



Water System Operations Group

Core Business: System Reliability

Operate and maintain the water and power systems in an effective and efficient manner to ensure reliable delivery of water supplies.

Performance Measure(s)

Water Operations

- Unexpected outages disrupting normal services (*Target = 0*)
- Meet all scheduled water deliveries (*Target = 100%*)
- Prioritize maintenance

Targets:

- *Miss < 10% of all preventive maintenance work orders (PMs)*
- *Miss < 1% of regulatory PMs*

Power Operations

- Secure power to satisfy CRA pumping requirements (*Target = 100% of energy needs*)
- Meet Electrical Reliability Standards (*Target = 100%*)

Workforce Development

- Prepare for emergencies
 - *Each field unit conducts two table-top exercises; the Group conducts one functional exercise*
- Train employees (*Target = 90% completion of employee training plans*)

Objective#1:

Operate System Reliably.

Actions:

1. Ensure system capability to deliver and treat supplies from the SWP, CRA, 10 Metropolitan reservoirs and 13 groundwater storage programs in Central and Southern California to meet regional water demands:
 - a) Schedule and deliver SWP and Colorado River supplies allocated to Metropolitan.
 - b) Deliver or store up to 100,000 acre-feet of water from Central Valley Banking Programs through the SWP system.
 - c) Put or call up to 30,000 acre-feet of deliveries from five groundwater conjunctive use programs.
 - d) Deliver available water transfers and exchanges through the SWP and CRA systems.
 - e) Manage the water quality of deliveries from supply sources.
2. Effectively plan and schedule imported supply deliveries on the SWP and the CRA to meet demands, storage objectives, water quality goals and financial goals.



Objective#1 - continued:

Operate System Reliably.

Actions:

3. Effectively implement water supply programs and agreements. Maximize regional water supply where possible through frequent coordination and cooperation. Cooperate with supply agencies by considering their unique operations whenever possible to develop solutions to issues that are in conformance with contract requirements and that meet other objectives, such as regional water supply and financial objectives.
4. Create an interdisciplinary task force to provide guidance for maintenance, repair, or modifications to hydroelectric plants and other large rotating equipment.
5. Maintain eight-pump flow readiness and aqueduct capacity on the CRA to ensure maximum use of Colorado River supplies when needed.
6. Perform continuous optimization of operational plans and water supply strategy implementation using automated system and resource models that incorporate updated forecasts of imported supply, water deliveries, demands, storage levels and operational constraints.
7. Continue to increase regional storage when supplies are available to minimize the impact of imported supply shortages and droughts in subsequent years.
8. Maintain the system to ensure operational reliability for reasonably expected demand scenarios. Evaluate the potential for unused capacity at the treatment plants and distribution systems. Develop alternative maintenance and operational strategies to cost-effectively manage idle capacity.
9. Execute a new contract with the Department of Water Resources (DWR) to provide maintenance and engineering services in support of the SWP.
10. Participate with DWR on a value engineering team to evaluate cost-effective options to rehabilitate SWP pumping facilities.



Objective #2:

Optimize maintenance.

Actions:

1. Plan, schedule, and execute the Annual Shutdown Plan for the CRA, pipelines, feeders, and treatment plants to ensure reliable operation of the water delivery system.
2. Perform maintenance activities to ensure reliable and effective water and power operations.
 - a) Implement inspection, servicing, and repair programs established for:
 - i) 242 miles of CRA
 - ii) Over 830 miles of distribution system tunnels and pipelines, over 5,000 distribution system structures and 480 flow meters.
 - iii) Five water treatment plants
 - iv) 16 hydroelectric power plants
 - v) 308 miles of power transmission lines and 1,200 high voltage towers
 - vi) 10 reservoirs
 - vii) Over 120,000 pieces of equipment
 - viii) 1,000 miles of unpaved roads
 - b) Ensure system reliability through:
 - i) Patrolling 100% of every pipeline every week
 - ii) Patrolling 100% of the CRA every week
 - iii) Performing maintenance on every structure for every pipeline at least once per year.
3. Evaluate emergency power system maintenance procedures and revise the standards, metrics, training and maintenance approach. The goal of this initiative is to eliminate failures of the stationary emergency generators at the water treatment plants and critical distribution system structures.
4. Establish vibration monitoring program as well as other predictive maintenance techniques that will help ensure equipment reliability.
5. Establish and utilize failure codes using computerized maintenance management systems and mobile technology for all critical equipment to diagnose equipment failures and expedite repairs.
6. Complete the rollout of mobile maintenance-recording devices throughout WSO to improve maintenance worker efficiency and record keeping.
7. Establish condition monitoring for distribution structures, large electric motors, and emergency generators to increase predictive maintenance and reduce equipment failures.
8. Complete and execute Annual Plan for protective coatings for Infrastructure Reliability Program.
9. Conduct quarterly chlorination at Lake Mathews and Lake Skinner outlet towers to control growth of quagga mussels.



Objective #3:

Support water resource programs.

Actions:

1. Participate on the Water Surplus and Drought Management (WSDM) Team to optimize the use of existing and new resources.
2. Continue implementation of the Five-Year Water Supply Plan, including the following:
 - Develop and implement new water supplies and actions as needed until longer term programs from the IRP can be implemented;
 - Develop and implement new storage programs, such as the Mojave Program, to increase dry-year storage and take capacity for future dry years;
 - Complete environmental review and conceptual design for an agreement with Semitropic Water Storage District to desalt agricultural drainage water; and
 - Evaluate, with member agencies, the feasibility of recovering additional groundwater supplies in Southern California.

Objective #4:

Effectively manage power system requirements and optimize generation.

Actions:

1. Work with California Air Resources Board (CARB) to provide free allowances or other accommodations for the water industry within the California Greenhouse Gas Emission Cap and Trade Program.
2. Acquire and manage up to 2.3 million MWh of wholesale energy to support CRA pumping requirements. Acquire approximately 60 percent of projected supplemental energy requirements through advanced purchases to reduce Metropolitan's exposure to energy price and supply volatility.
3. Work to ensure legislation extends Metropolitan's rights to power from Hoover Dam.
4. Retain the cost-based pricing methodology of federal hydropower.
5. Continue to meet all National Electricity Reliability Council (NERC) standards.
6. Continue to work with DWR to achieve effective and efficient State Water Project power operations.
7. Sell Metropolitan's Renewable Energy Credits that are produced from operation of solar power facilities and from some small hydroelectric plants.
8. Maximize run time for hydroelectric plants to optimize power generation within the acceptable operating envelopes of these hydroplants.
9. Analyze and develop strategies to respond to proposed and approved legislation and regulations that may impact Metropolitan's power operations and infrastructure.
10. Review strategies and develop policies regarding requests from other parties to use or interconnect to Metropolitan's CRA electric transmission system.



Objective #5:

Improve security and emergency response.

Action(s):

1. Maintain 100 percent compliance with the Transportation Security Administration's regulations governing chemical security deliveries and handling.
2. Meet Federal Energy Regulatory Commission security requirements for power generating facilities.
3. Continue to provide access control and surveillance system coverage for all critical infrastructure sites around the clock.
4. Continue to provide regular security patrols of CRA, water treatment plants, and the distribution system.
5. Continue to provide uninterrupted intrusion alarm and incident monitoring and response throughout the service area.
6. Revise Metropolitan's Chemical Responder Program to provide staff with the capability to respond to most hazardous materials releases of bulk water treatment chemicals.
7. Provide pipe and valve equipment rehabilitation, modification, and fabrication for urgent repairs of distribution facilities for Metropolitan, member agencies, and DWR.
8. Deliver emergency management training focused on on-site operations and control of the distribution system, emergency communications, chemical facility security and safety, water quality issues, and emergency operations center functions. Maintain emergency readiness including updating plans and conducting drills.
9. Continue implementation of two-way radio project to upgrade emergency communications.

Objective #6:

Develop workforce.

Action(s):

1. Increase employee knowledge of operations, maintenance, and water quality through technical and management training.
2. Continue training a new apprentice class in the mechanical and electrical trades.
3. Utilize standardized skills and knowledge testing for journey-level recruitment in the mechanical and electrical trades.
4. Develop and implement the increased use of on-line training where suitable in order to provide flexible delivery of mandatory training and reduce travel costs.
5. Continue use of Knowledge Capture to document critical systems and processes following established priorities. Integrate the Knowledge Capture data into on-line operations manual system.
6. Expand employee use of on-line operations and maintenance manuals by incorporating intuitive user interface and ease of updating.



Core Business: Water Quality and Environmental, Health & Safety

Develop and implement comprehensive programs to ensure Metropolitan delivers water that meets or exceeds all water quality regulations and objectives. Integrate effective environmental, health, and safety practices into Metropolitan's operations and culture that meet or exceed all environmental and regulatory compliance requirements.

Performance Measure(s)

Water Quality

- Comply with primary drinking water standards (*Target = 100% of health-based standards*)
- Control salinity (*Target = 500 mg/L (average)*)
- Resolve consumer complaints (*Target = no aesthetic complaints from consumers*)
- Actively engage in water quality regulatory process
 - Review and comment on all applicable water quality regulations and public health determinations
 - Proactively engage regulators and provide appropriate information on treatment, detection and costs such that new standards include the best available scientific information
- Engage on source water protection issues
 - Complete 2010 updates to watershed sanitary surveys
 - Follow up on all 2005 sanitary survey recommendations

Environmental, Health & Safety

- Comply with environmental permits (*Target = 100%*)
- Ensure worker safety (*Target = Injury/illness rate < 4.9 incidents/year/100 employees*)

Objective#1: <i>Protect source water quality.</i>
Action(s):
1. Continue source water monitoring of Colorado River and advocate for remediation efforts for uranium, perchlorate, and chromium 6.
2. Continue to participate in stakeholder forums to ensure successful remediation of chromium 6 at Pacific Gas & Electric's Topock gas compressor site.
3. Continue monitoring for indicators of wastewater and agricultural contamination.
4. Continue to track and monitor current water quality in the Sacramento-San Joaquin Delta region. Continue investigation of impacts on SWP drinking water quality from proposed or actual operational changes or physical modifications in the Delta.
5. Continue to monitor local watershed developments and advocate for actions to protect source water quality from potential contamination, such as the effects of urban runoff, wastewater, and recreation.



Objective#1 - continued:

Protect source water quality.

Action(s):

6. Pursue funding opportunities to support: (a) alternative treatment technology projects; (b) enhanced method detection of chemicals and microorganisms; and (c) quagga mussel control methods.
7. Continue to implement actions described in the Quagga Mussel Control Program including:
 - a) Partnering with federal, state and local agencies to evaluate and develop quagga mussel control strategies.
 - b) Conducting studies to evaluate and develop: (1) improved monitoring tools; (2) coatings which deter mussel attachment; (3) alternative disinfectants; and (4) lake management strategies.
8. Finalize the 5-year update to the Colorado River Watershed Sanitary Survey, and participate with DWR and State Water Contractors on the development of the 5-year SWP Watershed Sanitary Survey update.
9. Continue to participate with Las Vegas area stakeholders through the Lake Mead Water Quality Forum to ensure protection of downstream users as a result of wastewater discharges in the Las Vegas Valley.

Objective #2:

Optimize water treatment and distribution.

Action(s):

1. Conduct water quality monitoring, regulatory reporting, and treatment optimization to ensure 100% compliance with primary drinking water standards.
2. Collect over 50,000 water quality samples for microbiological and chemical analyses resulting in approximately 350,000 tests.
3. Manage salinity within constraints of water quality performance and source water availability.
4. Implement interim treatment strategies prior to completion of ozone at Diemer and Weymouth plants to minimize disinfection by-product formation and ensure maximum delivery of SWP supplies.
5. Implement low-ferric chloride dosing strategy at Skinner water treatment plant to minimize treatment costs.
6. Track and reduce number of reportable chemical releases at water treatment plants.
7. Complete full-scale testing of new bromate control methods to reduce chemical costs.
8. Benchmark ozone production efficiency to reduce power costs as appropriate.
9. Develop, in partnership with the Los Angeles Department of Water and Power, a long-term plan to manage the residual solids at the Jensen water treatment plant.
10. Provide technical training to staff for the Diemer ozone retrofit to ensure successful operations.



Objective #3:

Provide technical support to member agencies.

Action(s):

1. Continue federal and state efforts to increase Clean Water and Safe Drinking Water State Revolving Funds (SRF) for Metropolitan and its member agencies.
2. Support studies on water repurification and seawater desalination projects such as:
 - a) Develop a detailed scope of work and test plan to evaluate the water quality effects of integrating desalinated seawater water into Metropolitan's treated water distribution system.
 - b) Evaluate the water quality effects of integrating highly treated wastewater into Metropolitan's raw water system.
 - c) Evaluate operational opportunities and risks of connecting new water supply projects into Metropolitan's system.
3. Provide regular water quality updates through webinars and on-site meetings.
4. Continue working with service connection upgrades or modifications as requested by member agencies.

Objective #4:

Prepare for future regulations.

Action(s):

1. Continue to track and review legislative and regulatory developments for existing and emerging water quality constituents.
2. Conduct water quality applied research in the areas of disinfection by-products, quantification of constituents of emerging concern, detection of pathogens in source and treated water, early detection of cyanobacterial toxins, and quagga mussel detection and treatment methods.
3. Conduct studies to address: minimizing formation of current and emerging disinfection by-products; treatment options for constituents of emerging concern, and detection of chemicals and microorganisms listed on the U.S. EPA Contaminant Candidate List 3 (CCL3) such as algae toxins, pharmaceuticals, pesticides, and herbicides.
4. Continue work to develop or improve analytical methods for constituents of emerging concern such as low-level detection of bromate and perchlorate, algae toxins, and pharmaceuticals and personal care products.
5. Participate in technical advisory workgroups to provide input to regulators regarding: the EPA 6-Year Review process for regulated constituents, the selection of constituents for monitoring as part of the Unregulated Contaminant Monitoring Rule 3, and the CCL3 review.
6. Continue to support legislative analyses related to chlorine security and to prepare for new regulations in order to minimize potential adverse consequences for core business.
7. Provide regulatory review and comments on pending drinking water standards for key water quality constituents and revision to new and existing public health goals (PHGs).



Objective #4 - continued:

Prepare for future regulations.

Action(s):

8. Ensure compliance with Stage 2 Disinfectants/Disinfection By-Product Rule on April 1, 2012. Support member agencies in their plans to comply.
9. Provide review and comments on pending environment (air quality, waste water, and hazardous materials) and safety regulations and legislation that impacts Metropolitan's facilities, work practices and staff.
10. Participate in the review of the State Water Resources Control Board's draft Industrial Stormwater General Permit.

Objective #5:

Fully comply with water quality, safety, and environmental regulations.

Action(s):

1. Meet or surpass regulatory requirements for drinking water quality, and ensure delivery of aesthetically acceptable water.
2. Continue to review and refine monitoring and data management programs to optimize frequency of testing and reporting for water quality compliance.
3. Continue to provide EHS training to ensure safe work practices and adherence to environmental and workplace health and safety regulations.
4. Procure and implement an EHS management information system to better manage and track compliance, reporting deadlines and performance measures across the organization.
5. Continue to work with the regulatory agencies to successfully close electrical transformer remediation projects at Gene and Iron Mountain.
6. Complete development and implement the Water Quality Monitoring & Rapid Event Detection System (WQMREDS) to identify potential contamination events in the distribution system.
7. Meet all environmental regulatory compliance requirements (e.g., reports, permits, fees) in a timely manner.
8. Continue to provide ready access to important information and documents (EHS Intramet Site) and performance metrics (EHS Scorecard).