



*THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA*

CAPITAL INVESTMENT PLAN APPENDIX

For Fiscal Years 2016/17

and 2017/18

Xxxx2016

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INTRODUCTION

The primary focus of the Capital Investment Plan Appendix is to provide information on all capital programs and projects that are scheduled to begin or will be underway during FY 2016/17 and FY 2017/18. Scope, accomplishments, objectives and financial projections are given for each program along with individual project descriptions.

The CIP budget for FY 2016/17 and FY 2017/18 is estimated to be \$215 million and \$2xx million respectively and is planned to be funded by current operating revenues (R&R and PAYGO).

The total FY 2016/17 and FY 2017/18 capital budget of \$xxxxmillion includes all anticipated costs for labor including administrative overhead, construction and professional services contract costs, right of way, materials, operating equipment, and incidental expenses. It does not include a contingency amount.

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 11 CIP Programs described in Table 1.

Under each CIP Program there is one to several appropriations, each with multiple projects. Every project with work planned for the two budget years is listed and described under the individual appropriation descriptions starting on page 21.

Table 1 – CIP Programs

Program	Definition
Supply Reliability/System Expansion	Projects under this program will increase the capacity of Metropolitan’s water supply and delivery infrastructure to meet projected demand increases.
Colorado River Aqueduct Reliability	Projects under this program will replace or refurbish facilities and components on the Colorado River Aqueduct system in order to reliably

Program	Definition
	convey water to Southern California.
Treatment Plant Reliability: - Diemer Plant - Jensen Plant - Mills Plant - Skinner Plant - Weymouth Plant	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. 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.
Distribution System Reliability	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.
Right of Way & Infrastructure Protection	Projects under this program will refurbish or upgrade Metropolitan’s Prestressed Concrete Cylinder Pipelines (PCCP) to maintain water deliveries without unplanned shutdowns.
Prestressed Concrete Cylinder Pipelines Rehabilitation	Projects under this program will provide for prudent use and management of Metropolitan’s assets in compliance with all applicable regulations and codes other than water quality.
Regulatory	Projects under this program will implement refurbishments, replacements, or upgrades that cost less than \$250,000 at Metropolitan facilities.
Minor Capital Projects	Projects under this program will provide economic savings that outweigh project costs through enhanced business and operating processes.
Cost, Efficiency & Productivity	Projects under this program will improve or modify Metropolitan’s SCADA and other Information Technology systems, and other facilities that are located throughout Metropolitan’s service area in order to utilize new processes, and/or technologies, and improve facility safety and security measures.
System Reliability	
Water Quality/Oxidation Retrofit	Projects under this program will add new facilities to ensure compliance, with water quality regulations for treated water for Metropolitan’s treatment plants and throughout the distribution system.

Program

Definition

CAPITAL INVESTMENT PLAN DEVELOPMENT

Background

The projects that comprise the proposed CIP have been identified from many Metropolitan studies of projected water needs that are embodied in board-approved documents such as the Integrated Resources Plan, Distribution System Overview Study, and the General Manager's Business Plan. As has been noted in the past, all facility expansion projects continue to be on hold or deferred pending further analysis and review of water service demands. Staff continues to study operational demands on aging facilities as well as new regulations, and have made recommendations for capital projects that will maintain infrastructure reliability and water quality standards, studied business and operational processes, and made recommendations for programs that will improve efficiency and provide future cost savings. Additionally, several projects have been identified and included that will enhance delivery of Colorado River water to portions of the service area that currently rely exclusively on deliveries from the State Water Project.

CIP Development Process

The CIP is structured to reflect Metropolitan's strategic goals of providing a reliable supply of high-quality water at the lowest cost possible. As part of the CIP 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 Business Plan Priorities for Water Supply Reliability and Water Quality.

A team comprised of staff from Water System Operations, Water Resource Management, Real Property Development and Management, Engineering Services, and Business Technology

evaluate and rate all projects. Those projects that directly support the priorities of Water Supply Reliability and Water Quality are prioritized for inclusion in Metropolitan's proposed CIP.

This rigorous evaluation process has resulted in a thorough review and assessment of all proposed capital projects by staff and managers prior to submittal to the evaluation team. 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 steadily increasing 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.

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 2016/17 and FY 2017/18 are reflected in the budget and objectives for each of the individual programs described later in this document.

Project Evaluation

Before a project is included in the CIP, it is evaluated and rated against an established set of criteria. Staff is required to submit proposals for all projects that include scope, justification,

alternatives, impacts of 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. Guidelines for project proposals start on page 12. The evaluation criteria cover four characteristics or objectives for capital projects: Project Necessity, Directive, Service Disruption, and Cost/Productivity/Sustainability. In addition, a

multiplier is applied to a project rating to factor in a risk assessment. See page 15 for a description of each criterion and multiplier.

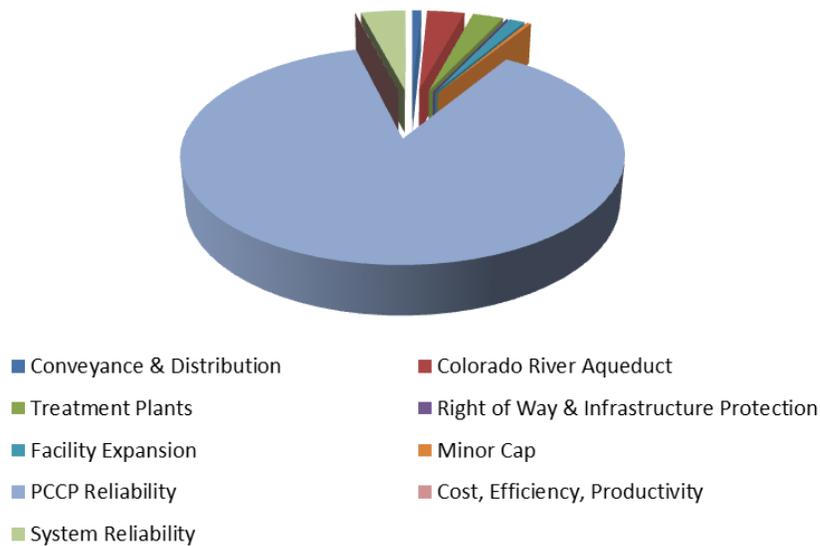
New Projects for FY 2016/17 and FY 2017/18

This year, a total of 66 new projects, excluding Minor Capital projects, were recommended by the CIP Evaluation Team to either proceed as proposed, or be staged to perform only a portion

of the work in the biennium budget period, and have been incorporated into the CIP Programs.

Figure 1 shows a breakdown of the new projects identified by CIP Program. The total estimate of expenditures for all new projects is \$2.5 billion. It should be noted that the largest addition, PCCP Rehabilitation, includes the preliminary estimates for the long-term rehabilitation of the five critical prestressed concrete cylinder pipelines.

Figure 1 – New CIP Projects by Program



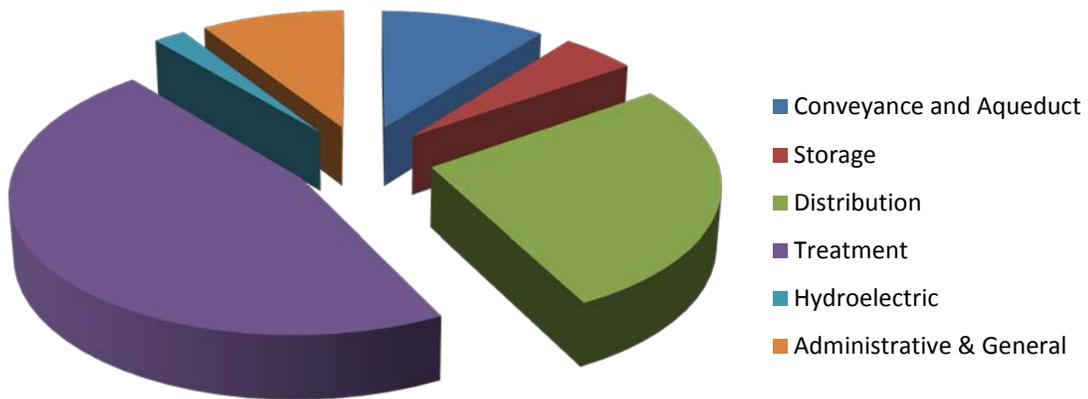
Total New Project Estimates – \$2.5 billion (non-escalated)

Cost of Service Category

The Cost of Service Categories for each program are: source of supply, conveyance and aqueduct, distribution, storage, treatment, hydroelectric, and administrative and general.

The categories support the development of rates and charges. Table 2 explains the Cost of Service Categories. Figure 2 shows the breakdown of the biennium CIP by Cost of Service category.

Figure 2 – FY 2016/17 and FY 2017/18 Biennial CIP by Cost of Service Category



FY 2016/17 – 2017/18 Biennium CIP Estimate – \$513 million

Table 2 – Cost of Service Categories

Category	Description
Source of Supply	This category includes capital costs for water supplies. Included in those costs are supply-related programs such as Colorado River conjunctive use programs, in-basin conjunctive use programs, and other capital projects that develop additional reliable supplies.

Category	Description
Conveyance and Aqueduct	This category includes the capital costs for Colorado River Aqueduct (CRA) facilities that convey water to Southern California and into Metropolitan's distribution system. The Inland Feeder is a Conveyance and Aqueduct facility. Conveyance and Aqueduct facilities can be distinguished from Metropolitan's other facilities primarily by the fact that they do not typically include direct connections to the member agencies.
Transmission/ Distribution	This category includes capital costs for facilities and programs, for "in-basin" feeders, canals, pipelines, laterals and other appurtenant works. The "in-basin" facilities are distinguished from Conveyance and Aqueduct facilities at the point of connection to the SWP (with the exception of the Inland Feeder), the terminal reservoirs of the CRA, Lake Mathews, and other major turnouts along the CRA facilities.
Storage	This category includes the capital costs for Metropolitan's reservoirs.
Treatment	This category includes the capital costs for Metropolitan's five treatment plants.
Hydroelectric	Hydroelectric costs include the capital costs incurred for the 16 small hydroelectric plants located throughout the distribution system.
Administrative and General	This category includes capital costs for other projects such as information technology system upgrades that benefit all of the service function categories listed above.

MAJOR OBJECTIVES FOR FISCAL YEAR FY 2016/17 and FY 2017/18

Below, grouped by CIP Program, are descriptions of capital project major activities anticipated to be underway or completed over the next two fiscal years.

Oxidation Retrofit Program

Weymouth Plant Oxidation Retrofit

Continue construction of the new oxidation facilities, including incorporation of the Board authorized extra work to increase the ozone treatment capacity to the full plant capacity of 520 million gallons per day (mgd).

Diemer Plant Oxidation Retrofit

Complete testing and start-up, and preparation of the record drawings.

Treatment Plant Reliability

Weymouth Plant

Complete construction of seismic upgrades to the filter buildings; complete design and begin rehabilitation of the filters and treatment Basins 5–8; complete design of the filter valve replacements.

Diemer Plant

Begin rehabilitation of all eight treatment basins; complete design and begin rehabilitation of the wash water reclamation plant; complete design and begin replacement of the filter valves; complete construction of the second stage of electrical system upgrades.

Jensen Plant

Complete design and begin replacement of the filter valves in Module 1; complete design and begin construction of facilities to transfer residual solids to the LADWP lagoons; complete upgrades of the surface wash system for filters 1- 20 and replacement of the service water pumps; complete design and begin upgrades of the plant electrical systems and refurbishment of the flocculators in Modules 2 and 3.

Mills Plant

Complete design and construction of two solids thickeners.

Distribution System Reliability

Complete first stage of the relining of the Etiwanda Pipeline.

Complete design and begin the relining of the Lakeview Pipeline.

Complete design and environmental documentation for the relining of 9 miles of the Orange County Feeder.

Complete the replacement of the liner and floating cover at the Palos Verdes Reservoir.

Distribution System Infrastructure Protection

Continue design, preparation of Programmatic Environmental Impact Reports, and right-of-way evaluations/acquisition as part of the Distribution System Infrastructure Protection Plan.

Prestressed Concrete Cylinder Pipe Rehabilitation

Complete the urgent repairs at 3 sites and continue design of rehabilitation of the remaining portions of the Second Lower Feeder.

Begin preliminary design of the rehabilitation of the PCCP portions of the Sepulveda Feeder.

Continue annual electromagnetic inspections of all PCCP pipelines.

Colorado River Aqueduct Reliability

A primary focus of capital projects on the CRA, in addition to regulatory compliance, safety, and overall reliability, is to prioritize projects needed to maintain 8-pump flow capability at all times. Over the next two years, projects that are a priority include design and construction of upgrades to the sand trap facilities upstream of the Eagle and Iron Mountain, and Hinds Pumping Plants; design and construction of discharge line isolation bulkheads, standby generators at Intake, Gene, and Iron

Mountain Pumping Plants, final design and construction of erosion protection over the Whitewater Siphon, and continuation of assessments of the main pump facilities including the main transformers and auxiliary power systems, motor exciters, motors and pumps, discharge valves, and cooling and lubrication systems.

Other critical projects at the CRA facilities include completion of construction of the Copper Basin Outlet Facilities; design and construction of wastewater system replacements at the Gene and Iron Mountain Villages; design and construction to refurbish the sump systems at all five pumping plants; and completion of the design of seismic retrofits of the 6.9kV switch houses.

System Reliability

LaVerne Shop Facilities

Complete construction of upgrades to the machine, fabrication, and coating shops and the first stages of equipment procurement and installation.

Information Technology

Complete the design, procurement and installation of communication infrastructure and equipment to replace outdated PBX-based equipment with unified Internet Protocol based technology; complete design and begin deployment of the final phase of the replacement and upgrades to the two-way radio system.

Complete preliminary design of the replacement of the control system and electrical system protection facilities at the Diamond Valley Lake Wadsworth Pumping Plant.

Complete design and begin replacement of the approximately 300 Remote Terminal Units Input/Output components and operating systems utilized for monitoring and control of Metropolitan's treatment, conveyance, and distribution systems with new hardware and software.

Supply Reliability/System Expansions

Although service demand projections are not anticipated to increase in the near-term to the extent that new facilities will be needed, several projects have been identified to improve water delivery flexibility. The Inland Feeder-Lakeview Pipeline Interconnection is being expedited to complete construction by late summer 2014. Improvements to the Greg Ave. Pump Station are also currently in design and are planned for construction during FY 2014/15.

Regulatory

Chlorine Containment

Begin construction of chlorine containment facilities at the Chemical Unloading Facility.

Cost, Efficiency, Productivity

Complete the upgrades of Oracle and PeopleSoft to the more recent, vendor supported versions.

Complete the construction of modifications to the Yorba Linda Hydroelectric Power Plant.

Complete the design and installation of a new, enhanced project control and reporting system to replace the outdated Project Management Information System.

Financial Projections

The CIP budget for FY 2016/17 and FY 2017/18 is estimated to be \$215 million and \$268 million respectively and is planned to be funded by current operating revenues (R&R and PAYGO). All of the projects in the CIP are reviewed each year as part of the 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. Estimated capital expenditures 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.

Funds required for the CIP for FY 2016/17 and FY 2017/18 have been estimated based on anticipated project progress and estimated costs for the new biennium budget period. Planned capital expenditures for FY 2016/17 are approximately \$50 million less than what was budgeted for FY 2015/16. This decrease in planned expenditures reflects a readjustment of project budgets and schedules as a result of some very favorable bids on construction contracts and to optimize use of resources as well as facility shutdown planning. Actual expenditures in FY 2013/14 are projected to be about \$100 million less than budgeted. Therefore, planned expenditures in FY 2014/15 of \$245 million reflect an increase from actual

expenditures in FY 2013/14 of approximately \$60 million.

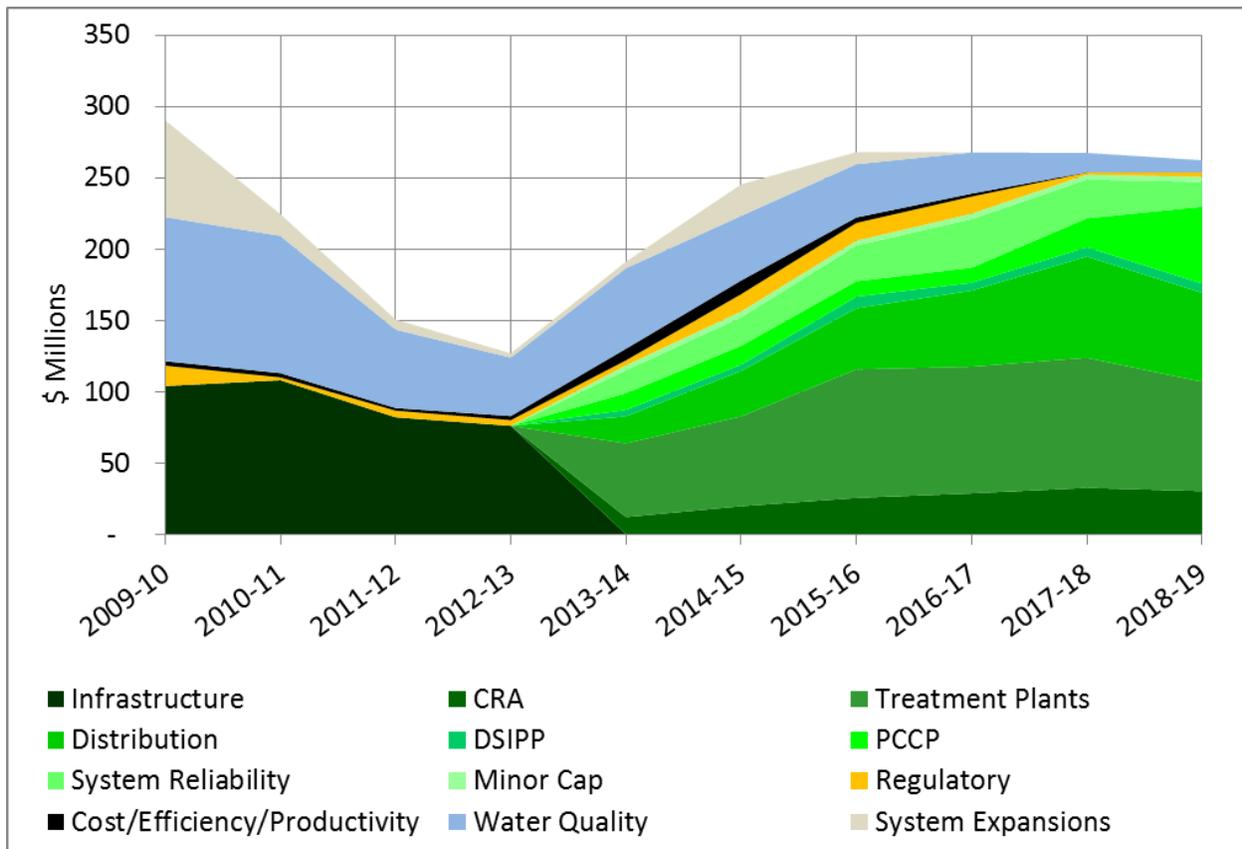
This increase reflects initiation of construction on several projects where design activities had been extended. Examples include chlorine containment at the Chemical Unloading Facility (CUF), relining of the PCCP portions of the Second Lower Feeder, liner repairs and cover replacement at the Palos Verdes Reservoir, refurbishment of the settling basins and replacement of the filter valves at the Diemer plant, and upgrades to the CRA village waste water systems. Two additional urgent projects to enhance Colorado River water delivery flexibility – the Inland Feeder-Lakeview Pipeline Interconnection and improvements to the Greg Avenue Pump Station - are also planned to move quickly into construction during FY 2014/15.

Planned capital expenditures for FY 2016/17 are approximately \$23 million more than in FY 2015/16. This increase is due to a ramp up of progress payments on the Diemer basin rehabilitation and filter valve replacements construction, chlorine containment at CUF, Second Lower Feeder PCCP relining, and rehabilitation of the filters at the Weymouth plant. Additionally, construction is anticipated to begin on relining of the Lakeview Pipeline, electrical system upgrades at the Jensen plant, and relining of the Orange County Feeder.

Figure 3 depicts the capital expenditure profile, including actual and projected cash flow, for the 10-year period from FY 2009/10 through FY 2018/19.

Figure 3 – FY 2016/17 – 2017/18 Biennium CIP by Program (non-escalated)

10-year Window 2009/10 through 2018/19



HOW TO USE THIS DOCUMENT

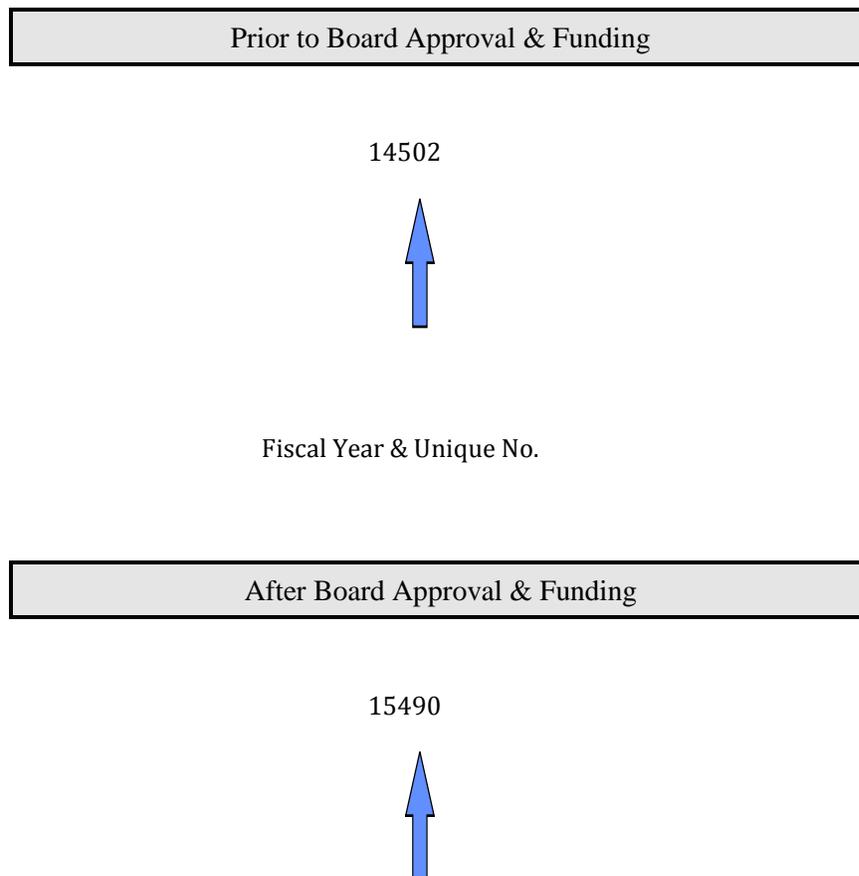
The core of this section is the Individual Appropriation Summary, which provides information for each capital project that is scheduled to begin or will be underway during FY 2016/17. The Individual Appropriation Summary is ordered by Appropriation title, starting on page 21. For assistance in locating a specific appropriation, refer to page 19.

Explanation of Capital Appropriation Numbers

Appropriation numbers are comprised of a five-digit number. The five-digit number uniquely identifies an appropriation.

If an appropriation has not yet received board approval, the first three numeric digits represent the fiscal year the appropriation was identified (e.g., “167” is FY 2016/17), the last two numeric digits uniquely identify the new appropriation placeholder number. If by board action, the authority to perform work and funding has been established, the five-digit numbers in the placeholder number change to the appropriation number. Figure 4 shows examples of the placeholder and appropriation numbers.

Figure 4 – Appropriation Number Naming Convention



Appropriation No.

Explanation of Individual Appropriation Summary

Each project planned to be underway during FY 2016/17 is included in the Individual Appropriation Summary. The information provided reflects appropriation and project details current as of the time of publication and is subject to change.

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 2016/17 and FY 2017/18 biennial estimate, total projected cost through June 30, 2016, estimated percent complete and estimated completion date. Table 3 provides an explanation of each item.

Table 3 – Key Appropriation Information

Item	Description
Total Appropriation Estimate	<p>The total estimate of cost from inception to completion of projects in an appropriation. It includes a contingency amount, and may include actual expenditures if projects in the appropriation are underway.</p> <p>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.</p>
Appropriated Amount	<p>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 December 31, 2013.</p>
Biennial Estimate	<p>Estimate of expenditures from July 2016 through June 2018. It does not include a contingency amount.</p>
Total Projected through June 30, 2015	<p>Actual expenditures to date and estimate of expenditures through June 2015.</p>
Estimated Percent Complete	<p>Estimated percent of work to be completed through June 2016.</p>
Estimated Completion Date	<p>Fiscal year in which all of the projects in an appropriation will be completed according to the current schedule.</p>

Guidelines for Project Proposals

Project Proposal

Sponsors are required to submit proposals for all projects to be considered for inclusion into the CIP

for FY 2016/17 and FY 2017/18. The projects are evaluated, rated and prioritized based on the contents of the proposals. The following guidelines are provided to the sponsors.

Table 4 – Project Proposal Guidelines

Section	Guideline
Appropriation Title	If applicable, indicate the Appropriation to which the project belongs. For instance, the Chemical Unloading Facility Chlorine Containment and Handling Facilities is part of the Chlorine Containment and Handling Facilities Appropriation.
Project Title	Provide a title for the project being proposed.
Sponsoring Group	Indicate the project sponsor from the following list of organizations: <ol style="list-style-type: none"> 1) Office of General Manager 2) Water System Operations 3) Water Resources Management 4) Engineering 5) Business Technology 6) Real Property Development and Management 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.
GM Business Plan	Indicate which GM Business Plan Strategy/Initiative the proposed project best fits.
Project Goal	Indicate which of the CIP goals below this project supports: <ol style="list-style-type: none"> 1) Reliability 2) Water Quality 3) Other Board Directive 4) Both Reliability and Water Quality

Section	Guideline
Background Information	Provide any supplemental information (e.g., detailed history of a problem, supporting technical information) that will help in evaluating the project. This can also be attached to the proposal.
Schedule	Provide an overall schedule for the project. Indicate if there are any time sensitivity issues (e.g., shutdown windows) and if the work can be staged. If work can be staged, indicate when subsequent stages can be implemented. A standard phasing plan is provided in the template. Indicate the proposed beginning and end dates for all appropriate phases, and when initial authorization will need to be requested from the Board.
Detailed Project Estimate	<p>Itemized list of all costs for the project include:</p> <ol style="list-style-type: none"> 1) Direct Labor with additives 2) Materials and Supplies 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 9) Credits and Contingency <p>A phase-based estimating form is linked through the template. All new project proposals and existing projects that have not yet been board authorized must include this estimating form.</p>
Benefit/Cost Analysis and Pay-Back Period	Perform a simple economic analysis that quantifies the cost to do the project, O&M savings and/or avoided costs. Discuss intangible benefits and costs. State assumptions. For IT projects, include Return on Investment analysis, if available.
O&M Impacts, Costs, and Benefits	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

Section	Guideline
Approvals	<p data-bbox="479 317 1419 415">in FY 2015/16. Preliminary design 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.</p> <p data-bbox="479 453 1149 474">Person submitting and/or sponsoring the proposed project</p> <p data-bbox="479 520 1281 541">Team manager of the person submitting and/or sponsoring the project</p> <p data-bbox="479 588 1265 609">Unit manager of the person submitting and/or sponsoring the project</p> <p data-bbox="479 655 1373 711">Section manager of the person sponsoring the project (e.g., all new and existing WSO-sponsored projects)</p> <p data-bbox="479 758 1357 779">Group manager sponsoring the project (e.g., all new WSO-sponsored projects)</p> <p data-bbox="479 825 1357 846">Project manager signs in concurrence. (e.g., Engineering and IT organizations)</p>

Evaluation Criteria

The evaluation criteria cover four characteristics or objectives for capital projects: Project Necessity, Directive, Service Disruption, and Cost /Productivity/Sustainability. In addition a

multiplier is applied to a project rating to factor in a risk assessment. Table 5 provides a description of the criteria and multiplier.

Table 5 – Evaluation Criteria and Multiplier

Criteria	Description
Necessity	<p>Assessment of the overall importance of a project. Criterion looks at whether or not a project does the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Infrastructure Reliability/Integrity/Business Systems Reliability <input type="checkbox"/> Stewardship <input type="checkbox"/> Water Supply
Directive	<p>Assessment of whether or not a project is specifically identified in one of the core or strategic initiatives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Regulatory/Legal Settlement <input type="checkbox"/> Special Initiative/Directive
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 system delivery and/or reliability <input type="checkbox"/> Cascading impact on system due to failure <input type="checkbox"/> Impact to operations
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

Capital Investment Plan FY 2016/17 and 2017/18

Criteria	Description
Risk Assessment	Assessment of the probability of: <ul style="list-style-type: none">❑ Increased future costs❑ Dependent projects❑ Facility/component/process failure❑ Workplace health and safety❑ Loss of outside funding❑ Lost opportunity❑ Not meeting service demands