City of Santa Clara

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Agenda Report

19-934   **Agenda Date: 12/3/2019**

REPORT TO COUNCIL

SUBJECT
Action on an Agreement with HSQ Technology for the Upgrade of an Existing MISER Supervisory Control and Data Acquisition (SCADA) Core System

BACKGROUND
The City's potable water distribution system infrastructure is comprised of approximately 335 miles of water mains, 27 wells, seven above ground potable water storage tanks with more than 28 million gallons of water storage capacity, three water import connections, nine emergency standby connections to external water systems, and four booster pump stations. The City's sewer collection system consists of more than 288 miles of sewer main with two pump stations and five lift stations controlling flow to the San José-Santa Clara Regional Wastewater Facility (RWF). The City's storm drain system has 22 pump lift stations.

The department uses HSQ Technology's Supervisory Control and Data Acquisition (SCADA) system to monitor and control the City's water, sewer, and storm drain infrastructure described above. The SCADA system is utilized by both the Water and Sewer Utilities Department and the Public Works Department's Storm Division ("Storm"). SCADA data is stored in a proprietary HSQ database and mirrored to a relational database on the City's business network. The SCADA system monitors water, sewer, and storm stations and can control a small number of water components.

The system was originally installed in the early 1990's. Servers, computers, hardware, software, and components throughout the system are aged, obsolete and beyond their useful life. Most of the work on the system is repairing and/or replacing components with similar or hard to find parts, on an as-needed or an emergency basis. Some servers and workstations were upgraded in 2000 to keep up with repairs and updates. However, many of the circuit boards in the control panels at the remote sites are over 20 years old and in need of upgrades. The core system consists of two legacy Servers, two legacy Work Stations, one Master Radio, network appliances, and software, all located at the City Corporation Yard. There are approximately 1700 points being monitored over approximately 60 Remote Telemetry Units (RTU).

DISCUSSION
Staff requested a proposal from HSQ to upgrade computer hardware, software, and network and relocate key components of the core system to an existing fiber network. In addition, the City desires to install a second antenna/master radio on an existing tower at the SCADA Building, to rectify the single point of failure problem that currently exists with having only a single master radio (located near the electric meter shop).

The following sites with specified equipment are getting upgraded in addition to networking connections between the locations:

	Water & Sewer Operations Library	Emergency Operations Center	SCADA Building	City Hall Data Center	City Hall Water & Sewer Office
Rack	1	1	1	existing	
Switches	2	2	2	2	
Workstation	1	1	1		
Windows client	3				1
Server			1	1	
Master Radio & Antenna	1		1		

Importantly, the core system will be deployed on a closed network, utilizing purpose-built Silicon Valley Power (SVP) dark fiber. In addition, the servers will be housed in the recently constructed SCADA Building at the Corporation Yard and at the City Data Center at City Hall; both facilities are designed for cyber security. This upgrade is an essential step to enable reliable and continuous monitoring and operation and provide preparatory infrastructure in order to move forward with subsequent upgrades of critical in-field hardware and programming components such as:

- Upgrade remote sites for primary communication over already installed fiber network;
- Downgrade existing Radio Network to secondary, backup network;
- Upgrade sub-components at remote sites as needed for communications over less proprietary protocols; and
- Add points/tags and upgrade functionality, including control, as desired / needed.

A core upgrade is required in order to maintain compatibility and operability with the numerous remote sites. The remote sites would not be able to communicate with a non-HSQ core and upgrading the remote sites simultaneously would entirely change the scope and intent of this effort. Once the HSQ core system has been upgraded and moved to fiber, there would be options to transition remote sites to less proprietary equipment and protocols and subsequent project phases may be candidates for competitive solicitation. The remote sites could also be outfitted with equipment allowing it to communicate on the faster and more reliable fiber network, leaving the radio network as an effective backup.

This recommendation meets the single/sole source criteria in Section 2.105.160(b)(2) of the City Code "When required to ensure operation or function to match other products with respect to repair, expansion, or completion of a system, existing structure or program currently in use by the City, including, but not limited to, utility and technology purchases required to achieve interoperability with existing systems or programs."

HSQ submitted a quote with a not-to-exceed amount of $452,353. Staff benchmarked HSQ's proposed pricing against projects at other cities in the area including San Jose, Palo Alto, Burlingame, Millbrae, and Turlock. In addition, the vendors Standard Parts and Service Price List

has been reviewed and is the basis for their quotation. Pricing was therefore deemed to be fair and reasonable.

ENVIRONMENTAL REVIEW
This project being considered is exempt from the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines section 15301, "Existing Facilities," as the activity consists of the repair, maintenance or minor alteration of existing facilities involving no or negligible expansion of the use beyond that presently existing.

FISCAL IMPACT
The Water & Sewer Utilities Department has sufficient budget in the SCADA Replacement and Process Improvement Project in the Water Utility Capital Fund to cover the not-to-exceed amount of $452,353 and a 10% contingency for this project. Ongoing maintenance will be programmed in future operating budgets, subject to the appropriation of funds.

COORDINATION
This report has been coordinated with the Finance Department, the City's IT Department, Silicon Valley Power Utility and the City Attorney's Office.

PUBLIC CONTACT
Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall Council Chambers. A complete agenda packet is available on the City's website and in the City Clerk's Office at least 72 hours prior to a regular meeting and 24 hours prior to a Special Meeting. A hard copy of any agenda report may be requested by contacting the City Clerk's Office at (408) 615-2220, email clerk@santaclaraca.gov <mailto:clerk@santaclaraca.gov> or at the public information desk at any City of Santa Clara public library.

RECOMMENDATION
Authorize the City Manager or designee to negotiate and execute an agreement with HSQ Technology to upgrade the SCADA system used to monitor and control Water, Sewer, and Storm Infrastructure for a not-to-exceed amount of $452,353 plus an additional 10% of the final negotiated not-to-exceed amount as contingency to cover any unanticipated costs that may result due to changes in final configuration or issues encountered during the implementation phase.

Reviewed by: Gary Welling, Director of Water & Sewer Utilities
Approved by: Deanna J. Santana, City Manager

ATTACHMENTS
1.   HSQ Quotation