

- **Board of Directors**
Engineering and Capital Programs Committee

June 12, 2007 Board Meeting

7-6

Subject

Appropriate \$625,000; and authorize preliminary design of the Solar Power Generation Facility at the Skinner Water Treatment Plant (Approp. 15391)

Description

Background

Under Metropolitan's Energy Management Program (EMP), staff is aggressively pursuing viable opportunities to develop renewable energy projects and seek available federal and state funding incentives. As part of the Governor's California Solar Initiative (CSI) and in conjunction with State Assembly Bill 32, California has established a goal to create 3,000 megawatts of new, solar-produced electricity by 2017. This effort is designed to move the state toward a cleaner energy future and help lower the cost of solar systems for residential, commercial, industrial, and agricultural consumers. The CSI will help reduce California's dependence on oil, boost the state's clean technology industry and reduce greenhouse gas (GHG) emissions. The CSI program is authorized by the California Public Utilities Commission (CPUC) and Senate Bill 1, and has a total budget of \$2.167 billion over ten years. To encourage installation and production of solar-based electricity, the CPUC has established rebate incentives in conjunction with the CSI program, and these rebates significantly reduce the overall cost of constructing a solar power generation facility. As of January 1, 2007, the CSI program will pay performance-based incentives (PBI) for solar power projects equal to or greater than 100 kilowatts, with monthly payments based on recorded kilowatt-hours (kWh) of solar power produced over a five-year period.

Metropolitan initiated its EMP in fall 2006. The goal of the EMP is to bring under one umbrella all energy management efforts that will help Metropolitan to design and operate its facilities in the most energy-efficient and cost-effective manner, while demonstrating leadership in the emerging energy management field. In identifying projects that fit within the EMP, Metropolitan will consider renewable energy projects in addition to energy conservation or reduction projects. In the evaluation of renewable energy projects such as solar, wind and hydroelectric projects, Metropolitan's goal will be to balance the capital cost and return on investment with other more subtle benefits derived from the project. These benefits may include demonstrating leadership in the areas of conservation and energy management; reducing carbon emissions; demonstrating readiness to employ emerging technologies; reducing long-term dependence on purchased electricity; and moving toward long-term stabilization of energy costs through use of sustainable energy sources (e.g., solar, wind, and hydroelectric power).

In conjunction with the EMP, Metropolitan's Board authorized membership in the California Climate Action Registry in February 2007. The Registry's purpose is to help companies and organizations which operate in California to establish GHG emission baselines against which any future GHG emission reduction requirements may be applied. Accordingly, the initial focus of the EMP has been to prepare Metropolitan's GHG inventory, or carbon footprint, using the Registry's General Protocol. Ongoing work under the EMP includes establishing design standards for energy-efficient facilities; taking advantage of available rebates for energy efficiency and energy-saving projects at the earliest possible opportunity; operating Metropolitan's facilities in the most energy-efficient manner; and continuing to investigate renewable and sustainable energy sources, such as solar, wind, and hydroelectric power.

With respect to renewable and sustainable energy sources, several studies are planned or currently underway to evaluate potential energy generation sites within Metropolitan's distribution system. These studies include new and/or enlarged hydroelectric generation along existing conveyance and distribution system infrastructure; wind power generation at several sites along the Colorado River Aqueduct; and solar power generation at each treatment plant. Staff's initial studies have focused on evaluating solar power generation at the Skinner plant, as it experiences optimal solar radiation due to its location.

Skinner Solar Feasibility and Business Case

A study was completed in 2006 to assess the feasibility of constructing a solar power generation facility at the Skinner plant. The study concluded that such a facility is feasible and would help offset power consumption from Southern California Edison (SCE). Water treatment at the Skinner plant is an energy intensive process, consuming over 11.1 million kWh of electricity during 2006. This consumption reflects an expense of nearly \$1.4 million at current SCE electrical rates; this expense will increase over the next several years as SCE rates continue to increase. Furthermore, the plant's ongoing expansion and the addition of ozone disinfection are expected to increase the plant's energy usage in 2009 to several times that of the current usage level. As such, the solar power generation facility would provide an alternate source of power for the Skinner plant, while providing renewable green energy that would help reduce Metropolitan's overall carbon emissions. With implementation of the facility, Metropolitan would indirectly reduce carbon emissions by nearly 2.5 million pounds annually. In addition, staff has determined that up to \$5 million in rebate incentives from the CPUC could be realized over the first five years of operation of the Skinner Solar Power Generation Facility. A payback period of eight to ten years is expected for the Skinner Solar Power Generation Facility. This is based upon an estimated capital cost of \$9 million; a current average SCE-purchase rate of \$0.12/kWh (which is assumed to increase 5% annually), projected cost savings achieved by producing renewable energy independent of the SCE power grid; and current rebate incentives that have been reserved through SCE.

Staff recommends proceeding with preliminary design and preparation of environmental documentation for the Skinner Solar Generation Facility project at this time, in order to take advantage of the CSI program incentives.

Skinner Solar Power Generation Facility - Preliminary Design (\$625,000)

The conceptual design of the Skinner Solar Power Generation Facility recommends a one-megawatt solar power facility that could generate up to 2 million kWh of power annually. A one-megawatt solar power facility could meet up to one-sixth of the average energy demand of six megawatts at the Skinner plant after installation of ozonation facilities. The system will be ground-mounted and will include a single-axis tracking system to allow the solar panel arrays to track the sun's path from east to west on a daily basis. Approximately five to six acres will be required for the installation.

The recommended location of the facility is within the Skinner plant's operational area north of Tualota Creek ([Attachment 3](#)). This location was chosen as it is near the Skinner plant's future switchgear building (which will be the point of connection), and because the site has been cleared of vegetation. The site is currently being used as a temporary contractor storage area for ongoing construction projects at the Skinner plant. Upon completion of this construction, the cleared site would be well-suited for installation of the solar power generation facility.

The preliminary design is recommended to be performed by MWH Americas, Inc., as discussed below. Metropolitan staff will perform program management, coordination regarding the incentives and electrical interconnections, and coordination with other activities underway at the Skinner plant. As part of the project scope, a more refined construction cost estimate will be developed, as well as a construction schedule and estimated level-of-effort for final design.

Preparation of environmental documentation is recommended to be performed by Jones & Stokes Associates, Inc. as discussed below. Metropolitan staff will perform permitting and coordination with resource agencies. As part of the project scope, field-level reconnaissance studies, as well as technical studies related to noise, aesthetics, air quality, and hydrology will be developed.

This action appropriates \$625,000 and authorizes preliminary design and preparation of environmental documentation for the Skinner Solar Power Generation Facility.

Staff will return to the Board at a later date to approve the environmental documentation and authorize final design.

Consulting Engineering & Environmental Support (No Action Required)

Preliminary design of the Skinner Solar Power Generation Facility is recommended to be performed by MWH Americas, Inc. under an existing board-authorized agreement. MWH was selected through a competitive selection process via Request For Qualifications No. 575. For this agreement, Metropolitan established a Small Business Enterprise participation level of 20 percent. No amendment to the existing agreement is required for this work.

Environmental documentation for the Skinner Solar Power Generation Facility is recommended to be performed by Jones & Stokes, Inc. under an existing board-authorized agreement. For this agreement, Small Business Enterprise levels of participation were not established by Metropolitan. No amendment to the existing Jones & Stokes agreement is required for this work.

The Skinner Solar Power Generation Facility has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team and funds have been included in the fiscal year 2006/07 capital budget. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map. [Attachment 3](#) depicts the location of the facility within the Skinner plant's operational boundaries.

Project Milestones

October 2007 – Complete preliminary design and environmental documentation

Policy

Metropolitan Water District Administrative Code Section 5108: Capital Project Appropriation

Metropolitan Water District Administrative Code Section 8115: Negotiated Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Options #1 and #2:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action consists of basic data collection and resource evaluation activities, which do not result in a serious or major disturbance to an environmental resource. This may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. Accordingly, the proposed action qualifies as a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #3:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$625,000; and
- b. Authorize preliminary design and preparation of environmental documentation for the Skinner Solar Power Generation Facility with a capacity of one megawatt.

Fiscal Impact: \$625,000 in budgeted funds (Approp. 15391)

Business Analysis: This option would allow Metropolitan to continue its efforts to reduce operating costs and increase efficiency under the Power Reliability and Energy Conservation Program, with the ultimate goal of constructing a solar power generation facility in FY 2008/09. The project will reduce power purchases for the

Skinner plant and provide an alternate source of power in emergency situations, while providing renewable green energy that will reduce Metropolitan’s overall carbon emissions.

Option #2

Adopt the CEQA determination and

- a. Appropriate \$625,000; and
- b. Authorize preliminary design and preparation of environmental documentation for the Skinner Solar Power Generation Facility with a capacity of two megawatts.

Fiscal Impact: \$625,000 in budgeted funds (Approp. 15391)

Business Analysis: This option would allow Metropolitan to implement a larger size solar generation facility (i.e., two-megawatt facility) at the Skinner plant. However, current rebate incentives offered by the CPUC are limited to systems of one-megawatt in size and smaller, and hence the payback period for this option is estimated to be between 15-20 years.

Option #3

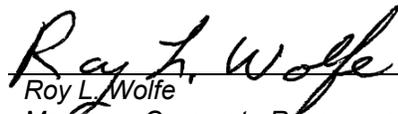
Do not authorize entering into preliminary design and preparation of environmental documentation for the Skinner Solar Power Generation Facility.

Fiscal Impact: None

Business Analysis: This option would indefinitely suspend efforts associated with implementation of the Solar Power Generation Facility, which are aimed at reducing costs and increasing efficiency at the Skinner plant. This option would also defer efforts by Metropolitan to reduce carbon emissions at the Skinner plant. All electrical power used at the Skinner plant would continue to be purchased from Southern California Edison.

Staff Recommendation

Option #1


 Roy L. Wolfe
 Manager, Corporate Resources

5/17/2007
 Date


 Jeffrey Kightlinger
 General Manager

5/25/2008
 Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Attachment 3 – Skinner Plant Site Map

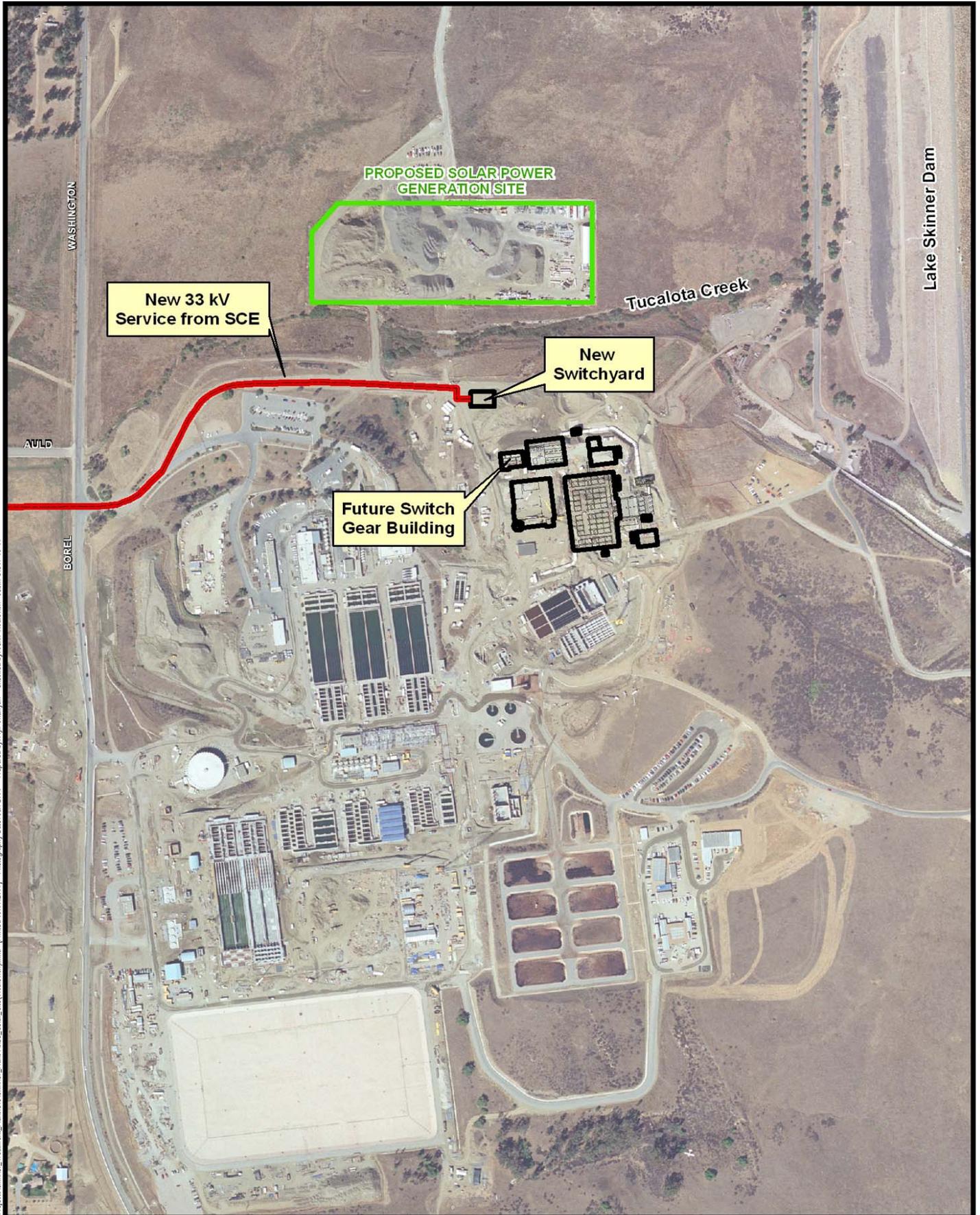
Financial Statement for Power Reliability and Energy Conservation Program

A breakdown of Board Action No. 4 for Appropriation No. 15391 is as follows:

	Previous Total Appropriated Amount (June 2005)	Current Board Action No. 4 (June 2007)	New Total Appropriated Amount
Labor			
Owner costs (Project management, environmental documentation)	\$ 435,700	\$ 180,000	\$ 615,700
Studies and Investigations	175,000	-	175,000
Final Design	700,000	-	700,000
Submittal Review	420,000	-	420,000
Control Systems Integration	128,000	-	128,000
Construction Inspection & Support	1,322,250	-	1,322,250
Water Systems Operations	391,000	-	391,000
Materials and Supplies	1,020,000	-	1,020,000
Incidental Expenses (Rebate reservation)	15,000	50,105	65,105
Professional Services (MWH Americas and Jones & Stokes)	10,000	380,000	390,000
Equipment Use	15,000	-	15,000
Contracts	9,845,000	-	9,845,000
Remaining Budget	1,123,050	14,895	1,137,945
Total	\$ 15,600,000	\$ 625,000	\$ 16,225,000

Funding Request

Program Name:	Power Reliability and Energy Conservation Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15391	Board Action No.:	4
Requested Amount:	\$ 625,000	Capital Program No.:	15391-E
Total Appropriated Amount:	\$ 16,225,000	Capital Program Page No.:	E-53
Total Program Estimate:	\$ 29,450,000	Program Goal:	E- Cost Efficiency / Productivity



Projects\Skinner_Treatment_Plant\GIS\Skinner_Plant_Airp_Solar_Site\rsalovch.mxd [Printed 05/01/2007] Photography Date: Jan 2006 Prepared by: A.K. Unanyan Checked by: John Vrsalovich Job# 61807-05-01

Skinner Plant Site Map

