



● **Board of Directors**
Engineering and Operations Committee

December 8, 2009 Board Meeting

8-2

Subject

Appropriate \$7.56 million; and authorize (1) Metropolitan force construction of the Skinner Electrical Building Upgrade and Skinner Ground Fault Protection Upgrade projects; and (2) agreement with Premier Personnel Resources for temporary skilled labor (Approp. 15365)

Description

This action authorizes Metropolitan force construction of two projects to upgrade electrical systems at the Robert A. Skinner Water Treatment Plant. The first project will replace deteriorated electrical equipment in the 12 electrical buildings which supply power to Skinner Plants Nos. 1 and 2. The second project will upgrade the ground fault protection in 3 electrical buildings by installing a system that isolates a ground fault for a specific piece of equipment and keeps other equipment on-line. This action also authorizes an agency temporary skilled labor agreement to support the Metropolitan force construction effort.

Timing and Urgency

Upgrades to the electrical equipment serving Skinner Plants Nos. 1 and 2 are needed to reduce the potential for plant shutdowns caused by electrical equipment failures and ground faults. Existing electrical components have deteriorated and the frequency of equipment failures has significantly increased. Individual component failure is unpredictable. In the 3 electrical buildings, upgrading each Unit Power Center (UPC) with a ground fault protection system will limit and contain the ground fault for a specific piece of equipment. Both projects will enhance plant reliability by reducing the possibility of partial or overall plant shutdowns caused by unintentional power outages.

Staff recommends proceeding with construction at this time to increase plant reliability and maintain reliable water deliveries. These two projects have been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria. Both are categorized as Infrastructure Refurbishment projects and are budgeted within Metropolitan's CIP for fiscal year 2009/10.

Skinner Electrical Building Upgrades and Ground Fault Protection Upgrades – Procurement and Construction (\$7,560,000)

Background

The Skinner plant was placed into service in 1976 to supply treated water to Riverside and San Diego Counties. Since its original construction, the plant has been expanded four times and now consists of seven treatment modules that are operated as three distinct facilities (Plants Nos. 1, 2, and 3). The plant has a treatment capacity of 630 mgd, and delivers a blend of waters from the Colorado River and State Water Project to Eastern Municipal Water District, Western Municipal Water District of Riverside County, and San Diego County Water Authority.

In February 2007, Metropolitan's Board authorized final design of the Skinner Electrical Building Upgrade project to replace deteriorated electrical equipment; add air conditioners and insulation to the 12 electrical buildings; and seismically upgrade Electrical Buildings Nos. 1 and 2. In the same action, Metropolitan's Board authorized final design of the Skinner Ground Fault Protection Upgrade project.

The 12 electrical buildings serving Skinner Plants Nos. 1 and 2 house six UPCs and nine Motor Control Centers (MCCs). The buildings provide power to process equipment critical to plant operations, such as the flocculators,

traveling bridges, solids transfer pumps, filter surface wash valves, filter inlet valves, and the chemical feed systems in the ferric chloride, polymer, and sodium hypochlorite tank farms. These 12 buildings are constructed of ribbed sheet metal and were installed without insulation or air-conditioning systems over 25 years ago. Current Metropolitan practice, as well as common industry practice, is to provide electrical equipment buildings with air conditioners and insulation to maintain interior temperatures below 85°F, which is within equipment manufacturers' recommended operating environment. During the summer, temperatures inside the 12 buildings frequently exceed 100°F, with peak temperatures reaching 120°F. The lack of temperature control inside the electrical buildings has contributed to equipment deterioration and component failures. As a result, electrical components, including circuit breakers, motor starters, transfer switches, and relay, do not always function properly. Electrical component failure could result in an unplanned outage of process equipment, or potentially an entire module. When the components do fail, they require intensive maintenance, and spare parts for some of the electrical equipment are difficult to locate or are no longer available.

The UPCs serving Skinner Plants Nos. 1 and 2 are solidly grounded and do not have ground fault protection systems. When a fault occurs, the UPCs can be severely damaged. The installation of a high resistance grounding system with ground fault detection will minimize damage to the UPCs and faulted equipment, and will provide a means for detecting and isolating the fault. An up-to-date design which isolates a ground fault for a specific piece of equipment and keeps other equipment on-line was recently installed at Skinner Plant No. 3 (Module No. 7).

Final design has been completed and staff recommends moving forward to accomplish the bulk of the electrical work using Metropolitan forces supplemented with agency temporary skilled labor (see below), with the remainder of the work to be completed via construction contract at a later time.

Pilot Project

Due to the size and scheduling complexity of these two projects, staff explored several options for executing the work, including construction by a contractor and by Metropolitan forces. A pilot project was completed as part of the final design activities to determine the feasibility of using Metropolitan forces for the electrical upgrade portion of the work. The scope of the pilot project included purchasing components for an entire MCC and completing the upgrade work for electrical equipment inside three MCC sub-units or "buckets," and one transformer. All pilot project work was performed by Metropolitan forces, using Skinner plant electricians and apprentices. The schedule, work-hours, and material costs required to complete this scaled-down portion of the work were monitored and documented. Staff successfully completed the work in the pilot project under budget and without interruption to plant operations.

The pilot project demonstrated that Metropolitan forces could effectively quantify the work, procure upgraded components and parts, and then perform the upgrades, all within budget and schedule constraints while achieving the desired quality of work. At the same time, staff had the flexibility needed to revise the schedule and resequence the work to maintain the plant in continuous service as operational needs varied.

Scheduling difficulties are common when performing electrical upgrade work using a contractor at an operating treatment plant. There is a potential for change orders when areas released for electrical contract work must be quickly restored to service during high water demand periods or when operational needs change. Further, detailed as-builts of the electrical system to be upgraded are not always available. As a result, there is increased vulnerability for unplanned shutdowns, along with potential delays and contract change orders when unforeseen conditions are encountered.

In this current competitive bidding environment, staff believes that bids received from potential contractors for the remaining electrical upgrade work may be slightly less than the estimated cost of Metropolitan force construction for the same work. However, staff anticipates that construction change orders on the contract would be higher than typically expected for new construction.

As a result of the above risks and previous experience with other electrical upgrade work, staff's preferred method for execution of small-to-medium projects of this nature is to utilize Metropolitan forces whenever possible.

Implementation Plan

Due to the size and complexity of the work, construction of the two electrical upgrade projects is recommended to be performed by Skinner plant staff supported by supplemental labor contracted through a skilled labor agreement. Completing the electrical upgrades using a contractor is not recommended because flexibility is required to schedule the work while maintaining the plant in continuous service, since the start-stop nature of the work would create a strong potential for significant contract delays and change orders, and an increased vulnerability for unplanned shutdowns. This project will be similar to the Colorado River Aqueduct (CRA) Pump Rehabilitation Program, which was a five-year project to rehabilitate a majority of the pumps at the five CRA pumping plants. Metropolitan forces, supplemented by outside contractors, led three work crews who refurbished the pumps at one site and then moved on to the next site, all under controls similar to those described below.

Metropolitan inspection staff will manage the Metropolitan force construction by implementing controls similar to those used on construction contracts. Controls include detailed planning of construction activities; tracking of progress and schedule versus expenditures; inspection of the work and quality of construction; documentation of all changes; and monthly construction reports. All equipment procurement and inventory control will be performed by Metropolitan staff. Construction of the two electrical upgrade projects is anticipated to last four years.

This action appropriates \$7.56 million and authorizes construction of the Skinner Electrical Building Upgrades and Skinner Ground Fault Protection Upgrades to replace deteriorated electrical equipment in 12 electrical buildings, and to provide ground fault protection systems within six UPCs in 3 electrical buildings. All work will be performed by Metropolitan staff, supplemented with agency temporary skilled labor. The appropriated funds include \$1,197,000 for Metropolitan force labor and \$900,000 for agency temporary skilled labor for the construction; \$3,659,000 for materials, supplies and equipment; \$488,000 for construction inspection; \$170,000 for submittals review and technical support by design staff during construction; \$164,000 for project management, hazardous material handling documentation and as-built drawings; and \$982,000 for remaining budget.

Metropolitan staff will perform inspection of the construction. For this project phase, the anticipated cost of inspection is approximately 8.5 percent of the total construction cost. Engineering Services' goal for inspection of projects with construction costs more than \$3 million is 9 to 12 percent. The total cost of construction is estimated to be \$5,756,000.

Staff will return to the Board for award of procurement contracts exceeding the General Manager's authority. Staff also plans to return to the Board in mid-2010 to award a contract to add air conditioners and insulation to the 12 electrical buildings, and to seismically upgrade 2 electrical buildings.

Supplemental Labor Support – New Agreement with Premier Personnel Resources

Metropolitan has utilized short-term temporary labor services since 1988. Additional skilled craft labor is occasionally needed on a short-term temporary basis to augment full-time labor for specific work needs. These resources may be used for emergency repairs, scheduled and unscheduled shutdowns, capital projects, and reimbursable projects to manage peak demands and to address critical maintenance work that must be conducted during unanticipated long-term regular employee absences.

In order to maximize efficiency, staff plans to use supplemental labor to augment Metropolitan forces performing the Skinner Electrical Building Upgrade and Skinner Ground Fault Protection Upgrade work. Over the 4-year duration of construction, two to three agency temporary skilled electricians will supplement the Skinner plant's electricians, while the Metropolitan staff continues to perform routine, preventive, and emergency plant maintenance work. Under this plan, no more than 10 percent of Skinner plant personnel will be assigned to these two capital projects, thus ensuring that staff is available to carry out routine and preventive maintenance tasks.

Request for Proposals (RFP) No. 190168A for skilled craft and labor support was issued by Metropolitan in November 2008 to obtain agency temporary skilled labor. The evaluation criteria included organizational qualifications; ability to meet work requirements; adequacy of staffing to meet demand and urgent conditions;

past performance, including client satisfaction and response time; environmental sensitivity, including use of green products and recycling policies; and a competitive fee rate schedule.

In response to RFP No. 190168A, proposals were submitted by six firms. In November 2009, two firms were pre-qualified for a two-year period to provide the types of skilled labor planned for the Skinner electrical upgrades. Based on an evaluation of the proposals from the pre-qualified firms, staff recommends entering into a skilled labor agreement with Premier Personnel Resources. Premier will be responsible for screening, testing, verifying certifications and licenses, and ensuring that temporary workers meet minimum qualifications regarding skills and environmental health and safety training required for the Skinner electrical upgrades assignment. In addition, Premier will be responsible for providing written verification that all persons hired for temporary work assignments are eligible for employment under all state and federal laws and have passed required background investigations. Individuals will be limited to a maximum of six months on the project, and six months must elapse between temporary assignments. All crafts covered by a prevailing wage determination are entitled to prevailing wage rates.

For this agreement, Metropolitan has established a Small Business Enterprise (SBE) participation level of 20 percent of the agreement amount. Premier is an SBE firm, thus achieving 100 percent participation.

This action authorizes a skilled labor agreement with Premier for a not-to-exceed total of \$900,000 to provide supplemental labor support for the Skinner Electrical Building Upgrade and Skinner Ground Fault Protection Upgrade projects.

Project Milestone

January 2014 – Completion of construction

See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

These two projects are consistent with Metropolitan's goals for sustainability by enhancing the reliability of the existing treatment in order to maintain reliable water deliveries in the future.

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Options #1 and #2:

The projects were previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. The Board found these projects to be exempt under Class 1, Section 15301 and Class 2, Section 15302 of the State CEQA Guidelines on February 13, 2007. A Notice of Exemption (NOE) was filed on the projects at that time and the statute of limitations has ended. With the current board action, there are no substantial changes proposed to the projects since the original NOE was filed. Hence, the previous environmental documentation in conjunction with the project fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act with regards to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2007 NOE (Class 1, Section 15301 and Class 2, Section 15302 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Option #3:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$7.56 million;
- b. Authorize construction of the Skinner Electrical Building Upgrades and Skinner Ground Fault Protection Upgrades by Metropolitan forces; and
- c. Authorize an agreement with Premier Personnel Resources in an amount not to exceed \$900,000 for temporary skilled labor.

Fiscal Impact: \$7.56 million in budgeted funds under Approp. 15365

Business Analysis: This option will reduce the frequency of unexpected electrical component failure, reduce the incidence of unplanned shutdowns, and increase reliability of the Skinner electrical system.

Option #2

Adopt the CEQA determination and direct staff to advertise the Skinner Electrical Building Upgrades and Ground Fault Protection Upgrades work for competitive bidding by contractors.

Fiscal Impact: No immediate fiscal impact. Construction cost would depend on the successful low bid.

Business Analysis: Under this option, staff would prepare plans and specifications for bidding the work. Staff would return to the Board at a later date for award of the construction contract. Construction by a contractor would likely cost the same or more than if performed by Metropolitan forces, due to change orders and delays resulting from unforeseen conditions, and operational flexibility required by the Skinner plant to meet treated water demands.

Option #3

Do not proceed with the two projects at this time.

Fiscal Impact: Unknown

Business Analysis: Deferral of these projects would result in an increased risk of unplanned outages due to failure of aged deteriorated electrical components. Plant staff would procure and install replacement electrical components as they fail, and would have less time to spend on other plant maintenance duties. In the event of an unplanned outage, a temporary reduction in treatment capacity would be likely.

Staff Recommendation

Option #1


Roy L. Wolfe
Manager, Corporate Resources

11/24/2009
Date


Jeffrey Kightlinger
General Manager

11/24/2009
Date

Attachment 1 – Financial Attachment

Attachment 2 – Location Map

BLA #6596

Financial Statement for Skinner Improvements Program

A breakdown of Board Action No. 19 for Appropriation No. 15365 for the Skinner Electrical Building Upgrades and Skinner Ground Fault Protection Upgrades* is as follows:

	Previous Total Appropriated Amount (Aug. 2009)	Current Board Action No. 19 (Dec. 2009)	New Total Appropriated Amount
Labor			
Studies and Investigations	\$ 787,000	\$ -	\$ 787,000
Final Design	2,492,500	-	2,492,500
Owner Costs (Program mgmt. & as-built drawings)	4,397,100	164,000	4,561,100
Submittals Review	120,000	170,000	290,000
Construction Inspection and Support	9,041,000	488,000	9,529,000
Metropolitan Force Construction	3,855,400	1,197,000	5,052,400
Materials and Supplies	2,347,150 **	3,619,000	5,966,150
Incidental Expenses	474,500	20,000	494,500
Professional/Technical Services	4,434,000	-	4,434,000
Premier (Skilled labor)	-	900,000	900,000
Equipment Use	308,000	20,000	328,000
Contracts	116,327,800	-	116,327,800
Remaining Budget	1,306,250 **	982,000	2,288,250
Total	\$ 145,890,700	\$ 7,560,000	\$ 153,450,700

Funding Request

Program Name:	Skinner Improvements Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15365	Board Action No.:	19
Requested Amount:	\$ 7,560,000	Capital Program No.:	15365-I
Total Appropriated Amount:	\$ 153,450,700	Capital Program Page No.:	318
Total Program Estimate:	\$ 163,700,000	Program Goal:	I-Infrastructure Reliability

*The total amount expended to date on the Skinner Electrical Building Upgrades and the Skinner Ground Fault Protection Upgrades is approximately \$939,991.

**\$281,550 were transferred from Materials and Supplies to Remaining Budget when nine other projects within this program were completed under budget.

Robert A. Skinner Water Treatment Plant

