



- Board of Directors  
*Engineering and Operations Committee*

10/11/2011 Board Meeting

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**7-2**

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## **Subject**

Appropriate \$360,000; and authorize final design and procurement of standby generators at the Temescal and Corona Power Plants (Approp. 15441)

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## **Description**

This action authorizes final design and procurement of two replacement standby generators for the Temescal and Corona Power Plants. These 50 kilowatt (kW) generators are required to power slide gates that control flows from the Lower Feeder to the Robert B. Diemer Water Treatment Plant during a utility power outage. The 30-year-old existing standby generators have reached the end of their expected service life and experienced failures.

## **Timing and Urgency**

The two existing standby generators at the Temescal and Corona Power Plants provide backup electrical power during a utility power outage, allowing continued operation of critical control facilities that maintain flows in the Lower Feeder. The generators at both locations have reached the end of their service life. The generator manufacturer is no longer in business and replacement parts are difficult to obtain. Pursuant to South Coast Air Quality Management District (SCAQMD) regulations, the temporary generator at Temescal must be replaced with a permanent unit by February 2012. Additionally, upgrades to the electrical and fuel storage systems are required to meet current fire codes and environmental regulations. Staff recommends that these projects move forward with final design and procurement at this time.

These projects have been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria, and are categorized as Infrastructure Upgrade projects. The two projects are budgeted within Metropolitan's CIP for fiscal year 2011/12.

## **Background**

The Corona and Temescal Power Plants, which are both rated at 2.8 MW, were constructed in 1982 within the Lower Feeder system. From Lake Mathews, the Lower Feeder conveys untreated water sequentially through the Temescal Power Plant and the Corona Power Plant before reaching the Diemer plant. The two hydroelectric plants have similar layouts and operate in a similar manner.

At each plant, the Lower Feeder serves as a bypass when the hydroelectric turbines are not in operation. Each plant has a control tower, penstock, turbine-generator, and outlet pipe. The flow into each plant is regulated by its control tower. The control towers are multi-functional and serve to adjust flowrates into the power plants; divert flow back to the Lower Feeder in the event of a generator trip; suppress surges in the Lower Feeder; keep the Lower Feeder pressurized upstream of the towers; and bypass flows when the turbines are not in operation.

Key components of each control tower are a throttling gate and a bypass gate. The throttling gates maintain constant water pressure at the inlets to the turbines. These gates adjust their position automatically to handle fluctuating flows in the Lower Feeder due to varying system demands. The bypass gates are used to divert flows around the turbines when the plants are offline. Automatic flow adjustments at both power plants are necessary to

minimize air entrainment within the water, which can severely impact the filtration process at the Diemer plant. The standby generator at each power plant provides backup power for operation of the control tower slide gates in the event of a utility power outage.

The existing standby generators at each hydroelectric plant are 30 years old and were both installed during the original plant construction. Recent inspections have identified that both generators have reached the end of their service life. Both generators have excessive piston blow-by, excessive oil leaks, and crankshaft bearing wear. Further, the manufacturer of the two engines is no longer in business. Replacement parts have become increasingly difficult to obtain via aftermarket vendors. While staff has been able to fabricate simple replacement parts or salvage them from other equipment in order to make recent repairs, this approach is not considered viable in the future.

In February 2011, the standby generator at Temescal Power Plant failed to start up during a utility power outage. Since then, a portable generator has been mobilized as a back-up until a permanent replacement generator can be procured. Pursuant to SCAQMD regulations, a portable generator may be used at the same location for only 12 consecutive months, after which a permanent installation is required. To avoid a gap in standby generator availability, the portable unit must be replaced with a new permanent unit before February 2012.

Staff recommends proceeding with procurement of two 50 kW replacement standby generators at this time, along with final design of the ancillary facilities at the Temescal and Corona Power Plants. Upgrades to appurtenant facilities are required to meet current fire code and environmental regulations. Each generator will be supplied with an integrated, self-contained fuel storage tank, and will meet current emission regulations. The generators will include a control system capable of automatic startup upon loss of utility power, automatic transfer back to utility power once the normal source has been reestablished, and remote status monitoring. The new generators will be located outdoors in order to comply with current fire codes. Modification of the electrical systems is needed to support the replacement generators at their new locations. The existing nonconforming above-ground fuel storage tanks and containment areas will be removed.

**Project No. 1 – Temescal Power Plant Standby Generator Replacement – Final Design and Procurement (\$180,000)**

Planned final design phase activities include development of detailed plans and specifications; preparation of a procurement package for the generators; acquisition of SCAQMD permits; receipt of bids for the generator and for the construction contract; preparation of a construction cost estimate; and all other activities in advance of award of the construction contract. The procurement contract for the standby generator is planned to be awarded under the General Manager's Administrative Code authority. Staff will return to the Board at a later date for award of the construction contract.

This action appropriates \$180,000 and authorizes final design phase activities to replace the standby generator at Temescal Power Plant. The requested funds include \$42,500 for final design of the construction and procurement contracts; \$75,000 for purchase of the generator; \$37,500 for permitting, bidding, and project management; and \$25,000 for remaining budget. The cost of final design is approximately 14.8 percent of the estimated total construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The construction cost for this project is anticipated to range from \$275,000 to \$325,000.

**Project No. 2 – Corona Power Plant Standby Generator Replacement – Final Design and Procurement (\$180,000)**

Planned final design phase activities for the Corona Power Plant are similar to Temescal, including development of detailed plans and specifications; preparation of a procurement package for the generators; acquisition of AQMD permits; receipt of bids for the generator and for the construction contract; preparation of a construction cost estimate; and all other activities in advance of award of the construction contract. The procurement contract for the standby generator is planned to be awarded under the General Manager's Administrative Code authority. Staff will return to the Board at a later date for award of the construction contract.

This action appropriates \$180,000 and authorizes final design phase activities to replace the standby generator at Corona Power Plant. The requested funds include \$42,500 for final design of the construction and procurement

contracts; \$75,000 for purchase of the generator; \$37,500 for permitting, bidding, and project management; and \$25,000 for remaining budget. The cost of final design is approximately 14.8 percent of the estimated total construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The construction cost for this project is anticipated to range from \$275,000 to \$325,000.

### Summary

This action appropriates \$360,000 and authorizes final design and procurement to replace standby generators at the Temescal and Corona Power Plants. These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2011/12 capital budget. These projects are included within capital Appropriation No. 15441, the Conveyance and Distribution System Rehabilitation Program Phase II, which was initiated in fiscal year 2006/07. Appropriation No. 15441 also includes projects such as the Sepulveda Feeder Repairs and Allen-McColloch Pipeline Repairs. With the present action for the Temescal and Corona Power Plants, the total funding for Appropriation No. 15441 will increase from \$31,699,000 to \$32,059,000.

See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map. These projects are consistent with Metropolitan's goals for sustainability by enhancing reliability of the existing conveyance and distribution system in order to maintain reliable water supplies in the future.

### Project Milestone

June 2012 – Completion of final design for replacement of the standby generators at Temescal and Corona Power Plants

### Policy

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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)

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CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The activity involves final design, funding, procurement and replacement of existing public facilities, along with minor modifications of land which do not involve removal of healthy, mature, scenic trees, with 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 action qualifies under three Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; and Class 4, Section 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

### Board Options

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#### Option #1

Adopt the CEQA determination and

- a. Appropriate \$360,000;
- b. Authorize final design and procurement of standby generators at Temescal and Corona Power Plants.

**Fiscal Impact:** \$360,000 in budgeted funds under Approp. 15441

**Business Analysis:** These projects will enhance system reliability and allow operation of critical Lower Feeder flow control equipment in the event of a utility power outage.

**Option #2**

Do not authorize the generator replacement projects at this time.

**Fiscal Impact:** Increased cost to maintain the existing standby generators, and potential regulatory non-compliance.

**Business Analysis:** Under this option, staff would continue to maintain the existing standby generators. Failure of the generators could result in the inability to operate critical Lower Feeder flow control equipment during a utility power outage. Disruptions in Lower Feeder flows can adversely affect treatment operations at the Diemer plant by decreasing filter performance, and could lead to increases in filter outlet turbidity. Continued use of the portable generator at Temescal Power Plant beyond February 2012 would expose Metropolitan to SCAQMD violations and monetary fines.

**Staff Recommendation**

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Option #1

	9/29/2011
_____ Gordon Johnson Manager, Chief Engineer, Engineering Services	Date

	9/29/2011
_____ Jeffrey Kightlinger General Manager	Date

**Attachment 1 – Financial Statement**

**Attachment 2 – Location Map**

Ref# es12613721

## **Financial Statement for Conveyance and Distribution System Rehabilitation Program – Phase II**

A breakdown of Board Action No. 35 for Appropriation No. 15441 for replacement of the standby generators at the Temescal and Corona Power Plants<sup>1</sup> is as follows:

	<b>Previous Total Appropriated Amount (July 2011)</b>	<b>Current Board Action No. 35 (October 2011)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies & Investigations	\$ 2,050,000	\$ -	\$ 2,050,000
Final Design	2,331,400	85,000	2,416,400
Owner Costs (Program mgmt, permitting)	3,777,350	75,000	3,852,350
Submittals Review & Record Drwgs	13,100	-	13,100
Inspection & Support	1,464,300	-	1,464,300
Metropolitan Force Construction	6,972,300	-	6,972,300
Materials and Supplies	1,438,100	-	1,438,100
Incidental Expenses	770,400	-	770,400
Professional/Technical Services	1,543,500	-	1,543,500
Equipment Use	228,200	-	228,200
Contracts	8,136,730	150,000	8,286,730
Remaining Budget	2,973,620	50,000	3,023,620
<b>Total</b>	<b>\$ 31,699,000</b>	<b>\$ 360,000</b>	<b>\$ 32,059,000</b>

### **Funding Request**

<b>Program Name:</b>	Conveyance and Distribution System Rehabilitation Program – Phase II		
<b>Source of Funds:</b>	Revenue Bonds, Replacement and Refurbishment or General Funds		
<b>Appropriation No.:</b>	15441	<b>Board Action No.:</b>	35
<b>Requested Amount:</b>	\$ 360,000	<b>Capital Program No.:</b>	15441-I
<b>Total Appropriated Amount:</b>	\$ 32,059,000	<b>Capital Program Page No.:</b>	281
<b>Total Program Estimate:</b>	\$ 106,335,000	<b>Program Goal:</b>	I-Infrastructure Reliability

<sup>1</sup> The total amount expended to date on the replacement of standby emergency generators at Temescal and Corona Power Plants is approximately \$120,000.

# Temescal & Corona Power Plants

