



CITY OF HAYWARD
AGENDA REPORT

AGENDA DATE 06/27/06

AGENDA ITEM 5

WORK SESSION ITEM _____

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT: Authorization for the City Manager to Execute an Agreement for Professional Services for Utilities SCADA Software Conversion and Programming Upgrade

RECOMMENDATION:

It is recommended that the City Council adopt the attached resolution authorizing the City Manager to execute an agreement with Scada Support Group (SSG).

DISCUSSION:

In 1994, the City implemented a Supervisory Control and Data Acquisition (SCADA) system to monitor, gather data, and assist in control of water distribution and wastewater collection and wastewater treatment. The heart of a typical SCADA system is a computer that monitors measurable parameters such as pressure, temperature, flow rates and the like ("sensors"), and performs operations such as turning pumps on or off and opening and closing valves ("actuators"). SCADA computers are of an industrial design that require special components not typically found in personal computers.

Control Manufacturing Company (CMC) installed the current City SCADA system in 1994. CMC provided IntelliMAC computers and worked with staff to develop the proprietary program software that operates these computers. Presently, 31 IntelliMACs are used for water distribution and wastewater collection, and 11 units are used for the Water Pollution Control Facility (WPCF) SCADA system. SCADA has become an indispensable part of utility operations.

Programs that operate SCADA systems have changed as technology has advanced. The industry standard for SCADA computers has migrated to Programmable Logic Controllers (PLCs). A PLC uses a computer and special sensors and actuators to automate various process control functions in industrial applications, such as water and wastewater utilities. In order to maintain an effective SCADA system, it is necessary to convert to a PLC-based system. Projects are included in the 2006-07 Capital Improvement Program to address this need.

The first priority in this effort is implementing the conversion to a PLC-based system at the WPCF, as the Phase I WPCF Improvement Project includes installation of a PLC-based SCADA system for the new improvements.

Conversion or transition to the new system for water distribution and wastewater collection is more complex. The system is spread throughout the City and, unlike the WPCF, relies upon radio communication. Thus its architecture is more complicated and will require additional time for conversion.

The SCADA conversion and the transition to a PLC-based system is proposed to be completed through a combination of staff and consultant resources. The consultant will provide software design and programming services, record update, and field services during installation and construction. While the initial phase will focus on the WPCF conversion, this agreement for consulting services will cover the upgrade of all components of the Utilities SCADA System.

CONSULTANT SELECTION:

Staff recommends that an agreement be executed with Scada Support Group (SSG) to provide consulting services. Such services will require persons with expertise in PLC programming, SCADA architecture, and knowledge of utility and wastewater treatment operations. The current SSG team essentially developed the software for the City's existing SCADA systems in 1994. In the years since, the City has continued to use this team to maintain and make minor upgrades to the system as necessary. SSG specializes in programming SCADA processors for water and wastewater applications.

The City issued a request for proposals for consulting and design services for this project in 2005. Two nationally recognized firms responded, with proposals ranging from about \$800,000 to \$1,200,000. Both firms proposed using key members of the team from SSG as subconsultants to assist in program translation, network design and PLC programming. Given the significant cost of the proposals, staff evaluated more cost efficient means for implementing the conversion, and concluded that a significant overall cost savings will be achieved by a combined effort that coordinates software conversion through a direct contract with SSG with replacement of hardware components by staff.

PROJECT COSTS:

| | |
|---|----------------|
| Administration | \$ 30,000 |
| SSG Consulting Services | 540,000 |
| Computer and Communication Replacement for WPCF, Water Distribution and Wastewater Collection | <u>560,000</u> |
| Total: | \$1,130,000 |

FUNDING:

A total of \$1,130,000 is included in the recently approved 2006-07 Capital Improvement Program for the SCADA System.

CONSULTANT SCHEDULE:

Phase I – WPCF Conversion

Begin Phase I

July 1, 2006

Complete design, procurement, and programming

September 30, 2006

Complete field services during installation and construction

December 1, 2006

Phase II – Water Distribution/Wastewater Collection Conversion

Begin Phase II

January 1, 2007

Complete design, procurement, and programming

June 30, 2007

Complete field service during installation and construction

December 31, 2007

Prepared by:



Alex Ameri, Deputy Director of Public Works/Utilities

Recommended by:



Robert A. Bauman, Director of Public Works

Approved by:



Jesús Armas, City Manager

DRAFT

NH
4/7/06

HAYWARD CITY COUNCIL

RESOLUTION NO. 06-

Introduced by Council Member _____

**RESOLUTION AUTHORIZING THE CITY MANAGER
TO EXECUTE AN AGREEMENT BETWEEN THE CITY
OF HAYWARD AND SCADA SUPPORT GROUP FOR
PROFESSIONAL SERVICES FOR THE UTILITIES
SUPERVISORY CONTROL AND DATA SYSTEM
SOFTWARE CONVERSION AND PROGRAMMING
UPGRADE**

BE IT RESOLVED by the City Council of the City of Hayward that the City Manager is hereby authorized and directed to negotiate and execute on behalf of the City of Hayward an agreement with Scada Support Group (SSG) for professional services to upgrade the existing Utilities Supervisory Control and Data Acquisition (SCADA) System, in an amount not to exceed \$540,000, in a form to be approved by the City Attorney.

IN COUNCIL, HAYWARD, CALIFORNIA _____, 2006

ADOPTED BY THE FOLLOWING VOTE:

AYES: COUNCIL MEMBERS:
MAYOR:

NOES: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ATTEST: _____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

City Attorney of the City of Hayward