropriately allocated costs to construct, operate and maintain projects needed to meet peak demands on Metropolitan’s distribution system, as shown in the fiscal years 2018/19 and 2019/20 Cost of Service Report for Proposed Water Rates and Charges (the “2018 Cost of Service Report”); and

WHEREAS, pursuant to Resolution 8329, adopted by the Board on July 9, 1991 and Resolution 9199, adopted by the Board on March 8, 2016, and as each is thereafter amended and supplemented, proceeds of the RTS Charge, Capacity Charge, and other revenues from the sale or availability of water are pledged to the payment of Metropolitan’s outstanding revenue bonds and to the payment of Metropolitan’s outstanding subordinate revenue bonds and to revenue bonds and subordinate bonds to be issued pursuant to Resolution 8329 and Resolution 9199; and

WHEREAS, the Capacity Charge is charged (on a dollar per cubic-foot-per-second basis) to member public agencies (“member agencies”), based upon the amount of capacity used by such member agency that is designed to recover the cost of providing peaking capacity within the distribution system; and

WHEREAS, on February 1, 2018, the General Manager and Chief Financial Officer provided to the Board and the public a board letter describing the proposed biennial budget for fiscal years 2018/19 and 2019/20, identifying key assumptions, addressing key circumstances such as current state water supply conditions, and continued suspension of the ad valorem rate restrictions under Section 124.5 of

the MWD Act to allow Metropolitan to maintain the current ad valorem tax rate, incorporating a ten-year financial forecast; determining anticipated total revenues and revenues anticipated to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, identifying revenue requirements for that period and recommending rates and charges consistent with cost of service principles to be effective January 1, 2019/ and January 1, 2020, and explaining that costs and revenues may be at variance with forecasts and variations will be addressed, for example by contributions to, or withdraws from, financial reserves maintained for this purpose; and

WHEREAS, the recommended charges were developed using the same unbundled water rate elements in the rate structure approved by Resolution 8774 and implemented by Resolution 8805, as detailed in the fiscal years 2018/19 and 2019/20 Cost of Service Report for Proposed Water Rates and Charges (the “2018 Cost of Service Report”) provided to the Board and the public on February 1, 2018; and

WHEREAS, in *San Diego County Water Authority v. Metropolitan Water District of Southern California, et al.*, San Francisco Superior Court Case Nos. CPF-16-515282 and CPG-17-563350 (the “2016 and 2017 Cases”, collectively), the San Diego County Water Authority challenged Metropolitan’s water rates and charges adopted on April 12, 2016 and the charges adopted on April 11, 2017, respectively, and Metropolitan is defending such challenges; and

WHEREAS, the detailed proposed departmental and non-departmental biennial budget for fiscal years 2018/19 and 2019/20 (the “Proposed Biennial Budget”) was distributed to the Board and the public on February 1, 2018; and,

WHEREAS, on March 7, 2018, the CIP appendix to the detailed Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 was provided to the Board and the public, providing detailed information on proposed capital projects and capital improvement costs; and

WHEREAS, Board workshops and discussions regarding the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 and water rates and charges for calendar years 2019 and 2020 were held on February 12, 2018 and March 12, 2018 at the regularly scheduled Finance and Insurance Committee meetings, and on February 27, 2018 and March 27, 2018 at special meetings of the Finance and Insurance Committee; and

WHEREAS, on February 12, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee of Metropolitan’s Board the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20, ten-year financial forecast, determination of anticipated total revenues and of revenues anticipated to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and his recommended rates to be effective January 1, 2019 and January 1, 2020, and charges for fiscal years 2018/19 and 2019/20; and

WHEREAS, on February 27, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee further detail regarding the estimated revenue requirements in the Proposed Biennial Budget, provided an overview of Metropolitan’s existing rate structure and the process of determining rate components under Metropolitan’s existing rate structure, and addressed questions previously raised by the Board; and

WHEREAS, on March 12, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee a summary of the proposed CIP budget, addressed additional questions raised by the Board, and discussed financial policies and the impact on the Proposed Biennial Budget and resulting

revenue requirements and rates and charges; and

WHEREAS, the Board conducted a public hearing on its proposed rates and charges for 2019 and 2020 at its regular meeting on March 13, 2018, at which interested parties were given the opportunity to present their views regarding the proposed rates and charges; and

WHEREAS, notice of the public hearing on the proposed rates and charges was published prior to the hearing in various newspapers of general circulation within Metropolitan's service area; and

WHEREAS, written notice of intention of Metropolitan's Board to consider and take action at its regular meeting held April 10, 2018, to adopt Metropolitan's Capacity Charge for calendar year 2019 was given to each of Metropolitan's member agencies; and

WHEREAS, Metropolitan received written comments regarding the proposed water rates and charges, which, together with Metropolitan's responses, have been provided to the Board and the public; and

WHEREAS, on April 4, 2018, the General Manager and Chief Financial Officer provided to the Board and the public a board letter describing the recommendations for the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 (updated with minor revisions since the version distributed on February 1, 2018); determination of total revenues and of revenues to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and recommended rates to be effective January 1, 2019 and January 1, 2020, and charges to be effective January 1, 2019; and

WHEREAS, the April 4, 2018 board letter included the Proposed Biennial Budget, ten-year financial forecast and 2018 Cost of Service Report (updated with minor revisions, corrections, and updates since the version distributed on February 1, 2018) on the rates and charges; and

WHEREAS, on April 9, 2018, the Chief Financial Officer presented to the Finance and Insurance Committee of Metropolitan's Board the Proposed Biennial Budget for fiscal years 2018/19 and 2019/20 and ten- year financial forecast, determination of total revenues and of revenues to be derived from water transactions and firm revenue sources required during fiscal years 2018/19 and 2019/20, and the recommended rates to be effective January 1, 2019 and January 1, 2020, and charges to be effective January 1, 2019, explaining that actual revenues and expenses may vary from budgeted amounts for a variety of reasons, and that Administrative Code Section 5202(e) contemplates variation in actuals to budget and provides policy guidance to the Board and that Metropolitan's financial obligations may include liabilities and future commitments, such as retiree obligations and debt service, that are not reflected in the budget but that can be addressed in a fiscally prudent manner to reduce future obligations and keep future rate increases reasonable within the policy guidance provided by Administrative Code Section 5202(e); and

WHEREAS, based on the feedback received from board workshops held on February 12, 2018, February 27, 2018, March 12, 2018, and March 27, 2018, and at the public hearing on March 13, 2018, the General Manager proposed rates and charges for adoption on April 10, 2018; and

WHEREAS, on April 10, 2018, the board considered the rates and charges presented by the General Manager and approved the biennial budget for fiscal years 2018/19 and 2019/20 and adopted recommended water rates for calendar years 2019 and 2020 and charges for calendar year 2019; and

WHEREAS, in approving the biennial budget and adopting the rates and charges on April 10, 2018, the Board determined the amount of revenue to be raised by the Capacity Charge in calendar year 2019 to be based on a Capacity Charge in such year of \$8,600 per cubic-feet-per-second; and

WHEREAS, each of the meetings of the Board were conducted in accordance with the Brown Act (commencing at Section 54950 of the Government Code), for which due notice was provided and at which quorums were present and acting throughout;

NOW, THEREFORE, the Board of Directors of The Metropolitan Water District of Southern California does hereby resolve, determine and order as follows:

Section 1. That the Board of Directors of Metropolitan hereby fixes and adopts a Capacity Charge, as described below, to be effective January 1, 2019.

Section 2. That said Capacity Charge shall be in an amount sufficient to provide for payment of the capital financing costs not paid from ad valorem property taxes, as well as operations, maintenance and overhead costs, incurred to provide peaking capacity within Metropolitan's distribution system.

Section 3. That such Capacity Charge effective January 1, 2019 shall be a charge as specified in Section 5 (set in dollars per cubic-feet-per-second of the peak day capacity) for capacity provided to a member agency.

Section 4. That the Capacity Charge specified in Section 5, together with other revenues from Metropolitan's water rates, other charges, ad valorem property taxes, and other miscellaneous revenue, does not exceed the reasonable and necessary cost of providing Metropolitan's water service for which the rates and charges are made, or conferring the benefit provided, and is fairly apportioned to each member agency in proportion to the peak day capacity utilized by each member agency.

Section 5. That the Capacity Charge shall be a fixed charge as shown in the following table and collected from each member agency monthly, quarterly or semiannually as agreed to by Metropolitan and the member agency.

Table 1. Calendar Year 2019 Capacity Charge

	Peak Day Demand (cfs) (May 1 through September 30)				Rate (\$/cfs): \$8,000
	Calendar Year			3-Year Peak	
AGENCY	2015	2016	2017		3-Year Peak
Anaheim	33.7	29.7	34	34	\$292,400
Beverly Hills	25.5	26.2	25.7	26.2	\$225,320
Burbank	10	12.1	14	14	\$120,400
Calleguas	175.5	175.1	186.5	186.5	\$1,603,900
Central Basin	51.4	43	36.7	51.4	\$442,040
Compton	0.1	0.3	0.1	0.3	\$2,580
Eastern	178.5	204.8	219	219	\$1,883,400
Foothill	14.9	17.1	18.6	18.6	\$159,960
Fullerton	15.3	14.3	22.7	22.7	\$195,220
Glendale	33.2	38.8	41.4	41.4	\$356,040
Inland Empire	94.8	118.3	140.5	140.5	\$1,208,300
Las Virgenes	42.8	45.3	44.6	45.3	\$389,580
Long Beach	61.3	61.5	55.2	61.5	\$528,900
Los Angeles	600.9	531.7	250.4	600.9	\$5,167,740
MWDOC	293	401.1	436.5	436.5	\$3,753,900
Pasadena	36.9	38	39.9	39.9	\$343,140
San Diego CWA	960.7	911.3	749.9	960.7	\$8,262,020
San Fernando	—	—	—	0.0	\$0
San Marino	4.7	6.8	7.5	7.5	\$64,500
Santa Ana	15.6	14.7	26.3	26.3	\$226,180
Santa Monica	11.7	10.8	16.6	16.6	\$142,760
Three Valleys	108.1	113.5	126.4	126.4	\$1,087,040
Torrance	28.2	39.1	34	39.1	\$336,260
Upper San Gabriel	79.1	11.9	12.1	79.1	\$680,260
West Basin	178.5	197.9	201.7	201.7	\$1,734,620
Western MWD	129	175.4	174.4	175.4	\$1,508,440
Total	3,183.4	3,238.7	2,914.7	3,571.5	\$30,714,900

Totals may not foot due to rounding

Section 6. That the Capacity Charge for each member agency, the method of its calculation, cost allocations and other data used in its determination are as specified in the adopted rates and charges to be effective January 1, 2019, which forms the basis of the Capacity Charge, and the corresponding 2018 Cost of Service Report. The adopted rates and charges and cost of service reports are on file and available for review by interested parties at Metropolitan’s headquarters.

Section 7. That the General Manager and the General Counsel are hereby authorized to do all things necessary and desirable to accomplish the purposes of this Resolution, including, without limitation, the commencement or defense of litigation.

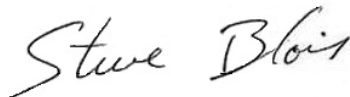
Section 8. That this Board finds that the proposed capacity charge is not defined as a Project under the California Environmental Quality Act (“CEQA”) since it will not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment and involves continuing administrative activities, such as general policy and procedure making (Section 15378 (b)(2) of the State CEQA Guidelines). In addition, the proposed action is not subject to CEQA because it involves the creation of government funding mechanisms or other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines).

Section 9. That if any provision of this Resolution or the application to any member agency, property or person whatsoever is held invalid, that invalidity shall not affect other provisions or applications of this Resolution which can be given effect without the invalid portion or application, and to that end the provisions of this Resolution are severable.

Section 10. That the General Manager is hereby authorized and directed to take all necessary action to satisfy relevant statutes requiring notice by publication.

Section 11. That the Board Executive Secretary is hereby directed to transmit a certified copy of this Resolution to the presiding officer of the governing body of each member agency.

I HEREBY CERTIFY that the foregoing is a full, true and correct copy of a Resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California, at its meeting held on April 10, 2018.



Secretary of the Board of Directors
of The Metropolitan Water District
of Southern California

**THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA**

RESOLUTION 9237

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA**

**FINDING THAT CONTINUING AN AD VALOREM PROPERTY TAX RATE AT THE
RATE LEVIED FOR 2017/18 IS ESSENTIAL TO THE FISCAL INTEGRITY OF THE
DISTRICT AND SUSPENDING THE AD VALOREM TAX RATE RESTRICTION FOR
FISCAL YEARS 2018/19 AND 2019/20**

WHEREAS, The Metropolitan Water District of Southern California (“Metropolitan”), pursuant to Section 124 of the Metropolitan Water District Act (the “Act”), is authorized to levy and collect taxes on all property within the district for the purposes of carrying on the operations and paying the obligations of the district; and

WHEREAS, pursuant to Section 307 of the Act, the Board of Directors (“Board”) determines the amount of money necessary to be raised by taxation for district purposes each fiscal year and fixes rates of taxation upon the assessed valuation of property taxable by the district to be levied accordingly; and

WHEREAS, since its inception Metropolitan has levied and collected property taxes; and

WHEREAS, the Board, pursuant to sections 133 and 134 of the Act, is authorized to fix the rate or rates at which water shall be sold. Such rates, so far as practicable, shall result in revenue which, together with revenue from fixed charges or assessments, will pay Metropolitan’s operating expenses, capital costs, debt service and other expenses and obligations; and

WHEREAS, before 1942, all revenues to pay for operations, construction of the Colorado River Aqueduct, other facilities and other Metropolitan obligations came from ad valorem property taxes. After deliveries of Metropolitan water began in fiscal year 1941/42, water sales were an additional source of revenues, but not until 1974 did revenues from water sales equal revenues from ad valorem taxes; and

WHEREAS, on November 4, 1960, Metropolitan entered into its contract with the California Department of Water Resources (the “State Water Contract”) for water service from the State Water Project. Metropolitan’s was the first contract executed and the prototype for the 28 state water contracts that followed; its terms were validated by the California Supreme Court in *Metropolitan Water Dist. v. Marquardt* (1963) 59 Cal.2d 159; and

WHEREAS, under the State Water Contract, Metropolitan is obligated to pay allocable portions of the cost of construction and replacement of the State Water Project system, as well as ongoing operating and maintenance costs, regardless of quantities of water delivered to Metropolitan and regardless of the amounts of water Metropolitan sells to its member agencies. Approximately 70 to 80 percent of Metropolitan’s State Water Contract obligations are fixed, or unrelated to the quantity of water delivered; and

WHEREAS, Metropolitan's authority to levy a tax or assessment to satisfy State Water Contract obligations was a condition to entering into the State Water Contract, and the California Department of Water Resources only executed state water contracts with agencies that have taxing power; and

WHEREAS, the State Water Contract expressly provides that, if other available funds are not sufficient, Metropolitan must levy a tax or assessment to satisfy its State Water Contract obligations; and

WHEREAS, Metropolitan's outstanding general obligation bonds and State Water Contract obligations are indebtedness approved by the California voters before Article XIII A of the California Constitution (Proposition 13) was adopted; and

WHEREAS, Metropolitan's revenues from water transactions and deliveries vary with the quantity of water delivered and water deliveries fluctuate significantly with drought, weather conditions, availability of local supplies, economic conditions and other factors affecting regional demands. During the period from fiscal year 2008/09 through fiscal year 2016/17, Metropolitan's annual deliveries ranged from 1.5 million acre-feet to 2.2 million acre-feet; and

WHEREAS, when fixing taxes and setting rates, the Board and Metropolitan's member agencies evaluate the appropriate mix of property taxes and water rates and charges to promote Metropolitan's fiscal stability and ensure its ability to satisfy the region's long-term water supply needs while reasonably and fairly allocating the cost of providing service to its member agencies and complying with legal requirements; and

WHEREAS, on May 8, 1984, the Board approved proposed amendments to the Act, set forth in Board Letter 6-2 dated April 30, 1984; and

WHEREAS, such amendments were incorporated into Assembly Bill 1445, which was approved by the Legislature and filed with the California Secretary of State on July 3, 1984, and added to the Act as Section 124.5; and

WHEREAS Section 124.5 provides that Metropolitan must limit the ad valorem property tax to collect no more than the amount required to pay for a fraction of voter-approved debt, specifically, the composite amount required to pay (1) the principal and interest on general obligation bonded indebtedness of the district and (2) that portion of the district's payment obligation under a water service contract with the state which is reasonably allocable, as determined by Metropolitan, to the payment by the state of principal and interest on bonds issued pursuant to the California Water Resources Development Bond Act as of the effective date of this section and used to finance construction of facilities for the benefit of the district; and

WHEREAS Section 124.5 further provides that Metropolitan may suspend the ad valorem property tax restriction "if the board of directors of the district, following a hearing held to consider that issue, finds that a tax in excess of these restrictions is essential to the fiscal integrity of the district, and written notice of the hearing is filed with the offices of the Speaker of the Assembly and the President pro Tempore of the Senate at least 10 days prior to that date of the hearing;" and

WHEREAS, Section 124.5's rate restriction became effective in fiscal year 1990/91; and

WHEREAS, in fiscal years 1990/91 through 1999/2000, the Board maintained Metropolitan's tax levy rate at .0089 percent, a rate that was below the rate then permitted under the restriction clause of Section 124.5; and

WHEREAS, Metropolitan's tax levy rate has declined from .0089 percent in fiscal year 1999/2000 to .0035 percent in fiscal year 2012/13; and

WHEREAS, on June 11, 2013, the Board held a public hearing, with advance notice as required by Section 124.5, to consider Resolution 9156, "A RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA FINDING THAT MAINTAINING THE AD VALOREM TAX RATE FOR FISCAL YEAR 2013/14 IS ESSENTIAL TO THE FISCAL INTEGRITY OF THE DISTRICT";

WHEREAS, at the June 11, 2013 public hearing, the Board received, considered, and evaluated public comments and evidence and all material factors pertaining thereto, including the financial and operating information summarized in Board Letter 8-2 executed by the Chief Financial Officer and General Manager on May 31, 2013; and

WHEREAS, as described in Resolution 9156, the Board found that a tax rate in excess of the restriction set out in Section 124.5 was essential to the fiscal integrity of Metropolitan; and

WHEREAS, by Resolution 9156 the Board resolved and determined that that the tax rate restriction in Section 124.5 was suspended for fiscal year 2013/14 and that the Board in its discretion may levy taxes for fiscal year 2013/14 at the tax rate levied for fiscal year 2012/13 (.0035 percent of assessed valuation, excluding annexation levies); and

WHEREAS, on August 20, 2013, the Board adopted Resolution 9157, "A RESOLUTION LEVYING TAXES FOR THE FISCAL YEAR COMMENCING JULY 1, 2013 AND ENDING JUNE 30, 2014 FOR THE PURPOSES OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA", which set the tax rate for fiscal year 2013/14 at .0035 percent; and

WHEREAS, on March 11, 2014, the Board held a public hearing with advance notice as required by Section 124.5, to consider the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels, and to give interested parties the opportunity to present their views regarding the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels; and

WHEREAS, on August 19, 2014, the Board considered Resolution 9181, "A RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA FINDING THAT MAINTAINING THE AD VALOREM TAX RATE FOR FISCAL YEAR 2013/14 IS ESSENTIAL TO THE FISCAL INTEGRITY OF THE DISTRICT"; and

WHEREAS, at the August 19, 2014 meeting, the Board received, considered, and evaluated public comments and evidence and all material factors pertaining to Resolution 9181, including the financial and operating information summarized in Board Letter 5J-2 executed by the Chief Financial Officer and General Manager; and

WHEREAS, at the August 19, 2014 meeting, the Board adopted Resolution 9181, through which it resolved and determined that the tax rate restriction in Section 124.5 was suspended for fiscal year 2014/15 and that the Board in its discretion may levy taxes for fiscal year 2014/15 at the tax rate levied for fiscal year 2013/14 (.0035 percent of assessed valuation, excluding annexation levies); and

WHEREAS, on August 19, 2014, the Board adopted Resolution 9182, "A RESOLUTION LEVYING TAXES FOR THE FISCAL YEAR COMMENCING JULY 1, 2014 AND ENDING JUNE 30,

2015 FOR THE PURPOSES OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA”, which set the tax rate for fiscal year 2014/15 at .0035 percent; and

WHEREAS, on August 18, 2015, the Board held a public hearing with advance notice as required by Section 124.5, to consider the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels, and to give interested parties the opportunity to present their views regarding the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels; and

WHEREAS, on August 18, 2015, the Board considered Resolution 9194, “A RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA FINDING THAT MAINTAINING THE AD VALOREM TAX RATE FOR FISCAL YEAR 2015/16 IS ESSENTIAL TO THE FISCAL INTEGRITY OF THE DISTRICT”; and

WHEREAS, at the August 18, 2015 meeting, the Board received, considered, and evaluated public comments and evidence and all material factors pertaining to Resolution 9194, including the financial and operating information summarized in Board Letter 5J-2 executed by the Chief Financial Officer and General Manager; and

WHEREAS, at the August 18, 2015 meeting, the Board received, considered, and evaluated public comments and evidence and all material factors pertaining to Resolution 9194, including the financial and operating information summarized in Board Letter 5G-2 executed by the Chief Financial Officer and General Manager; and

WHEREAS, at the August 18, 2015 meeting, the Board adopted Resolution 9194, through which it resolved and determined that the tax rate restriction in Section 124.5 was suspended for fiscal year 2015/16 and that the Board in its discretion may levy taxes for fiscal year 2015/16 at the tax rate levied for fiscal year 2014/15 (.0035 percent of assessed valuation, excluding annexation levies); and

WHEREAS, on August 18, 2015, the Board adopted Resolution 9195, “A RESOLUTION LEVYING TAXES FOR THE FISCAL YEAR COMMENCING JULY 1, 2015 AND ENDING JUNE 30, 2016 FOR THE PURPOSES OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA”, which set the tax rate for fiscal year 2015/16 at .0035 percent; and

WHEREAS, on March 8, 2016, the Board held a public hearing with advance notice as required by Section 124.5, to consider the recommendation to suspend the tax restriction clause of Section 124.5 for fiscal years 2016/17 and 2017/18 to maintain the ad valorem tax at current levels, and to give interested parties the opportunity to present their views regarding the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels; and

WHEREAS, on August 16, 2016, the Board adopted Resolution 9210, “A RESOLUTION LEVYING TAXES FOR THE FISCAL YEAR COMMENCING JULY 1, 2016 AND ENDING JUNE 30, 2017 FOR THE PURPOSES OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA”, which set the tax rate for fiscal year 2016/17 at .0035 percent; and

WHEREAS, on August 15, 2017, the Board adopted Resolution 9230, “A RESOLUTION LEVYING TAXES FOR THE FISCAL YEAR COMMENCING JULY 1, 2017 AND ENDING JUNE 30, 2018 FOR THE PURPOSES OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA”, which set the tax rate for fiscal year 2017/18 at .0035 percent; and

WHEREAS, on March 13, 2018, the Board held a public hearing with advance notice as required by Section 124.5, to consider the recommendation to suspend the tax restriction clause of Section 124.5 for fiscal years 2018/19 and 2019/20 to maintain the ad valorem tax at current levels, and to give interested parties the opportunity to present their views regarding the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels; and

WHEREAS, Metropolitan currently utilizes tax revenues solely to pay debt service on its general obligation bonds, approved by the voters in 1966 and presently outstanding in the amount of \$78,390,000 as of December 31, 2017, and a small portion of its State Water Contract obligations; and

WHEREAS, Metropolitan provides, sells and delivers a reliable water supply at wholesale to its member agencies throughout a broad service area; and

WHEREAS, the water supply, conveyance rights and other rights to the State Water Project that Metropolitan receives under the State Water Contract are fundamental to Metropolitan's ability to consistently provide a reliable water supply and delivery at wholesale to its service area and, thus, satisfaction of its State Water Contract obligations is essential to Metropolitan's mission; and

WHEREAS, the State Water Project facilities are over 50 years old and Metropolitan's State Water Contract obligations include increasing costs for repair and replacement of existing facilities that are needed to both maintain the storage and conveyance capacity of the State Water Project facilities and assure continued availability and delivery of supplies from the State Water Project and other sources. These costs and obligations were not foreseen by the Legislature when, in 1984, it established the Section 124.5 tax rate restriction and nothing suggests that the Legislature intended to prohibit the Board from considering such circumstances when deciding whether suspension of the restriction is essential to Metropolitan's fiscal integrity; and

WHEREAS, Metropolitan's State Water Contract obligations also include substantial construction, replacement, operation and maintenance costs for endangered species protection and conservation measures, consistent with state and federal mandates. These obligations must be undertaken to ensure the reliability of the State Water Project, to address ecosystem needs and to secure long-term operating permits consistent with the federal and state endangered species acts. These costs and obligations were not foreseen or considered by the Legislature when, in 1984, it established the Section 124.5 rate restriction and nothing suggests that the Legislature intended to prohibit the Board from considering such circumstances when deciding whether suspension of the restriction is essential to Metropolitan's fiscal integrity; and

WHEREAS, consideration of, and providing for, current and anticipated State Water Contract obligations is essential to Metropolitan's fiscal stability and integrity; and

WHEREAS, availability of diverse financial resources to satisfy Metropolitan's State Water Contract obligations is essential to Metropolitan's fiscal stability and integrity; and

WHEREAS, an appropriate balance of fixed costs and fixed revenue is essential to Metropolitan's long-term fiscal health; and

WHEREAS, the ad valorem tax is essential to the appropriate balance of fixed costs and fixed revenue under current circumstances; and

WHEREAS, continuing an ad valorem property tax rate at the current rate will allow the Board flexibility to fund Metropolitan's State Water Contract obligations fully and fairly in fiscal year 2018/19 and

2019/20 and for the foreseeable future; and

WHEREAS, when it enacted Section 124.5, the Legislature recognized the importance of robust fixed revenue sources. At the same time that it established the rate restriction and safety valve to suspend the restriction, it authorized alternative fixed revenue sources in the form of benefit assessments and standby charges. To the extent such assessments or charges would be new assessments or charges, they would likely be governed by additional requirements not in place or contemplated when the Legislature enacted Section 124.5. In the Board's judgment, adoption of such new or additional assessments or charges is not practical and they are not practical fixed revenue sources at this time; and

WHEREAS, in FY 2018/19, approximately 80 percent of Metropolitan's estimated costs are fixed, while approximately 17 percent of Metropolitan's revenues are from fixed sources, including ad valorem property taxes, readiness-to-serve and capacity charges; in FY 2019/20, approximately 80 percent of Metropolitan's estimated costs are fixed, while approximately 15 percent of Metropolitan's revenues are from fixed sources, including ad valorem property taxes, readiness-to-serve and capacity charges. Suspending the rate restriction will allow Metropolitan to sustain ad valorem property tax revenues at 7 percent of overall revenues in fiscal year 2018/19 and 6 percent in fiscal year 2019/20 and at an estimated 6 percent of overall revenues in fiscal year 2025/26. Absent suspension, it is anticipated that, in fiscal years 2018/19 and 2019/20, ad valorem property tax revenue will drop to approximately 2 percent of overall revenue and, by fiscal year 2027/28, it will be only 0.1 percent of overall revenue; and

WHEREAS, absent maintenance of the tax rate or other changes, fiscal years 2018/19 and 2019/20 fixed revenues as a percentage of total revenues will decline from 17 percent to 12 percent in fiscal year 2018/19 and from 15 percent to 11 percent in fiscal year 2019/20; fixed revenues as a percentage of total revenues will decline from 17 percent to 11 percent in fiscal year 2027/28; and this trend will continue; and

WHEREAS, in light of Metropolitan's significant fixed costs and fluctuating volumetric revenues, robust and diverse fixed revenues are essential to Metropolitan's fiscal well-being for the additional reason that they help Metropolitan maintain creditworthiness. Positive credit ratings are central to fiscal integrity because they reduce the cost of borrowing and provide flexibility by increasing access to credit markets. Access to credit markets is especially important whenever Metropolitan faces supply or demand uncertainties. As set forth above, suspending the tax rate restriction will allow Metropolitan to retain important fixed revenues, whereas, absent suspension, these fixed revenues will be lost; and

WHEREAS, ad valorem taxes are an important component of Metropolitan's fiscal integrity because they help ensure that those for whom costs are incurred help pay those costs. As a wholesale water agency, Metropolitan's customers are its 26 member agencies. Each member agency pays volumetric rates based on the amount of water transactions with Metropolitan; whereas ad valorem taxes are levied directly on residents and businesses that are property owners within Metropolitan's service area. All property owners within Metropolitan's service area benefit from the water system that allows water to be delivered in Southern California. Ad valorem taxes ensure that residences and businesses pay a share of costs of the system; and

WHEREAS, maintaining the existing ad valorem tax rate advances fiscal integrity because it takes pressure off Metropolitan's volumetric water rates and readiness-to-serve and capacity charges and assist the Board, in its discretion, in maintaining a fair and appropriate balance between fixed costs and fixed revenues and help ensure that all who benefit from Metropolitan's service pay a fair share of the cost of that service; and

WHEREAS, maintaining the existing ad valorem tax rate and preventing the decline in fixed

revenues will create a more stable water revenue structure that can better deal with fluctuations in water transactions and support drought response measures; and

WHEREAS, Metropolitan's reliance on property taxes is significantly lower than most other agencies that entered into state water contracts. Other state water contractors rely on property taxes to cover up to 100 percent of their state water contract obligations. Even if all Metropolitan's property tax revenue were fully allocated to State Water Contract obligations- and it is not-Metropolitan would cover only 17 percent of its fiscal years 2018/19 and 2019/20 State Water Contract obligations. This percentage is at the far low end for state water contractors; and

WHEREAS, an analysis of fiscal health and stability must consider long-term circumstances, and the full spectrum of facts and circumstances, including the appropriate mix of property taxes and water rates and charges that will best allow Metropolitan to satisfy the region's long-term water supply needs; and

WHEREAS, notices of the public hearing were filed with the offices of the Speaker of the Assembly and the President pro Tempore of the Senate on February 26 2018; and

WHEREAS, the Board conducted a public hearing at its regular meeting on March 13, 2018, at which interested parties were given the opportunity to present their views regarding the recommendation to suspend the tax restriction clause of Section 124.5 to maintain the ad valorem tax at current levels; and

WHEREAS, the Board has carefully considered the comments and evidence and all material factors relevant to a finding that suspension of the tax rate restriction is essential to Metropolitan's fiscal integrity; and

WHEREAS, the meeting of the Board was conducted in accordance with the Brown Act (commencing at Section 54950 of the Government Code), for which due notice was provided and at which a quorum was present and acting throughout;

NOW, THEREFORE, the Board of Directors of The Metropolitan Water District of Southern California, after receiving, considering, and evaluating public comments and evidence and all material factors pertaining thereto, including the financial and operating information summarized in Board Letter 8-1 executed by the Chief Financial Officer and General Manager on April 10, 2018 and in recognition of the facts and considerations set forth in this Resolution, hereby:

1. Finds and determines that a tax rate in excess of the restriction set out in Section 124.5 of the Act is essential to the fiscal integrity of Metropolitan; and
2. Resolves and determines that the tax rate restriction in Section 124.5 of the Act is hereby suspended for the limited purpose of allowing the Board in its discretion to continue the ad valorem property tax rate for fiscal years 2018/19 and 2019/20 at the tax rate levied in fiscal years 2017/18 (.0035 percent of assessed valuation, excluding annexation levies); and
3. Waives compliance with Section 4301(b) of Metropolitan's Administrative Code for any tax levy that utilizes this suspension of Section 124.5 of the Act.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution of the Board of Directors of The Metropolitan Water District of Southern California, adopted at its meeting held April 10, 2018.

Stwe Blois

Secretary of the Board of Directors
of The Metropolitan Water District
of Southern California

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

