
WATER SYSTEM OPERATIONS

Water System Operations (WSO) group 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 State Water Project (SWP) through a raw water conveyance system, five treatment plants, and an extensive treated water distribution network. Water quality is paramount and all functions focus on producing and maintaining water 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 security. The security function ensures that Metropolitan's employees, water infrastructure, and equipment are adequately protected.

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 conveyance system consists primarily of the Colorado River Aqueduct system and five pumping plants. The distribution system consists of about 820 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.

Water Treatment operates and maintains five water treatment plants with a combined capacity of over 2.6 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. Four of the treatment plants (Jensen, Mills, Skinner, and Diemer) have been retrofit to use ozone as the primary disinfectant. Ozone construction is underway at the Weymouth plant and, by the end of this biennial budget, the nearly \$1.3 billion ozone retrofit program will be complete.

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 advocating for measures to reduce the risk of point and non-point source pollution.

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 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 Fleet Services unit acquires and maintains vehicles and emergency generators. The Power & Equipment Reliability unit provides maintenance services which include: predictive, preventive, and

corrective maintenance analysis for critical equipment, including all 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 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.

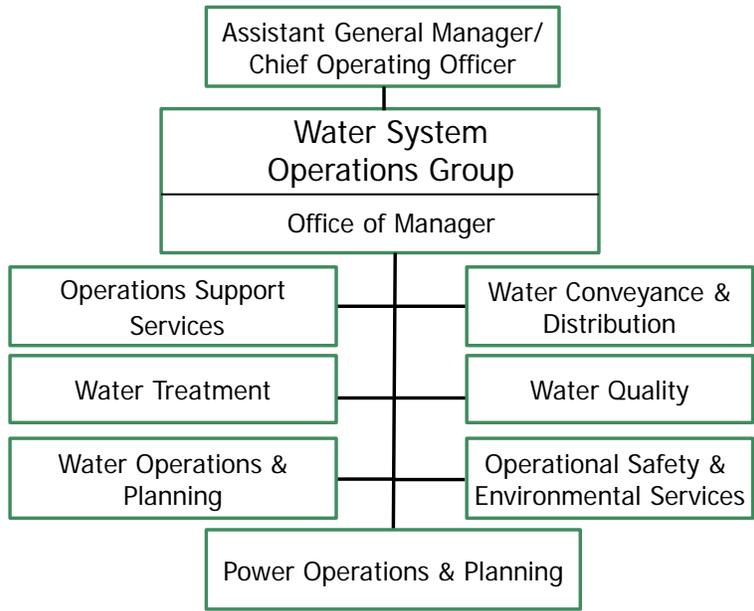
In addition, the section programs and maintains Metropolitan's control system, known as Supervisory Control and Data Acquisition (SCADA) and is also responsible for emergency response management and providing emergency response training to employees.

Power Operations and Planning plans, acquires and accounts for the energy required to operate the Colorado River Aqueduct (CRA). This activity requires 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 generally 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.

Safety and Environmental 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 environmental and occupational health and safety rules and regulations. 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 environmental incidents.

In addition, the section manages technical skills training for maintenance craft employees and sponsors an accredited apprenticeship program which trains industrial mechanics and electricians over a four-year period of classroom and hands-on instruction.



GOALS AND OBJECTIVES

In FY 2016/17 and FY 2017/18, 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.

As the drought eases, rebuild water storage into accounts that provide the greatest delivery flexibility and cost effectiveness.

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.

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.

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.

Establish 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, access controls, incident monitoring, and response for critical infrastructure sites and office locations.

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

Energy Management

Manage and limit price exposure for wholesale energy to support CRA pumping.

Secure an agreement for coordinated electrical operations of the CRA.

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.

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.

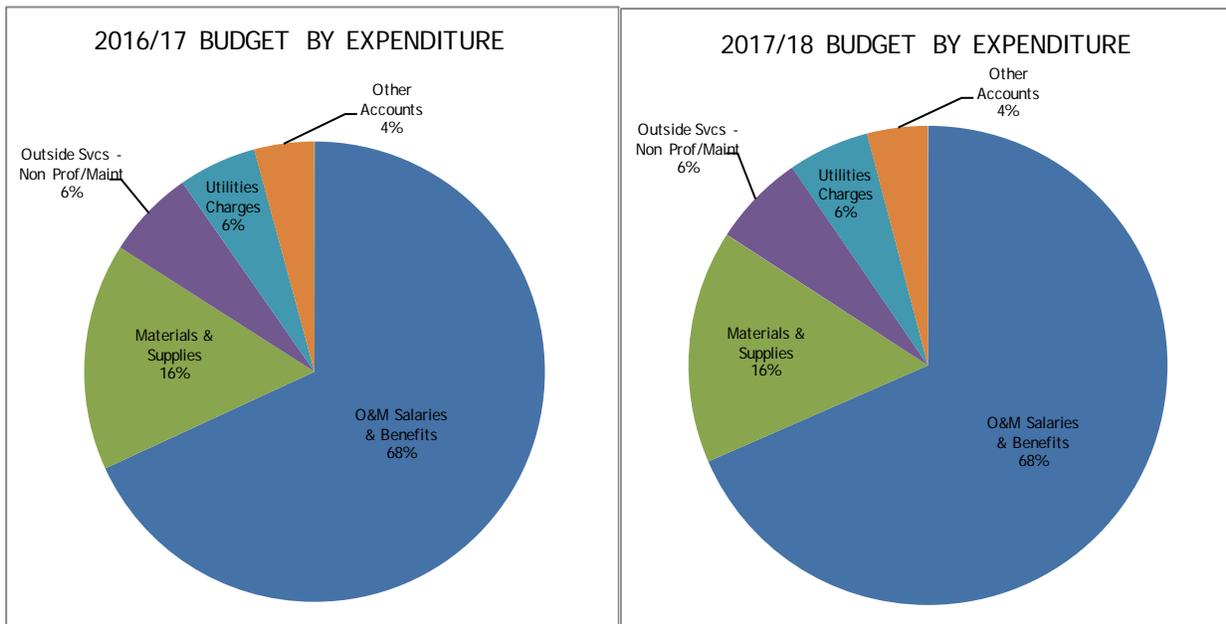
Complete implementation of ozone retrofit program with the startup of ozone at the Weymouth plant.

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

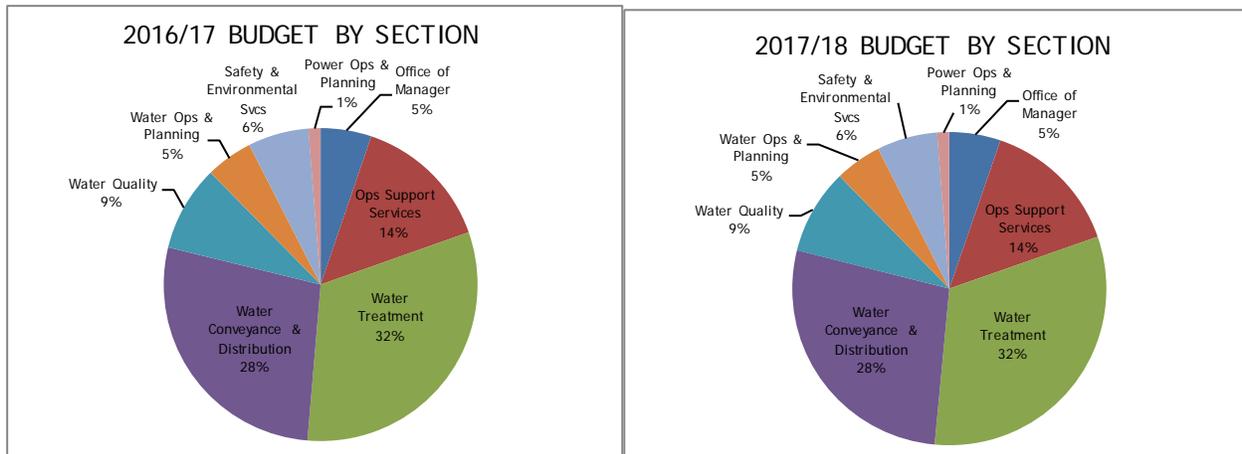
O&M Financial Summary

	2014/15 Actual	2015/16 Budget	2016/17 Proposed	Change from 2015/16	2017/18 Proposed	Change from 2016/17
Total Salaries and Benefits	155,336,500	155,277,700	157,184,700	1,907,000	160,471,200	3,286,500
Direct Charges to Capital	(7,391,500)	(7,222,700)	(6,897,300)	325,400	(6,931,700)	(34,400)
Total Salaries and Benefits	147,945,000	148,055,000	150,287,400	2,232,400	153,539,500	3,252,100
% Change		0.1%		1.5%		2.2%
Professional Services	1,325,900	2,377,000	1,119,000	(1,258,000)	1,060,500	(58,500)
Materials & Supplies	36,671,100	39,381,200	35,232,200	(4,149,000)	35,302,900	70,700
Outside Services - Non Professional / Mainte	13,508,100	15,307,800	13,765,000	(1,542,800)	14,013,500	248,500
Utilities Charges	13,904,900	13,651,900	12,115,400	(1,536,500)	12,323,800	208,400
Other Accounts	9,076,100	7,687,300	8,199,700	512,400	8,136,800	(62,900)
Total O&M	222,431,100	226,460,200	220,718,700	(5,741,500)	224,377,000	3,658,300
% Change		1.8%		(2.5%)		1.7%
Operating Equipment	—	7,019,900	4,489,200	(2,530,700)	5,539,400	1,050,200
Total O&M and Operating Equipment	222,431,100	233,480,100	225,207,900	(8,272,200)	229,916,400	4,708,500
% Change		5.0%		(3.5%)		2.1%

Note - Totals may not foot due to rounding.



O&M BUDGET BY SECTION



	2015/16 Budget	2016/17 Proposed	Change from 2015/16	2017/18 Proposed	Change from 2016/17	Pers. 15/16	Pers. 16/17	Pers. 17/18						
O and M Planning Section	10,691,259	10,654,174	(37,085)	10,778,585	124,411	—	—	—						
Operations Support Services Section	32,292,809	31,679,221	(613,588)	32,226,823	547,601	153	161	161						
Power Operations and Planning Section	2,943,153	2,756,684	(186,469)	2,792,708	36,024	11	11	11						
Safety and Environmental Services	14,342,762	13,813,025	(529,737)	13,962,476	149,451	54	55	55						
Water Conveyance and Distn Section	57,196,047	60,648,097	3,452,050	61,567,315	919,217	267	271	271						
Water Operations and Planning Section	—	—	—	—	—	43	43	43						
Water Quality Section	20,409,372	19,512,811	(896,561)	19,719,056	206,245	95	93	93						
Water System Operations, Office of Manager	12,769,264	11,545,518	(1,223,746)	11,821,074	275,556	20	19	19						
Water Treatment Section	75,815,609	70,109,105	(5,706,504)	71,509,020	1,399,915	275	273	273						
Total O&M							226,460,275	220,718,635	(5,741,640)	224,377,056	3,658,420	917	926	926

Note - Totals may not foot due to rounding.

Personnel Summary

		2014/15 Actual	2015/16 Budget	2016/17 Proposed	Change from 2015/16	2017/18 Proposed	Change from 2016/17
Regular	Total	883	949	951	2	951	—
	O&M	851.9	903.2	906.99	3.79	906.78	-0.21
	Capital	31.4	45.8	44.01	-1.79	44.22	0.21
Temporary	Total	25	14	19	5	19	—
	O&M	24.09	14	18.89	4.89	18.89	0
	Capital	1.39	0	0	0	0	0
Total Personnel	Total	909	963	970	7	970	—
	O&M	875.99	917.2	925.88	8.68	925.67	-0.21
	Capital	32.79	45.8	44.01	-1.79	44.22	0.21

Note – Totals may not foot due to rounding.

SIGNIFICANT BUDGET ISSUES

WSO's biennial O&M and Operating Equipment budget is \$225.2 million in FY 2016/17 and \$229.9 million in FY 2017/18 or a decrease of 3.5% and an increase of 2.1%, respectively from the prior year budgets. The decrease is due primarily to the following factors:

- Lower treated water flows, falling worldwide commodity prices and lower chemical dosages needed to treat the more abundant Colorado River supplies has resulted in the reduction of chemical costs for water treatment.
- Lower-than-projected electrical rates and new solar energy production has resulted in decreased utility costs.
- A reduction in professional services primarily due to the deferral or winding down of projects.
- Overall reduction in security costs as a result of a highly competitive bid for new security guard contract.

The following are the significant changes by budget year.

FY 2016/17

Personnel-related issues

For O&M work, the complement of regular employees was increased by two positions to reflect increased support for servicing the vehicle fleet. In addition, the equivalents of 4.9 temporary employees were added to offset peak workload and long-term employee absences.

For capital work, a similar effort (4 to 5% of labor) compared to FY 2015/16 will be dedicated to starting up new facilities and to major repair and rehabilitation projects.

Professional Services

The budget reflects the deferral or winding down of projects. Budget is based on historical spending and planned projects.

Materials & Supplies

The budget reflects decreased chemical costs for water treatment due to lower treated water flows, falling worldwide commodity prices and lower chemical dosages needed to treat the more abundant Colorado River supplies.

Utilities Charges

The budget reflects decreased electricity costs due to lower-than-projected electrical rates and new solar energy production.

Other

The Outside Services-Non Professional/Maintenance budget reflects decreased security costs resulting from highly competitive bid for new security guard contract.

FY 2017/18

Personnel-related issues

Overall personnel count for both O&M and capital work remains flat from the FY 2016/17 budget. The rise in salary and benefits costs results from merit increases and an increase in retirement-related benefits.

Materials & Supplies

The budget reflects inflationary pressure anticipated on materials and supplies and increased chemical dosages when more SWP supplies become available as the drought eases.

Utilities Charges

The budget reflects higher anticipated electricity rates from FY 2016/17.

Other

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

Operating Equipment – FY 2016/17 and FY 2017/18

The operating equipment budget has been reduced in this biennial budget which results in a slightly aging fleet, particularly for lighter-duty vehicles. Priority was placed on maintaining sufficient heavy equipment for emergency response and aqueduct maintenance. For emergency response, the goal is to enable an internal response to two simultaneous pipeline breaks.