MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

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

February 12, 2008 Board Meeting

8-2

Subject

Appropriate $10.2 million; and authorize replacement of Metropolitan's telephone system (Approp. 15376)

Description

The Telephone System Replacement Project will upgrade the telephone system and related IT-unified communication components throughout Metropolitan's offices and field facilities.

Background

Metropolitan's existing Siemens telephone system, serving all Metropolitan's sites throughout the service area, is over 16 years old and has reached the end of its useful life. Many of the parts are difficult to obtain because the equipment is outdated and is no longer manufactured or supported by its vendor. For example, replacement circuit boards are obtained from refurbished "aftermarket" sources where there is no guarantee that parts will be reliable. In 2000, Metropolitan's Board authorized the installation of factory-refurbished equipment in lieu of purchasing new equipment, saving $1.1 million in initial costs and deferring expenditures to replace the system. At that time, staff estimated that the telephone system would need to be replaced in approximately five years, and that the new Voice Over Internet Protocol (VOIP) based telephone technology would become ready for corporate business use in that timeframe. In 2006, the Gartner Group, which was retained to provide benchmarking and critical assessment of Metropolitan's IT infrastructure (including its phone system), emphasized the urgency of replacing the current phone system given its age and the associated risk of failure. The phone system is becoming increasingly unreliable, with 24 instances of components failing in the last year. In addition, the existing system lacks the flexibility to meet Metropolitan's evolving voice communication requirements.

Analysis of Replacement Options

Several approaches to replacing the phone system were analyzed and evaluated, including implementing older Time Division Multiplexing (TDM) based voice technology (employed by the current system), hosted solutions, an advanced VOIP-based telephone system supported by Metropolitan staff, and a VOIP-based telephone system supported and maintained by a third-party (hereafter referred to as Third Party Managed solution). While all approaches would provide greater reliability than our current telephone system, staff's recommendation is to upgrade to a VOIP-based system, which will provide a modern, cost-effective phone system to serve Metropolitan's current and future communication needs.

TDM-based system – TDM telephone systems, initially developed in the mid 1960s, are primarily hardware-based and run on a separate voice network. A positive aspect of this option is that this system utilizes very well-proven technology and would therefore be expected to be highly reliable following the upgrade. Further, Metropolitan staff is very familiar and proficient in supporting this type of a telephone system. In addition, the system would be similar to the current one, so user training would be expected to be minimal. One of the significant drawbacks of this option is that manufacturers are now withdrawing product development from TDM-based telephone systems and instead are investing their research and development efforts on VOIP-based systems. Implementing a TDM-based replacement is estimated to be 20-25 percent more costly than a VOIP-based system because there are more hardware and proprietary components involved. Metropolitan has an aging voice network infrastructure, comprised partially of copper wires dating back to the 1930s. Consequently, this option would require an additional investment to upgrade the voice network wiring and cabling. Moreover, TDM-based options cannot easily integrate with enhanced communications capabilities such as e-mail and mobile communications.

This option is estimated to cost $12 million in one-time capital costs and an increase of $100,000 annually in O&M costs over the existing Siemens system. The total 5-year cost is estimated to be $15 million without the voice network upgrade (estimated to be an additional one-time cost in the range of $4 million to $6 million).

Hosted solution – In this option, the telephone system would be housed off-site at a third-party location. The positive aspects of this option include the benefits of predictable operating costs and that Metropolitan telephone support staff could be reassigned to perform other work. In addition, all upgrades to the system would be performed by the vendor. The initial investment would be minimal in that Metropolitan would pay on a monthly basis for the service. In addition, this solution could be implemented more quickly than the other options. A primary drawback of this option is its cost. This option is estimated to cost $4.4 million annually in O&M costs, which is an increase of $3.9 million annually in O&M costs (hosted services, licensing, support, and maintenance) over the cost for the existing Siemens system. The total 5-year cost is estimated to be $22 million. In addition, Metropolitan has a relatively complex telephone infrastructure and geographically diverse locations, so it will be challenging for the vendor to offer comparable services with reliability and redundancy without investing heavily in equipment and personnel to meet our needs. With this option, there would be limited ability to control, manage, and secure the critical infrastructure because it belongs to the hosting vendor. This would make it difficult to integrate the hosted telephone system with other Metropolitan communication technologies such as e-mail and mobile communications. Also, this option may not meet disaster recovery needs as Metropolitan may not receive priority service restoration in the event of a regional emergency such as an earthquake. Additional premium subscription fees may be required to guarantee pre-defined recovery timeframes for Metropolitan in the event of a disaster.

Metropolitan managed VOIP-based system – This option would allow voice, video, and data to utilize a single (data) network that leverages Internet Protocol standards instead of requiring two separate networks to be maintained: one for voice and the other for data. Metropolitan's data network has recently been enhanced to improve its reliability and capacity. Using a VOIP-based solution would avoid a large investment to upgrade the aging voice network and cabling infrastructure. These systems are primarily software-based and were first introduced around the year 2000. With new manufacturers entering the market and established manufacturers developing new technologies and enhancing current products, there is greater design flexibility with more product choices than with traditional TDM-based designs. The technology has become more affordable with a highly competitive vendor marketplace offering deeper product discounts. To ensure reliability of the system, the VOIP-based solution would be equipped with automatic failover capabilities using redundant server and network components, alternate network paths, alternate connections to the Internet, and emergency electrical power backup systems. As an additional redundancy, a number of conventional phones could be connected over the Public Switched Telephone Network (AT&T, Verizon, etc.) to facilitate emergency voice communication. In addition, a VOIP-based telephone system could be more easily integrated with advanced unified communication technologies such as e-mail and mobile communications. This alternative however, would require more training initially for IT support staff to become proficient in supporting the new VOIP-based technology, and user training would be more extensive because there would be many new features of the system to be learned. This option is estimated to cost $10.2 million in one-time capital costs and no additional increase in O&M costs. The total 5-year cost for capital and O&M is estimated to be $12.7 million.

Third-party managed VOIP-based system – This alternative is similar to the option above. In this option, Metropolitan would own and house the new VOIP-based telephone infrastructure. The distinction is that the vendor would be responsible for supporting the system under Metropolitan's direction, rather than using Metropolitan staff to perform the support work. The advantages of this alternative include those listed above for a VOIP-based system, plus predictable operating costs and Metropolitan telephone support staff could be reassigned to perform other work. The primary drawback is that this option would be more expensive than using internal staff to support the system. This option is estimated to cost $10.2 million in one-time capital costs and an increase of $270,000 in annual O&M costs over the existing Siemens system. The total 5-year cost is estimated to be $14 million.

Telephone System Replacement Project – Full Implementation ($10.2 million)

The upgrade to a VOIP-based system will create the infrastructure foundation to enable future convergence of related communications technologies such as messaging (e-mail, instant messaging, text messaging, fax, and voice mail) and conferencing (audio, video, and web). This convergence, referred to as "Unified Communications," permits virtual workplace capabilities that may reduce travel time and energy usage, facilitate collaboration for dispersed employees, connect mobile and remote employees, and minimize delays in locating key staff.

Staff recommends that Metropolitan initiate a competitive process to explore alternative VOIP-based solutions from leading manufacturers (e.g., Cisco, Avaya, Nortel, NEC, etc.) as well as the current provider, Siemens. The scope of this project will include completion of system design, deployment of the new system, and upgrade of related IT-unified communication software (such as e-mail) and hardware components to facilitate integration of the VOIP system with other Metropolitan communications technologies.

The total estimated cost to implement a VOIP-based system is $10.2 million. To ensure that the project estimate is reasonable and competitive, Metropolitan retained the services of a consulting firm specializing in telephone systems to assist in developing the cost quotation. As part of due diligence, the consulting firm in turn validated their estimates by issuing a request for information from telephone system vendors. The resulting cost figures from the consulting firm were then reviewed by Metropolitan staff for reasonability, and were subsequently used as the basis for finalizing the project estimate.

This action appropriates $10.2 million and authorizes the Telephone System Replacement Project. The appropriation includes funding for: Metropolitan staff to develop a request for proposals, select the VOIP vendor, complete the technical design, work side-by-side with the telephone technicians while installing the new equipment, test the new system, and perform project management; a professional services agreement for consulting services to design and build the new telephone system; upgraded equipment and software for the new system and related IT-unified communications components; training and incidental costs, and a remaining budget to address any unforeseen issues that may arise during the project. Procurement contract(s) will be brought back to the Board for authorization when they are completed. The allocation of funds to the accounting categories (e.g., professional and technical services, materials and supplies, etc.) will be provided at that time. The telephone system will be implemented incrementally. The project is estimated to be completed by the summer of 2011.

The design and deployment of the Telephone System Replacement Project is consistent with Metropolitan's sustainability goals by enhancing the reliability of Metropolitan's telephone system in order to maintain reliable communications. This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team and funds have been included within the FY 2007/08 capital budget.

See **Attachment 1** for the financial statement.

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Options #1, #2, #3, and #4:

The proposed actions are not defined as a project under CEQA because they involve continuing administrative activities, such as general policy and procedure making (Section 15378(b)(2) of the State CEQA Guidelines). In addition, the proposed actions are not subject to CEQA because they involve other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines).

The CEQA determination is: Determine that the proposed actions are not subject to CEQA pursuant to Sections 15378(b)(2) and 15378(b)(4) of the State CEQA Guidelines).

Board Options

Option #1

Adopt the CEQA determination and

a. Appropriate $10.2 million in budgeted funds; and
b. Authorize the Telephone System Replacement project to implement a Metropolitan managed new VOIP-based system.

Fiscal Impact: $10.2 million in budgeted funds under Approp. 15376

Business Analysis: This option will improve the reliability of the telephone system, will reduce downtime and equipment failures, and will add unified communications capabilities to the telephone system. No annual increase in O&M costs is anticipated.

Option #2

Adopt the CEQA determination and

a. Appropriate $12 million in budgeted funds; and
b. Authorize the Telephone System Replacement project to implement a TDM-based system.

Fiscal Impact: $12 million in budgeted funds under Approp. 15376 and approximately $100,000 annual increase in O&M costs

Business Analysis: This option will improve the reliability of the telephone system and will reduce downtime and equipment failures. However, TDM is not a future direction for telephone system manufacturers. It will not easily integrate unified communications capabilities with the telephone system. Additionally, this option will require an upgrade to the voice network estimated to be an additional one-time cost in the range of $4 million to $6 million. This option will also result in an O&M cost increase of approximately $100,000 per year.

Option #3

Adopt the CEQA determination and authorize the Telephone System Replacement project to implement a hosted telephone system.

Fiscal Impact: No expenditure of budgeted capital funds, and an increase of $3.9 million annually in O&M costs

Business Analysis: This option provides for predictable operating costs and is inclusive of upgrades which would be performed by the vendor. The drawback of this option is the ongoing cost and limited ability to control, manage, and secure critical telephone infrastructure as it will be housed off-site at a third-party location. This option will result in an O&M cost increase of approximately $3.9 million per year.

Option #4

Adopt the CEQA determination and

a. Appropriate $10.2 million in budgeted funds; and
b. Authorize the Telephone System Replacement project to implement a third-party managed VOIP-based system.

Fiscal Impact: $10.2 million in budgeted funds under Approp. 15376 and an increase of $270,000 annually in O&M costs

Business Analysis: This option would provide the same benefits as in Option #1. However, this option will result in an O&M cost increase of approximately $270,000 per year.

Staff Recommendation

Option #1

Roy Wolfe 1/30/2008
Roy Wolfe *Date*
Manager, Corporate Resources

Debra C. Man 1/30/2008
Debra C. Man *Date*
for Jeffrey Kightlinger
General Manager

Attachment 1 – Financial Statement

BLA #5519

Financial Statement for ITSP Infrastructure Program

A breakdown of Board Action No. 10 for Appropriation No. 15376 is as follows:

	Previous Total Appropriated Amount (Sept. 2007)		Current Board Action No. 10 (Feb. 2008)		New Total Appropriated Amount
Labor	$ 6,788,425		$ 9,291,000	**	$ 16,079,425
Materials and Supplies	11,211,870	*	-		11,211,870
Incidental Expenses	179,474		-		179,474
Professional/Technical Services	3,991,997		-		3,991,997
Contracts	285,000		-		285,000
Equipment Use	500		-		500
Remaining Budget	1,213,734	*	909,000		2,122,734
Total	**$ 23,671,000**		**$ 10,200,000**		**$ 33,871,000**

*Reflects reallocation of $110,000 from Remaining Budget to Materials and Supplies for the Enterprise GIS project to complete the following, which is consistent with the board-authorized scope: Implement GoogleEarth Enterprise to support 3D visualization of MWD data using GoogleEarth clients.
** This amount will be reallocated to other account categories once cost estimates are finalized following completion of contract negotiations.

Funding Request

Program Name:	ITSP Infrastructure Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15376	**Board Action No.:**	10
Requested Amount:	**$** 10,200,000	**Capital Program No.:**	15376-I
Total Appropriated Amount:	**$** 33,871,000	**Capital Program Page No.:**	E-36
Total Program Estimate:	**$** 46,931,000	**Program Goal:**	Reliability & Efficiency