



- Board of Directors
Engineering and Operations Committee

3/13/2012 Board Meeting

7-10

Subject

Appropriate \$650,000; and authorize final design and procurement of a standby generator for Iron Mountain Pumping Plant (Approp. 15438)

Description

This action authorizes final design of a project to replace the standby generator, transformer, and ancillary equipment for Iron Mountain Pumping Plant. The standby generator provides emergency power to critical auxiliary systems at the pumping plant. This action also authorizes procurement of the new generator.

Timing and Urgency

The standby generator at Iron Mountain Pumping Plant is 50 years old, requires frequent repairs, and has reached the end of its service life. In addition, upgrades to the generator's ancillary equipment are required to meet current fire codes and environmental regulations, including the addition of a fuel unloading area and a spill containment structure. This project will improve the reliability of emergency power for critical auxiliary systems at the pumping plant, including the fire protection pumps and the potable water treatment and delivery system.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria, and is categorized as an Infrastructure Replacement and Rehabilitation project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2011/12.

Background

The Colorado River Aqueduct (CRA) is a 242-mile-long water conveyance system that transports water from the Colorado River to Lake Mathews in Riverside County. The CRA was placed into service in 1941. It consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons and reservoirs.

The Iron Mountain Pumping Plant was originally completed in 1939. The plant has nine 4,300-horsepower pumps whose auxiliary mechanical systems rely on a standby diesel generator for backup power supply. This generator was installed in the early 1960s to produce electricity in the event of loss of the main power supply. Critical auxiliary systems powered by the generator include fire water pumps, the village's potable water treatment and delivery system, emergency lighting, sump pumps which prevent flooding of the pumping plant, and cooling water pumps servicing the main CRA pumps.

The existing standby generators at the five CRA pumping plants are over 50 years old and have reached the end of their service life. Over the past two years, the generators have required frequent repairs, while replacement parts have become difficult to obtain. In addition, unlike modern generators, the existing generators must be manually started in the event of a power loss. The manual start-up routine results in a relatively lengthy time delay between loss of primary power and availability of standby power. Until the standby power can be activated, many supporting systems are inoperable, which could result in overheating of the main pumps or flooding of the pumping plant.

In April 2008, Metropolitan's Board authorized preliminary design phase activities to replace the standby generators at each of the five CRA pumping plants. Preliminary design has been completed, and staff is staging the replacement work at each plant to minimize operational disruptions to the CRA conveyance system, to effectively manage the geographically diverse projects, and to resolve local agency permitting issues on a case-by-case basis. This action addresses the Iron Mountain Pumping Plant generator. Construction for replacement of the Eagle Mountain Pumping Plant generator is underway, and final design for the Hinds Pumping Plant generator is scheduled to be completed in April 2012. Staff will return to the Board at a later date for authorization of final design and generator procurement for the Intake and Gene Pumping Plants.

Iron Mountain Pumping Plant Standby Generator Replacement – Final Design Phase and Procurement (\$650,000)

Planned upgrades at the Iron Mountain Pumping Plant include the relocation and installation of a new 600 kilowatt (KW) generator and transformer to replace an existing 500 KW generator assembly. The larger capacity unit is needed to power current auxiliary system loads at the pumping plant. 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. This generator will be located in a new building with a fuel unloading area and spill containment that complies with current building codes. The step-up transformer is required to increase the generator's voltage to match the driven equipment at the pumping plant. The transformer is necessary because small generators are no longer manufactured in the higher voltages used by the existing pumping plant equipment. Proceeding with procurement of the generator and transformer at this time will allow installation to occur during a planned winter 2014 CRA shutdown.

All final design and procurement activities will be performed by Metropolitan staff. Planned activities include engineering design; preparation of procurement packages and receipt of bids for the standby generator and transformer; preparation of drawings and specifications for the construction contract; development of a construction cost estimate; coordination to meet stringent permitting requirements, including San Bernardino County Fire Department and Mojave Desert Air Quality Management District permits; receipt of bids for construction; and all other activities in advance of award of the construction contract.

This action appropriates \$650,000 and authorizes final design phase activities to replace the standby generator at Iron Mountain Pumping Plant. The procurement contracts for the generator and transformer are planned to be awarded under the General Manager's Administrative Code authority. The requested funds include \$188,000 for final design of the relocation and installation of the new generator; \$278,000 for purchase of the generator, transformer and SCADA equipment; \$12,000 for fabrication inspection and functional testing; \$40,000 for acquisition of permits; \$72,000 for receipt of multiple bids and for project management; and \$60,000 for remaining budget. The final design cost as a percentage of the estimated total construction cost is approximately 12.5 percent. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. Staff will return to the Board at a later date for award of the construction contract.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2011/12 capital expenditure plan. This work is included within capital Appropriation No. 15438, the CRA Reliability Program - Phase 2, which was initiated in fiscal year 2006/07. Other projects authorized under Appropriation No. 15438 include the CRA 6.9 kV Fault Current Protection Upgrades, CRA Mile 12 Flow and Chlorine Monitoring Station Upgrades, and the CRA 230kV Disconnect Switches Replacement. With the present action, the total funding for Appropriation No. 15438 will increase from \$29,294,000 to \$29,944,000. See [Attachment 1](#) for the Financial Statement, and [Attachment 2](#) for the Location Map.

Project Milestones

September 2012 – Award of equipment procurement contract

December 2012 – Completion of final design

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Sections 8121 and 8122(g): General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The overall activities involve funding, design, minor alterations and replacement of existing public facilities; and minor modifications in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees. In addition, these activities involve negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1, Class 2, and Class 4 Categorical Exemptions (Sections 15301, 15302, and 15304 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed actions qualify under three Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; and Class 4, Section 15304).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$650,000; and
- b. Authorize final design and procurement of a standby generator for Iron Mountain Pumping Plant.

Fiscal Impact: \$650,000 in budgeted funds under Approp. 15438

Business Analysis: This option will enhance CRA reliability and help maintain critical pumping plant auxiliary systems in operation in the event of power loss of the main supply.

Option #2

Do not proceed with the standby generator replacement project at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to enhance electrical reliability of Iron Mountain Pumping Plant, and could result in the unplanned shutdown of critical auxiliary systems in the event of a power outage.

Staff Recommendation

Option #1


 _____ 2/21/2012
 Gordon Johnson Date
 Manager/Chief Engineer,
 Engineering Services


 _____ 2/29/2012
 Jeffrey Lightlinger Date
 General Manager

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Financial Statement for CRA Reliability Program - Phase 2

A breakdown of Board Action No. 19 for Appropriation No. 15438 for replacement of the Iron Mountain Pumping Plant Standby Generator¹ is as follows:

	Previous Total Appropriated Amount (Mar. 2012)	Current Board Action No. 19 (Mar. 2012)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 1,396,800	\$ -	\$ 1,396,800
Final Design	1,948,900	188,000	2,136,900
Owner Costs (Program mgmt. & permitting)	2,402,090	112,000	2,514,090
Submittals Review & Record Drwgs	393,600	-	393,600
Construction Inspection & Support	1,846,000	12,000	1,858,000
Metropolitan Force Construction	3,014,700	48,000	3,062,700
Materials & Supplies	2,362,405	230,000	2,592,405
Incidental Expenses	130,800	-	130,800
Professional/Technical Services	1,607,000	-	1,607,000
Equipment Use	25,505	-	25,505
Contracts	12,951,440	-	12,951,440
Remaining Budget	1,214,760	60,000	1,274,760
Total	\$ 29,294,000	\$ 650,000	\$ 29,944,000

Funding Request

Program Name:	CRA Reliability Program - Phase 2		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15438	Board Action No.:	19
Requested Amount:	\$ 650,000	Capital Program No.:	15438-I
Total Appropriated Amount:	\$ 29,944,000	Capital Program Page No.:	290
Total Program Estimate:	\$ 67,891,000	Program Goal:	I-Infrastructure Reliability

¹ The total amount expended to date on the Iron Mountain Pumping Plant Standby Generator Replacement project is approximately \$43,400.

Location Map

