

- **Board of Directors**
Engineering, Operations and Real Property Committee

September 11, 2001 Board Meeting

9-1

Subject

Authorize funding and delegate authority to award contracts for two Capital Investment Plan Information Technology projects: (1) increase of \$3.353 million to \$6.482 million in Appn. 15282 to replace outdated equipment and leased communications lines; and (2) \$1.334 million in Appn. 15376 to replace outdated data network and radio equipment

Description

This letter requests funding and delegation of authority to award contracts for two budgeted Information Technology Capital Investment Plan (CIP) programs to improve the reliability of communication systems by replacing outdated equipment. The CIP Evaluation Team recommended approval of both programs as part of the CIP review process. Both programs are included in the capital budget for fiscal year 2001/02.

Digital Microwave Services to Plants and Desert Facilities Program

The first program addresses the need to provide a more reliable, higher capacity “conveyance” system to move large volumes of voice and data traffic between Metropolitan facilities. In February 2001, the Board authorized funding to complete Phase I of the Digital Microwave Services to Plants and Desert Facilities program (Appn. 15282), which provided digital microwave services to the desert facilities and Wadsworth pumping plant. Digital microwave services were provided to the Wadsworth pumping plant using a “passive” microwave relay station. This cost-effective approach was identified as part of a critical review of available options and resulted in savings of approximately \$1.1 million. All Phase I work has been completed and the corresponding digital microwave links are all operational.

The February 2001 authorization also included funding for a preliminary study for Phase II of the program, which addresses the telecommunication needs of Metropolitan’s facilities located primarily in the coastal plain. Metropolitan currently relies on a combination of leased lines from telephone companies and older analog microwave technology to provide telecommunication services to its facilities in the coastal plain. The existing leased communication lines serving facilities in the coastal plain have proved to be much more prone to service outages and have higher recurring costs than the digital microwave system serving the desert sites. The analog microwave technology is outdated and increasingly difficult to maintain. At the same time, reliability of the communication systems is becoming more and more critical as Metropolitan increases its level of automation. Consistent with our review of alternate solutions for Phase I, the Phase II study explored cost-effective alternatives for providing reliable communication services between facilities in the coastal plain and critically analyzed each option. The study is now completed and forms the basis for our Phase II recommendation contained in this letter. The recommendation is that Metropolitan establish digital microwave services between facilities in the coastal plain because it will provide higher reliability and additional needed capacity while reducing ongoing costs for leased communication lines. The recommended option saves approximately \$4 million when compared to the option of leasing additional communication lines to meet the capacity needs.

Telecommunication Infrastructure Upgrade Program

This second CIP program addresses the need to replace outdated network and two-way radio equipment which function as a “distribution” system for voice and data traffic when it reaches a facility. The Telecommunication Infrastructure Upgrade program (Appn. 15376) would replace outdated data network equipment, including hubs, routers and switches. It would also replace aging two-way radio equipment, including member agency response

low-band repeaters, repeaters for “fill-in” coverage, a radio system for underground structures at the treatment plants, and 15-year-old two-way radios. The replacements are necessary to improve the reliability, capacity, coverage and maintainability of the systems, since the vendors no longer support much of the equipment and parts are not readily available. The recommended option to purchase equipment saves approximately \$100,000 when compared to the option of leasing the necessary equipment.

Additional information on each program is contained in the Detailed Report ([Attachment 1](#)). A breakdown of the cost estimate for the Digital Microwave Services to Plants and Desert Facilities program (Appn. 15282) is shown in the Financial Statement ([Attachment 2](#)). A breakdown of the cost estimate for the Telecommunication Infrastructure Upgrade program (Appn. 15376) is shown in the Financial Statement ([Attachment 3](#)).

Policy

Metropolitan Water District Administrative Code Section 5108: Capital Project Appropriation

Metropolitan Water District Administrative Code Section 8113: Award of Contracts over \$250,000

CEQA

Options #1 and #2

The proposed action is categorically exempt under the provisions of the California Environmental Quality Act (CEQA). The overall activities involve either the purchasing or leasing of equipment and the minor alterations of existing public facilities with no expansion of use and no possibility of significantly impacting the physical environment. These alterations are replacements of existing structures where the new structures will be located on the same sites as the structures replaced and will have the same purpose and capacity as the structures replaced. As such, this proposed action qualifies under both Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

The CEQA determination for both Options #1 and #2 is: Determine that pursuant to CEQA, the proposed action qualifies for both Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

Board Options/Fiscal Impacts

Option #1

Adopt the CEQA determination; and

- a. Regarding the Digital Microwave Services program, authorize an increase of \$3.353 million for Phase II of the program, to a total of \$6.482 million, and delegate authority to the Chief Executive Officer (CEO) to award contracts over \$250,000 to continue replacement of outdated equipment and leased communications lines with more reliable digital microwave services to “convey” large volumes of voice and data traffic between Metropolitan facilities primarily located in the coastal plain (Appn. 15282).
- b. Regarding the Telecommunication Infrastructure Upgrade program, authorize \$1.334 million and delegate authority to the CEO to award contracts over \$250,000 to purchase equipment to replace outdated data network and radio equipment that “distribute” voice and data traffic when it reaches Metropolitan facilities (Appn. 15376).

This option addresses the needs, saves approximately \$4.1 million when compared to Option #2, and provides more reliable service.

Fiscal Impact: \$4.687 million of budgeted CIP funds under existing Appropriation 15282 and new Appropriation 15376, plus a one-time O&M expenditure of \$292,500 for two-way radios, which were originally included as part of the capital budget estimate.

Option #2

Adopt the CEQA determination and

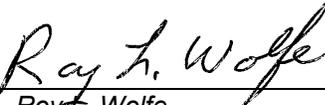
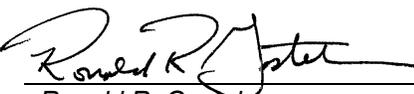
- a. Regarding the Digital Microwave Services Program, authorize up to \$1.06 million per year to a total of \$7.42 million, and delegate authority to the CEO to award contracts exceeding \$250,000 for additional leased communications lines to provide a higher capacity “conveyance” system to move large volumes of voice and data traffic between Metropolitan facilities located primarily in the coastal plain.
- b. Regarding the Telecommunication Infrastructure Upgrade Program, authorize \$1.76 million and delegate authority to the CEO to award contracts exceeding \$250,000 to lease equipment to replace outdated data network and radio equipment that “distribute” voice and data traffic when it reaches Metropolitan facilities.

This option has higher overall costs and provides less reliable communication services.

Fiscal Impact: Up to \$9.18 million of additional O&M expenditures for leased communications lines and equipment over the next seven years, which is the average life expectancy of the equipment in the previous option.

Staff Recommendation

Option #1

	8/23/2001
Roy L. Wolfe Manager, Corporate Resources	Date
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	8/24/2001
Ronald R. Gastelum Chief Executive Officer	Date

Attachment 1 – Detailed Report

Attachment 2 – Financial Statement (Appn. No. 15282)

Attachment 3 – Financial Statement (Appn. No. 15376)

BLA #1157

DETAILED REPORT

Digital Microwave Services to Plants and Desert Facilities Program

The Digital Microwave program addresses the need to provide a more reliable, higher capacity “conveyance” system to move large volumes of voice and data traffic between Metropolitan's facilities. The program includes two phases. The first phase replaced a 12-year-old analog system with a digital microwave system to furnish adequate and reliable communication service to all Metropolitan's pumping facilities in the desert. The second phase will address the telecommunication needs of Metropolitan's facilities located primarily in the coastal plain.

In February 2001, the Board authorized additional funding to complete Phase I of the program, provide digital microwave service to the new Wadsworth pumping plant, and prepare a preliminary scoping study for the second phase of the program. All currently authorized work has been completed.

The preliminary scoping study for Phase II of the program concluded that the existing leased communications lines serving facilities in the coastal plain do not provide adequate capacity to meet projected needs and are subject to more service outages than the digital microwave system. The study analyzed different alternatives to provide communication services to these facilities and recommended that Metropolitan extend digital microwave services to the remaining facilities, replace outdated communications equipment, and eliminate leased communications lines, where appropriate. The recommended option meets the capacity needs, saves \$4 million when compared to the option of leasing communications lines, and provides higher reliability.

Telecommunication Infrastructure Upgrade Program

The second CIP program addresses the need to replace outdated network and two-way radio equipment which function as a “distribution” system for voice and data traffic when it reaches a facility. The Telecommunication Infrastructure Upgrade program includes four projects:

- 1) The Data Network Hub Replacement project will replace outdated network hubs at field facilities. The hubs collect data traffic from multiple users and forward the traffic to routers for distribution. The existing hubs are about six years old, do not meet current capacity requirements, are no longer supported by the vendor, and are not supported by network management tools that can proactively address network performance issues.
- 2) The Data Network Router Replacement project will replace aging routers and associated channel service units at field facilities. The routers distribute data traffic across the network. The existing routers and associated channels units are about six years old, do not meet capacity requirements, have experienced multiple failures over the past year, and do not provide up-to-date data security features.
- 3) The Network Data Center Core Switch Replacement project will replace outdated, non-redundant core switches at the Union Station facility. The data center core switches direct all data traffic to/from the enterprise servers and are a single point of failure for corporate applications that are continuously used (e.g., Oracle financial applications, procurement, etc.). The existing switches do not meet capacity requirements and provide the needed redundancy.
- 4) The Two-Way Radio Systems Upgrade project will replace 15-year-old radios, member agency response system low-band repeaters, and provide wireless tunnel communication systems for all treatment plants. The replacements are necessary to improve the reliability, capacity, coverage and maintainability of the systems, since the vendors no longer support much of the equipment and parts are not readily available.

After the Telecommunication Infrastructure Upgrade program was approved in the capital budget, it was determined that the purchase of hand-held and mobile radios for the Two-Way Radio Systems Upgrade project should be an O&M expenditure rather than a capital expense. This reduced the capital budget estimate for the program and increased the O&M budget estimate by about \$292,500. In addition, staff determined that it would be necessary to purchase more capable routers for the Data Network Router Replacement project to more fully utilize the capacity of the digital microwave “conveyance” system. This increased the cost estimate for the project by about \$226,000. The net result of these adjustments was a \$292,500 increase in the O&M budget estimate and a \$66,500 reduction to the capital budget estimate.

FINANCIAL STATEMENT

A breakdown of Board Action No. 4 for Appropriation No. 15282 to provide digital microwave services to plants and desert facilities is as follows:

	Board Action No. 3 <u>(February 2001)</u>	Board Action No. 4 <u>(September 2001)</u>
Metropolitan Labor	\$ 456,000	\$ 765,000
Materials & Supplies	200,000	2,540,000
Incidental Expenses	34,000	179,000
Professional & Technical	113,000	200,000
Operating Equipment	3,000	15,000
Administrative Charges	227,000	425,000
Contract Payments	2,096,000	2,060,000
Remaining Budget	<u>0</u>	<u>298,000</u>
Total:	\$ 3,129,000	\$ 6,482,000

FUNDING REQUEST

Program Name: Digital Microwave Services to Plants & Desert Facilities			
Source of Funds: Pay-As-You-Go Fund			
Appropriation No.:	15282	Board Action No.:	4
Requested Amount:	\$3,353,000	Capital Program No.:	15282-A
Total Appropriated Amount:	\$6,482,000	Capital Program Page No.:	
Total Program Estimate:	\$6,482,000	Project Goal:	R-Reliability

FINANCIAL STATEMENT

A breakdown of Board Action No. 1 for Appropriation No. 15376 to replace obsolete data network and radio equipment included in the Telecommunications Infrastructure Upgrade program is as follows:

Board Action	
No. 1	
<u>(September 2001)</u>	
Labor and Additives	\$ 93,120
Materials & Supplies	1,125,300
Incidental Expenses	0
Professional & Technical	0
Operating Equipment	0
Administrative Charges	51,380
Contract Payments	0
Remaining Budget	<u>64,200</u>
Total:	\$ 1,334,000

FUNDING REQUEST

Program Name: Telecommunications Infrastructure Upgrade			
Source of Funds: Pay-As-You-Go Fund			
Appropriation No.:	15376	Board Action No.:	1
Requested Amount:	\$1,334,000	Capital Program No.:	15376-A
Total Appropriated Amount:	\$1,334,000	Capital Program Page No.:	
Total Program Estimate:	\$1,334,000	Project Goal:	R-Reliability