



OPERATIONS COMMITTEE

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Agenda Report

File #: 2021-1584

Agenda Date: 7/7/2021

Agenda Item No: 12.

FROM: James D. Herberg, General Manager
Originator: Kathy Millea, Director of Engineering

SUBJECT:

PROCESS CONTROL SYSTEMS UPGRADES, PROJECT NO. J-120

GENERAL MANAGER'S RECOMMENDATION

RECOMMENDATION: Recommend to the Board of Directors to:

- A. Approve Task Order No. 1 under the Master Services Agreement with ABB Inc. to provide services, software, and equipment for Process Control Systems Upgrades, Project No. J-120, for an amount not to exceed \$11,818,480; and
- B. Approve a contingency of \$1,181,848 (10%).

BACKGROUND

The Supervisory Control and Data Acquisition (SCADA) system provides essential process monitoring, control, and archiving of process data, which is required for regulatory compliance. This system provides automatic control and allows operators to interactively monitor and control the process facilities from centralized areas, assuring that the systems are performing properly and that alarm conditions can be monitored and responded to immediately. The existing SCADA system utilizes programmable logic controllers (PLCs) and a Human-Machine-Interface (HMI) system consisting of networks, servers, workstations, software, and a data archiving system referred to as a historian.

The existing HMI software package is no longer supported by any vendor and requires emulation software to use Windows-based workstations. There are only a few people outside of the Orange County Sanitation District (OC San) who can make software changes to support the current and future needs of OC San. This system will become increasingly difficult to service and maintain with time.

Process Control Systems Upgrades Study, Project No. SP-196, determined the requirements for the new SCADA system, developed a scope of work to replace the existing HMI, and performed a multi-phase procurement to evaluate and select a vendor platform to replace the existing SCADA system. Approval of a Master Services Agreement with the selected vendor, ABB Inc., is scheduled to be submitted for Board approval at the same meeting as this item.

RELEVANT STANDARDS

- 24/7/365 treatment plant reliability
- Sustain 1, 5, 20-year planning horizons
- Maintain a proactive asset management program

PROBLEM

The existing HMI system is at the end of its useful life and requires replacement to continue to provide a reliable system for OC San Operations and Maintenance staff. The HMI system needs to be replaced as a complete integrated system, including the development of new HMI and controller programming standards and templates.

PROPOSED SOLUTION

Approve Task Order No. 1 under the Master Services Agreement with ABB Inc. to replace the existing HMI, which includes software and hardware standards development. This task order will replace the HMI and will integrate the new system with the existing PLCs. Existing PLC systems will be replaced over time through a number of capital improvement projects.

TIMING CONCERNS

Finding programmers with the appropriate training to support the HMI system is becoming difficult. The existing HMI needs to be replaced as a complete system.

RAMIFICATIONS OF NOT TAKING ACTION

It will become increasingly difficult to support and maintain the HMI software due to staff and consultant retirements in the next 10 years.

ADDITIONAL INFORMATION

Staff conducted extensive negotiations with ABB Inc. to review the scope of work requirements, the assumptions to be used for the estimated level of effort, and the level of design detail required for this project. In evaluating whether the fee proposal was fair and reasonable, the estimated level of effort was evaluated in detail for each phase, task, and subtask, and found to be justified by the needs of the project, the agreed-upon assumptions, and OC San's expectation for the quality of services. This was further validated by staff from Stantec, the Consultant retained to support OC San through Project No. SP-196. The original proposal of \$8,433,736 was negotiated down to \$8,211,707.

During negotiations, additional scope items were added to enhance the functionality of the SCADA platform by incorporating additional features into the base platform identified in the RFP. A number of these items were not included in the base scope because doing so would have eliminated some competitors or given one firm an inappropriate advantage. These scope items added additional effort and licensing costs associated with the project.

No.	Item	Price	Justification
1	Replacement of existing Wonderware enterprise historian	\$1,275,899	This was not in the original scope since one of the competitors provides the current historian and would have had an unfair price advantage. Using ABB's historian leverages the integrated features of the new system.
2	Replacement of existing Monthly Summary of Operations reports and new electronic operator daily round sheets	\$1,213,169	The existing reporting system is a custom program that is difficult to maintain. OC San has been looking at implementing an operator round sheet solution for several years. This was not in the original scope since not all firms offer this feature.
3	Additional cybersecurity features	\$597,224	ABB offered additional cyber security features that extend beyond the base requirements. These features increase security and have been tested and proven by them as an integrated system.
4	Enhancement of the existing Major Equipment Status system	\$325,641	The original scope included the replacement of this system in kind. This enhancement will integrate with the SCADA system to provide real-time plant capacity for wet and dry weather conditions.
5	Additional programming standards and testing	\$144,840	This item increases how many programming templates that ABB will need to configure. The additional templates were identified after the original scope was prepared. This also adds support for witness testing by OC San for all new programming templates.
6	Existing Control Room Upgrade Study	\$50,000	Authorizes ABB to develop a conceptual design for the new control room configurations at Plant No. 1 and No. 2 based on the new HMI system.
	Total Additional Scope Items	\$3,606,773	

As a result of these negotiations, the base bid with the additional scope items resulted in total fee of \$11,818,480. Based on the above, staff recommends awarding the task order to ABB Inc.

CEQA

The project is exempt from CEQA under the Class 1 and 2 categorical exemptions set forth in California Code of Regulations Sections 15301 and 15302. A Notice of Exemption will be filed with the OC Clerk-Recorder after OC San's Board of Directors approval of the Master Services Agreement and Task Order No. 1.

FINANCIAL CONSIDERATIONS

This request complies with the authority levels of OC San's Purchasing Ordinance. This item has been budgeted (Budget Update, Fiscal Year 2021-2022, Appendix A, Page A-8, Process Control Systems Upgrades, Project No. J-120) and the budget is sufficient for the recommended action.

ATTACHMENT

The following attachment(s) may be viewed on-line at the OC San website (www.ocsan.gov) with the complete agenda package:

- Draft Task Order No. 1
- Presentation

GR:dm:gc