



- Board of Directors
Engineering and Operations Committee

9/9/2014 Board Meeting

7-3

Subject

Appropriate \$1.33 million; and authorize: (1) design of a Project Control and Reporting System for management of the Capital Investment Plan; and (2) professional services agreement with CH2M Hill, Inc. (Approp. 15490)

Executive Summary

This action authorizes design of a new Metropolitan-wide Project Control and Reporting System (PCRS). This project will replace the aging Project Management Information System (PMIS) with a new web-based application to maintain project planning, management, and reporting functions for the Capital Investment Plan (CIP). The PCRS will provide centralized and expandable reporting capability that will integrate management of the CIP with Metropolitan's financial and budgeting systems.

Timing and Urgency

Metropolitan's existing PMIS application was developed in-house in the early 1990s to generate labor and cost reports for capital projects. These reports are used to monitor project status and expenditures compared to budgeted costs. At the present time, the PMIS application is outdated and relies on obsolete software for which vendor support has expired. Metropolitan adopted the Oracle E-Business Suite (EBS) in 1995, and has moved since that time to migrate internal business applications to an Oracle-based platform. While the PMIS application has been able to access data from the current version of Oracle Financials and the EBS, this ability will end in 2016 when Metropolitan adopts an upcoming Oracle upgrade.

This project will replace PMIS with a modern PCRS which will enable staff to efficiently manage capital projects and the capital budget. In addition, the new PCRS will improve CIP planning by upgrading Metropolitan's scheduling application, Primavera, to its latest release, and by providing the necessary features to integrate budget-loaded schedules with Metropolitan's corporate budgeting, financial, and reporting systems. Finally, the new PCRS will establish the platform and data warehouse which will support future Information Technology upgrades.

This project has been reviewed with Metropolitan's CIP prioritization criteria, and is categorized as a Cost Efficiency/Productivity project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2014/15.

Details

Background

Each fiscal year, Metropolitan staff manages and executes over 300 capital projects with budgets ranging from \$50,000 to more than \$200 million. Over the next five years, annual capital expenditures are projected to range from \$240 million to \$300 million. Staff relies on three primary systems to manage the CIP: (1) PMIS for monitoring actual expenditures of cost and labor hours; (2) Primavera for project scheduling and budgeting; and

(3) the corporate Integrated Budget Management System (IBMS) for cash-flow projections. Background information follows for each of these systems.

PMIS is the cornerstone of Metropolitan's project reporting system. It generates cost and labor reports from data obtained from the Oracle EBS application. These reports provide information on actual costs expended versus budgets for each project, and the actual labor hours expended. The 20-year-old PMIS application is based on obsolete technology and will no longer function when forthcoming upgrades to existing Oracle applications, such as PeopleSoft and Oracle EBS, are adopted by Metropolitan. Some of the PMIS functionality has already ended due to its reliance on obsolete software such as Lotus 1-2-3.

Staff develops detailed schedules for every project in the CIP using Primavera. These schedules contain detailed budgetary information for each project, and are used to generate capital expenditure forecasts. Metropolitan currently uses an older version of Primavera that lacks the features necessary to integrate schedule data with Metropolitan's budgeting, financial, and reporting systems. In addition, the existing project schedules cannot be used to generate resource requirement forecasts. For example, summary reports may indicate how many individuals are needed to execute capital projects, but cannot drill down to the resource level (i.e., field inspectors, administrative staff, or specialized engineers) which would enable more accurate resource planning.

IBMS is the system used to input overall capital expenditure forecasts into Metropolitan's biennial budget. IBMS cannot be integrated with the current Primavera scheduling system. Forecasted project costs must be manually exported from Primavera and then manually entered into IBMS. IBMS then generates the reports that compare estimated forecasts of total personnel needs, consultant utilization, and projected annual expenditures from Primavera, to the available personnel resources and financing in IBMS. The lack of integration between these applications requires iterative, manual adjustments in both IBMS and Primavera that are time-consuming and subject to error. Additional time and effort is then spent to verify the accuracy of the adjustments. This labor-intensive process has led to delays in finalizing and publishing Metropolitan's budget.

Over 70 percent of Metropolitan's biennial capital budget is dedicated to complex infrastructure refurbishment and replacement (R&R) projects. These types of projects are regularly impacted by shutdown constraints and complications associated with planning and performing construction in and around facilities that must remain in near-continuous operation. Since the existing PMIS system needs to be replaced in order to maintain management, budgeting, and reporting capabilities for the CIP, staff recommends that Metropolitan adopt a modern, web-based PCRS that will have the following features and attributes. The system should:

- Address routine project management needs including the generation of detailed project reports, management-level reports, and program dashboard reports.
- Improve expenditure forecasts.
- Enable resource management at the employee skill level.
- Reduce manual manipulation of data or duplicate data entry.
- Provide the foundation for an expandable reporting system that can support current and future reporting needs throughout Metropolitan.
- Be consistent with Metropolitan's technology policies to utilize commercial, off-the-shelf non-proprietary software that minimizes custom programming.
- Be compatible with future upgrades to Metropolitan's Information Technology systems.

These features will enable Metropolitan to deploy a modern, cost-effective, long-lasting project control and reporting system that will meet the needs of Metropolitan's managers, project and financial staff, and the Board.

Assessment Process

Staff conducted an assessment of Metropolitan's existing project management, reporting, and budgeting systems, and identified current system deficiencies, user needs, and conceptual designs of alternative solutions. The assessment included research into similar project control and reporting systems which have been deployed by other agencies. These agencies include the Orange County Sanitation District, Eastern Municipal Water District, Los Angeles Department of Water and Power, Los Angeles County Metropolitan Transportation Authority, city

of San Francisco Public Utilities Commission, and Pacific Gas and Electric Company. The systems adopted by these agencies were all deployed via professional services agreements with consultant teams that featured specialized expertise in the following fields: (1) project management of large capital programs; (2) standardized project control and reporting; and (3) software integration. Each of these agencies' systems is based on standard schedule templates that form the building blocks for an enterprise-wide PCRS. None of these systems were identical, reflecting that some level of customization was required for each system in order to integrate each agency's financial system and its CIP structure.

Based on staff's assessment of Metropolitan's needs and the information gained from other agencies' experience, a project plan and scope of work was developed for the new PCRS. In November 2013, staff issued Request for Proposals No. 1037 to evaluate options for development and deployment of a new PCRS. Nine firms submitted proposals in January 2014. Following detailed evaluation of the proposals, five firms were invited to present their proposed methodology and qualifications. Each firm was evaluated based on its experience, the expertise of the proposed project team, the implementation plan, the extent to which the proposed solution would meet Metropolitan's needs, and the estimated cost. Based on these criteria, staff recommends that CH2M Hill, Inc. be selected to design the new PCRS.

Recommended System

The planned PCRS will employ modern data management and analysis tools, including a data warehouse, to store data from Metropolitan's business applications such as accounting, procurement, time-keeping, and project scheduling; and will organize and filter the data into usable reports. This project will develop a user-friendly access portal for running standard and customizable project reports; update existing project schedules utilizing templates to support resource management, financial forecasting, and reporting needs; and integrate the schedule data with Metropolitan's financial and budgeting systems to improve resource and cost forecasting.

The centralized data warehouse will support the reporting needs of the PCRS, yet will be expandable to accommodate future Metropolitan-wide business reports such as financial reports and dashboards, grants reporting, and operational and inventory-related reports. The data warehouse will also use commercial off-the-shelf data analysis modules to reduce the need for labor-intensive "custom" design efforts, will allow daily updates from the source systems (Oracle EBS, PeopleSoft and Primavera), and will feature a user-friendly Web interface. The data warehouse will allow data to be compiled into standard and ad hoc reports while maintaining the security of the original source data. Importantly, the ability to access reports in the data warehouse will not require user licenses. Through this approach, the payment of annual license fees will be minimized, as Metropolitan's project accounting system and Primavera each require individual licenses that are paid annually. The planned analysis modules will be geared toward gathering and reporting on capital project-oriented data. However, the data warehouse will be a true backbone system that is relatively easy to expand with additional analysis modules which can be used to generate other types of reports.

Due to the number of software applications impacted by this effort, staff recommends that a staged process be followed to deploy the new PCRS. The first stage will be to finalize the system requirements and project deliverables, and develop a detailed cost estimate. This effort will include preparation of a design report which is similar to a set of contract drawings and specifications. It will establish specific report formats, data sources and integration paths, system architecture, operational requirements, and hardware and software needs. This is the most critical component of any software deployment project as it ensures that the final deliverable will meet Metropolitan's requirements prior to any procurement, programming, or installation. Following completion of the first stage, staff will return to the Board for authorization to commence hardware and software procurement, installation and programming, user acceptance testing, and system deployment.

Project Control and Reporting System – Design Phase (\$1,330,000)

Planned design activities include conducting user workshops with staff from Engineering Services, Information Technology, and Finance to finalize the design requirements, document control procedures, and document work flow processes; conduct a third-party technical review; specify the reporting and control system architecture, hardware and software needs, and sample report formats; and develop a cost estimate for procurement,

installation, programming, and system deployment. This design effort is recommended to be performed by CH2M Hill, Inc., as described below. Metropolitan staff will provide user input to the design process and will perform project management. The third-party technical review will be performed by a specialized firm via a professional services agreement that will be awarded under the General Manager's Administrative Code authority.

This action appropriates \$1.33 million and authorizes design of a new PCRS. The requested funds include \$880,000 for design activities by CH2M Hill, Inc., \$155,000 for Metropolitan staff to provide user input to the proposed system design; \$90,000 for review and documentation of pertinent business process and workflow revisions by Metropolitan staff; \$10,000 for third-party technical review; \$80,000 for project management and reporting; and \$115,000 for remaining budget.

The total estimated cost to complete the design, procurement, and deployment of the PCRS is anticipated to range from \$4.8 million to \$5.3 million. This amount includes \$1.33 million for design of the PCRS (the present action), and the following future costs: \$1 million for software and licensing; \$100,000 for procurement of servers; \$200,000 for an initial period of system maintenance; \$470,000 for user testing, Information Technology staff support, and project management; and \$1.7 million for deployment of the new system. Deployment of major software applications such as the PCRS is typically performed by a specialized consultant. For this effort, staff will seek to identify opportunities wherever possible for portions of the deployment to be performed in-house.

As discussed above, the assessment process for the new PCRS considered comparable systems deployed by other agencies to manage major capital programs. Each of those systems featured different software and required custom integration of existing applications. While the reporting needs differed, the end-products of the various systems were similar. Using these systems as a benchmark, the projected cost to complete Metropolitan's new PCRS is consistent with the total costs expended by others.

Agreement for Professional Services – CH2M Hill, Inc.

CH2M Hill, Inc. is recommended to design the new enterprise-wide PCRS. The planned scope of work includes: conducting workshops with Metropolitan staff to finalize reporting needs and report formats; developing control procedures for documents and work-flow processes; preparing a design report specifying the system architecture, hardware and software needs, and sample report formats; and developing a detailed cost estimate for procurement and system deployment. CH2M Hill, Inc. was selected through a competitive process via Request for Proposals No. 1037. CH2M Hill, Inc. has extensive experience in developing project control and reporting systems, and has recently deployed similar systems for the Orange County Sanitation District, the Panama Canal Authority, and the San Francisco Public Utilities Commission. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 20 percent. CH2M Hill, Inc. has agreed to meet this level of participation.

This action authorizes an agreement with CH2M Hill, Inc. in an amount not to exceed \$880,000, to design an enterprise project control and reporting system PCRS.

Summary

This action appropriates \$1.33 million, authorizes design of the new PCRS, and authorizes a professional services agreement with CH2M Hill, Inc. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2014/15 capital expenditure plan. See [Attachment 1](#) for the Financial Statement.

The PCRS is included within capital Appropriation No. 15490, the Project Control and Reporting System Appropriation, which was initiated in fiscal year 2014/15. This is the initial action under this appropriation.

Project Milestones

March 2015 - Completion of design

July 2015 - Return to the Board for authorization to deploy the planned PCRS

July 2016 - Deployment of the new PCRS

Policy

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)

CEQA determination for Option #1:

The proposed action is not defined as a project under CEQA because it involves continuing administrative activities (Section 15378(b)(2) of the State CEQA Guidelines). In addition, the proposed action is not subject to CEQA because it involves 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 action is not defined as a project and is not subject to CEQA pursuant to Sections 15378(b)(2) and 15378(b)(4) of the State CEQA Guidelines.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination that this action is not defined as a project and is not subject to CEQA, and

- a. Appropriate \$1.33 million;
- b. Authorize design of a Project Control and Reporting System for management of the Capital Investment Plan; and
- c. Authorize a professional services agreement with CH2M Hill, Inc. in an amount not to exceed \$880,000.

Fiscal Impact: \$1.33 million in capital funds under Approp. 15490

Business Analysis: This project will replace Metropolitan's outdated PMIS application with a web-based industry-standard PCRS that will integrate data in Metropolitan's financial, scheduling, and budgeting systems to provide standard project and program-level reports, and improve capital expenditure and personnel requirement projections.

Option #2

Do not proceed with development of a new Project Control and Reporting System at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to maintain reliable management, budgeting, and reporting capabilities for the CIP. Staff will manually manage cost and scheduling information, and/or develop a limited software application when the existing PMIS becomes obsolete. This will result in delays in development of the biennial budget and in monitoring and reporting necessary to manage the CIP.

Staff Recommendation

Option #1



Gordon Johnson
Manager/Chief Engineer
Engineering Services

8/26/2014
Date



Jeffrey Kightlinger
General Manager

8/27/2014
Date

Attachment 1 – Financial Statement

Ref# es12631861

Financial Statement for Project Control and Reporting System Appropriation

A breakdown of Board Action No. 1 for Appropriation No. 15490 for the Project Control and Reporting System¹ is as follows:

	Current Board Action No. 1 (Sept. 2014)
Labor	
Studies & Investigations	\$ -
Design	154,000
Owner Costs (Program mgmt., design review)	170,000
Materials & Supplies	-
Incidental Expenses	1,000
Professional/Technical Services	
CH2M Hill, Inc.	880,000
Technical review firm	10,000
Equipment Use	-
Contracts	-
Remaining Budget	115,000
Total	\$ 1,330,000

Funding Request

Appropriation Name:	Project Control and Reporting System		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15490	Board Action No.:	1
Requested Amount:	\$ 1,330,000	Budget Page No.:	157
Total Appropriated Amount:	\$ 1,330,000	Total Appropriation Estimate:	\$ 3,800,000

¹ This is the initial action for the Project Control and Reporting System. The total estimated cost to complete the PCRS is anticipated to range from \$4.8 million to \$5.3 million.