



Legislation Text

File #: 18-5415, **Version:** 1

ENGINEERING SERVICES CONTRACT WITH RH2 ENGINEERING FOR REDESIGN AND RECOVERY OF SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM FOR WATER, SEWER AND STORMWATER FACILITIES

COUNCIL STRATEGIC INITIATIVE ADDRESSED:

Provide sustainable water quality & environmental infrastructure

CITY ATTORNEY REVIEW: REQUIRED

SUMMARY STATEMENT:

The City's SCADA system utilizes a network of wired and wireless communications operating on licensed 900 MHz frequencies to connect two radio towers, nineteen remote sites and three control sites into a supervisory network for monitoring and control of its water supply and distribution system, and its stormwater and wastewater collection systems. The SCADA system was commissioned in 2014 and operates under four licensed radio station authorizations issued by the Federal Communications Commission (FCC). Despite having standard modern equipment and licensed frequencies, radio interference created by transmitters not present at the time of design or construction cause frequent and ongoing communication failures which have rendered the SCADA system unreliable. City staff considered and consulted with several radio experts regarding this interference, and determined that attempting to locate the source(s) of interference and require mitigation is not feasible. While the FCC is ultimately responsible for the protection of licensed frequency bands, enforcement is seemingly absent in these frequency bands.

The City also utilizes a radio telemetry system which operates on a licensed 460 MHz frequency to connect water reservoirs to their respective pump stations, and to the Mint Farm Regional Water Treatment Plant. This telemetry communication was implemented due to hard-wire failures, pre-dated the centralized 900 MHz SCADA network, and was left in place as a back-up. The 460 MHz system was not originally intended or designed for city-wide use but has proven to be more reliable and is currently being expanded to automate lake flushing operations. Due to the interference issues experienced with the 900 MHz system, staff recommends scaling up the 460 MHz system for city-wide SCADA communication, and discontinuing use of the 900 MHz system. Multiple communications methods are available including spread spectrum radio, cellular telephone, leased telephone, fiber optic and microwave, but none have been shown to be more cost-effective and reliable than the 460 MHz system.

In accordance with Washington state law regarding selection of professional engineering services, staff selected RH2 Engineering as the most qualified firm to provide services necessary for the recovery of the City's SCADA system. RH2 will review the existing SCADA architecture and computer servers use and capacities, perform a communication method and path study to confirm reliability of an expanded 460 MHz frequency and recommend solutions for reception dead zones, inventory site hardware and system software, provide recommendations for optimization, prepare a bid-ready conversion plan to migrate existing 900 MHz SCADA sites over to the 460 MHz frequency, provide a design report and templates to systematically add/upgrade future sites, and obtain authorization from the FCC as needed for additional licensed frequencies. Along with the necessary upgrades to restore functionality, the re-design will include a review of communication paths to and from essential facilities to ensure redundancy and distributed control.

FINANCIAL SUMMARY:

This agreement is estimated to cost \$149,852, which will be funded 30.4% by the Water Construction Fund, 62.3% by the Sewer Construction Fund, and 7.3% by the Stormwater Fund.

RECOMMENDED ACTION:

Motion to approve the agreement with RH2 Engineering for SCADA re-design services.