CITY OF WASHINGTON, ILLINOIS
City Council Agenda Communication

Meeting Date: Monday May 6th, 2024

Prepared By: Brian Rittenhouse – Public Works Director

Agenda Item: Purchase Authorization – Wastewater Treatment Plant SCADA Migration to Ignition.

Explanation: The City has three independent Supervisory control and data acquisition/Human Machine Interface (SCADA/HMI) systems utilizing two different software platforms. Carefully combining the three systems into one platform would create efficiencies in operational and licensing/support costs. Also, the implementation of a more modern software platform will provide the City with some new and significant features, such as secure mobile access, historical datalogging, redundancy, and improved alarm management. The transition to one SCADA/HMI system will take several phases to implement.

The Central SCADA System, Phase I, was completed last fiscal year. The Wastewater Treatment Plant's Migration to Ignition is consider Phase II, on the Wastewater side.

Concentric Quoted $187,640.00 for FY 24-25 for the attached recommendations.

Fiscal Impact: Request $187,640.00. $180,000.00 was budgeted for the Central SCADA System Improvements. There are sufficient funds to cover the overage.

Recommendation: Staff recommends contracting Concentric Integration to complete the Wastewater Treatment Plant SCADA Migration over to Ignition. This was an identified project in the SCADA Master Plan that was brought before Committee of the Whole in December of 2022. It was Recommended as a CIP Project.

Action Requested: Authorization to contract Concentric Integration to complete the Wastewater Treatment Plants SCADA Migration to Ignition in a not-to-exceed amount of $187,640.00.

April 22, 2024

Mr. Brian Rittenhouse
Public Works Director
City of Washington, IL
107 Legion Rd
Washington, IL 61571

Subject: WWTP SCADA Migration

Concentric Project Number: 2400686.00

Dear Mr. Rittenhouse:

The wastewater treatment plant SCADA system is currently using Wonderware Intouch 2014 R2 SCADA software for monitoring and control of the site. This version of Intouch is no longer supported by the software developer; therefore, the software no longer receives security updates or performance improvements. Concentric Integration recommends replacing the Wonderware Intouch SCADA system with Inductive Automation's Ignition SCADA platform and tying the wastewater system into the new Central Server architecture that was started with the Lift Station SCADA system. This will bring the City another step closer to a unified SCADA architecture across all Public Works facilities.

Scope of Services

Equipment

Concentric will provide the following equipment:

1. Quantity two (2) Dell Desktop Computers with the following requirements:
    a. Dual 27" Displays
    b. Minimum Core i7 multicore processor
    c. Minimum 16 GB RAM
    d. Minimum 256GB SSD operating system hard drive
    e. Minimum 1TB SSD file storage
2. Quantity one (1) Sierra Wireless RV50X Cellular Router.
3. Quantity one (1) Sierra Wireless MIMO Antenna.
4. Quantity one (1) Verizon SIM Card.
5. Quantity one (1) Yeastar S20 VOIP to landline adapter.
6. Quantity one (1) FortiGate Rugged 60F firewall with 3 years of support

7. Quantity one (1) Inductive Automation software package with 2 Perspective runtime client licenses, alarming module with voice and SMS, and enterprise management.

8. Quantity one (1) Inductive Automation Redundancy license.

9. Quantity one (1) Inductive Automation 1-year Basic Care support package.

Labor

Project Management

1. Plan, schedule, and coordinate the activities required to complete the Project.

2. Coordinate a phone-based kick-off call.

3. Provide monthly Project status updates via email.

4. Coordinate with the City's IT provider as it relates to the Project.

5. Manage a punch-list upon the last task of the Project.

   a. The City's Project Manager will be responsible for providing punch-list items to Concentric's Project Manager.
   b. Punchlist will be agreed up between Concentric's and the City's Project Manager(s) two weeks after the last task of the Project.

SCADA Firewall and Cellular Dialer

1. Furnish, install, and configure one (1) FortiGate Rugged 60F SCADA firewall to isolate and secure the SCADA network from the rest of the Public Works network.

2. Setup VPN back to Legion Road facility to create a secure connection between the wastewater plant and the central server for remote access and historical data logging.

3. Furnish, install, and configure one (1) Sierra Wireless RV50X to serve as the SMS gateway for SCADA text alerts.

4. Provide, install, and configure one (1) Yeastar S20 to generate phone calls for SCADA alarms.

SCADA Desktop Computers

1. Provide and provision two (2) desktop clients to act as dedicated SCADA workstations to provide local monitoring and control of the Wastewater Treatment Plant. The desktop workstations will serve as a remote tag provider for the central server.

2. Deploy desktop computers within the Wastewater Treatment Plant.

3. Upon completion of this Project, the City of Washington will have full ownership of the SCADA computers and data within. Concentric will provide continued support through separate maintenance support contract to assist the City in maintaining their SCADA system.

SCADA Software Configuration

1. Configure new SCADA desktop with Ignition SCADA software application:

   a. Configure Ignition's Allen-Bradley device driver to communicate and poll information from the existing plant PLCs, SCC-20, SCC30, SCC-70, and SCC-85.
   b. Configure datapoints (tags) in Ignition to maintain existing monitoring and control provided within the existing Wonderware Intouch SCADA system.

2. Migrate the existing alarms configured in the existing Wonderware Intouch application into Ignition:

   a. Coordinate with the City to create alarm pipelines within the Ignition platform to notify City staff according to the City's desired call out roster.
   b. Configure Ignition to connect to the existing phone line through the provided Yeastar S20.
   c. Configure Ignition to generate SMS text messages when an alarm condition occurs. Operators will have the capability to acknowledge the alarm(s) by sending an acknowledgment code back to Ignition via text message.

3. Configure the Ignition platform to integrate with the SCADA Active Directory for SCADA user management.

SCADA Historian

1. Configure the Ignition system to historize datapoints with the central Ignition server at Legion Road to provide the same data logging configured within the existing Intouch application.

2. Coordinate with the City to setup a data retention policy for historical data. Historical data may be pruned after a designated amount of time to maximize SCADA historian storage space.

3. Configure, store and forward for historical logging on the local desktop in the event the connection between the wastewater facility and the Legion Road central server is unavailable.

SCADA Graphic Development

1. Develop graphics using High Performance HMI graphic standards. High performance graphics emphasizes situational awareness, displaying critical data strategically to make quick decisions regarding the process. Below are some High-Performance HMI standards Concentric recommends implementing:

   a. Analog values, such as flow rates, pressures, tank levels, etc., will be visualized graphically and numerically. Graphical depictions of analog process values allow users to glance at SCADA and visually see whether the value falls within an acceptable range. It also provides benefit to see when a value is about to go into a warning or alarm condition, enabling users to change the process before an alarm condition occurs.

b. When values do fall outside the acceptable range, that graphics will alert users three ways: change of color, text stating the condition, and a visible warning or alarm symbol.
c. High performance graphics omit using unnecessary animated graphics, pictures as backgrounds, and inconsistent color-coding that can distract users.
d. The color scheme within the graphics will limit the use of color. Color will be specifically used and be consistent in definition. The colors selected will also consider colorblindness.
e. Graphic displays will generally follow a four-tier hierarchy:
Level 1: Overview of the entire system with only critical KPI's shown
Level 2: Process specific overview with trends showing past process behavior
Level 3: Specific sub-process or site data displayed
Level 4: Pop-window with capabilities to control the sub-process of site

2. Develop both a desktop and mobile version of the SCADA graphics as follows:

f. The desktop version will be accessible via web browser. Graphics wills scale accordingly to fit various screen sizes.
g. The mobile version will be accessed via the Ignition Perspective mobile application and optimized for user on smaller devices.
h. Both desktop and mobile version will be accessible remotely through the City's SCADA VPN (Virtual Private Network) connection.

3. Configure security with individual user accounts limiting each user group to certain SCADA functionality and/or specific graphics.

4. Provide visibility and control for the datapoints currently in the City's existing SCADA system. The datapoints will be reformatted to adhere to the High-Performance graphics standards mentioned above in Ignition.

5. Configure graphics to adhere to the agreed upon styles and elements from the Graphics Standards Meeting that was conducted with City personnel in 2023. Graphics will undergo an internal review process before presented to the City. The City will then have an opportunity to review the graphics and provide one round of comments for changes. Once the comments from the City are implemented, the graphics will be published and considered final. Additional modifications to the graphics, after the initial round of comments, may be provided outside this contract on a T&M basis.

6. The graphics developed for the two desktop computers will also be imported to the central server for remote viewing.

Local Redundancy

1. Configure the second desktop computer as a redundant Ignition server. In the event the primary desktop computer becomes unavailable or unresponsive, the software will automatically failover to the redundant server.

Training

1. Provide up to eight (8) hours of onsite training for City Staff on using the new SCADA system.

Documentation

1. Provide via USB flash drive or secure electronic file-share using Microsoft OneDrive, or similar, electronic copies of the following:

   a. An updated network diagram, detailing the new SCADA system.
   b. Ignition SCADA backup.

Fee

Our fee for the above scope is a lump sum of $187,640.

This proposal is valid for 90 days from the date issued.

Concentric Assumptions / Customer Responsibilities

1. Customer will assign an initial Project manager at the Project kick-off meeting.

2. Customer will provide a connection into the City's MPLS connection at the WWTP facility to connect back to the Legion Road facility.

3. Customer will provide site access for installation, programming, and startup during Customer's normal business hours. Work outside of Customer's normal business hours can be agreed upon as needed, provided Concentric can secure the site(s) upon departure.

4. Customer understands that all existing equipment to remain is assumed to be in good, working order. In the event that any other equipment does not perform as-expected, Concentric will work with the Customer to repair, as-needed, under a separate contract.

5. Customer will dispose of/recycle any removed equipment.

Annual Support

This Project will add additional hardware and software to the Customer, some of which has support or maintenance associated with it. Concentric recommends the Customer maintain any applicable support agreements once the initial support/warranty periods expire. On this Project, we have included the following support agreements, that all begin approximately at the date the product is shipped (not necessarily the date it is onsite) and last for periods varying from one year to three years.

Following is the recommended support and estimated amounts for annual renewals (this is provided solely for budgetary purposes and will need to be quoted at the time of renewal):

Description	Annual Renewal
Sierra Wireless RV50X Airlink Complete	$55.00
Inductive Automation Basic Care	$2,795.00
Total	**$2,850.00**

Manufacturer standard warranty on all other hardware

Description	3 Year Renewal
FortiGate-60F 3 Year Enterprise Protection	$1,405.00
FortiGate-60F 3 Year 4-Hour Hardware Delivery Priority RMA Service	$925.00
FortiGate-60F 3 Year FortiGate Cloud Management	$405.00
Total	**$2,735.00**

Manufacturer standard warranty on all other hardware

Project Schedule

Our estimated Project schedule will be agreed upon at the Project kick-off meeting.

Warranty

The warranty listed in the Standard Terms and Conditions (Paragraph 12.2):

☒ DOES apply
☐ DOES NOT apply

Standard Terms and Conditions References

Effective Date: The Effective Date of this Proposal and the associated Standard Terms and Conditions shall be the date this Proposal is accepted as shown by Customer's dated signature below.

Third Party Materials (See Standard Terms and Conditions Paragraphs 3.2 & 8.3):

☒ DOES apply
☐ DOES NOT apply

Notices: Notices required to be provided to Customer in accordance with Paragraph 16.3 of the Standard Terms and Conditions shall be delivered to the individual and address given above, unless Customer provides updated notification information to Concentric in writing

Standard Terms and Conditions

Concentric Integration, LLC's Standard Terms and Conditions, Version 10.2 (V10.2), located at http://goconcentric.com/standard-terms/ are hereby incorporated into this Project Proposal as though fully attached hereto. By signing below, each of the undersigned represents and warrants that Concentric Integration, LLC's Standard Terms & Conditions are legal, valid and binding obligations upon the parties for which they are the authorized representative.

Acceptance

If this proposal is acceptable, please sign one copy and return to us. Feel free to contact me if you have any questions.

Sincerely,

CONCENTRIC INTEGRATION, LLC

Michael D. Klein, PE
President
MDK

CUSTOMER:
City of Washington, IL

ACCEPTED BY: _____

TITLE: _____

DATE: _____

P:\WASHC\2400686-WWTP SCADA\Contracts\Work\2400686.00 WASHC WWTP SCADA Proposal.docx