

## **Request for Proposals**

### **Water System Telemetry & Controls – Implementation Contract #2021-31**

#### **1. INTRODUCTION**

The City of Duvall Public Works Department is seeking proposals from qualified firms with experience as a system integrator and with the capability to complete design, programming, installation, and construction support services for the complete replacement of the City's water utility SCADA system. Details are as outlined in this Request for Proposals (RFP) document and the City of Duvall's draft SCADA Master Plan, dated July 2020. A copy of the SCADA Master Plan can be provided via email in PDF format upon request and will also be posted on the City's website ([www.duvallwa.gov](http://www.duvallwa.gov)). The City invites you to submit a Proposal and Statement of Qualifications **no later than 11:00 AM on Wednesday June 30<sup>th</sup>**.

#### **2. BACKGROUND**

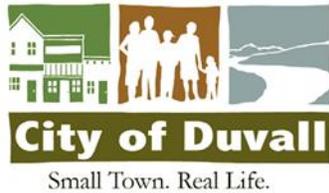
The City of Duvall is located in the Snoqualmie River Valley in eastern King County, approximately 20 miles northeast of Seattle. The City is approximately 2.5 square miles in area and has a population of 8,200 residents. The City is located along State Route 203, between the valley communities of Carnation and Monroe.

The city purchases water as a contracted wholesale customer from Seattle Public Utilities (SPU) and supplies its customers with this water through two intertie connections to the SPU Tolt pipeline. The city's water system facilities include the two Tolt supply stations, two welded steel reservoirs, a closed zone pump station, several pressure-reducing valve stations, and several chlorine residual monitoring stations.

The City currently is unable to remotely monitor and control any of its water system facilities, due to non-functioning telemetry and SCADA equipment that is obsolete and has exceeded its useful service life. Facilities with existing SCADA equipment include two supply stations with connections to the SPU Tolt pipeline, two water storage reservoirs, and one pump station.

#### **3. CONSULTANT QUALIFICATIONS**

Qualified consultants shall provide evidence of relevant experience in SCADA and telemetry systems engineering, design, installation, configuration, programming, and integration in support of the City's selected technology as outlined in the SCADA Master Plan. Additional qualifications include



familiarity with HMI and PLC programming, instrumentation selection and field calibration / troubleshooting, and significant experience with programming for water systems.

#### **4. SCOPE OF WORK**

The project includes priority improvements to be implemented first include complete replacement of all SCADA equipment at the two supply stations, two water storage reservoirs, and pump station; replacement of the SCADA workstation/master telemetry unit (MTU) with three new SCADA workstations, and replacement of the leased telephone telemetry system with cellular-based telemetry. Additional improvements will be implemented by this project upon completion of the priority improvements. This will include new SCADA equipment at the seven (7) chlorine residual monitoring stations and remote monitoring equipment at four (one each zone) of the pressure-reducing stations.

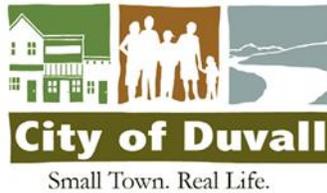
It is the intent of the Contract Documents to describe the work necessary to functionally complete and to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided by the successful contractor whether or not called for specifically. Additional details are provided in the attachments to this Scope of Work. The vendor shall be solely responsible for estimation and verification of all components necessary to complete the work.

The following scope of work for this project is based on the City of Duvall's Water System Telemetry and Controls SCADA Master Plan, draft dated July 2020; and describes the minimum acceptable requirements for the SCADA system. Consultants are encouraged to demonstrate their specific knowledge of the project and to include any additional information that may be appropriate for successful completion of the proposed improvements. The proposal and cost estimate for the Scope of Work below shall include all labor and materials necessary to remove existing equipment, complete installation of a new properly functioning SCADA system including all hardware and appurtenances, appropriate software and licensures, industry standard documentation of the work performed, operations manual, and two one-day training sessions for City staff on proper operation of the new SCADA system. The proposal should also include tasks to integrate surveillance cameras and site security features (including equipment, hardware and software) at the two reservoir sites.

#### **Project Details**

##### **Task 1 – RTU and Communications Replacements**

This task consists of the removal, replacement and programming of all SCADA and communications equipment at the Tolt 1 Supply Station, Tolt 2 Supply Station, Crestview Reservoir, Big Rock Road Reservoir, and Big Rock Road Pump Station (note - the Big Rock



Road Reservoir and Big Rock Road Pump Station are located at the same site), as shown below. The new equipment will provide real-time information on the system including flow and pressure. This task will also include adding and programming new SCADA and communications equipment at all seven (7) chlorine monitoring stations and at four of the pressure-reducing station sites, as shown below. All sites shall be standardized in their hardware, including the PLC, OIT, and cellular modem.

RTU Hardware at Tolt 1, Tolt 2, Crestview Reservoir, and Big Rock Road Reservoir/Pump Station Sites:

- PLC with input/output modules– Allen Bradley CompactLogix
- OIT – Allen Bradley PanelView, or Cmore EA9 series touch panel
- Cellular Modem
- Cellular Antenna with surge protection, mounted outside to improve reception
- Uninterruptable Power Supply
- DC Power Supply
- Electrical Surge Protection
- Terminal blocks and fuses required to integrate existing equipment and instrumentation
- NEMA 4 Enclosure with 3-point latch and lock
- Battery for loss of power connection

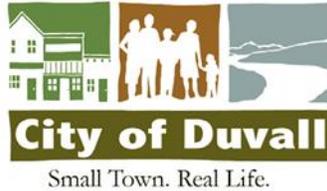
Each RTU's PLC and OIT shall be programmed to control the existing equipment and instrumentation. This program shall be written after uploading and review of the existing PLC program.

RTU Hardware at Chlorine Monitoring Stations:

- PLC with input/output modules– Allen Bradley CompactLogix or MicroLogix
- Cellular Modem
- Cellular Antenna with surge protection, mounted outside to improve reception.
- Uninterruptable Power Supply
- DC Power Supply or Battery powered as determined by site characteristics
- Electrical Surge Protection, as necessary
- Terminal blocks and fuses required to integrate existing equipment and instrumentation
- NEMA 4 Enclosure with 3-point latch and lock

Signals that should be monitored include:

- Chlorine Level (mg/L)



- Chlorine Monitor Fault Alarm
- RTU Power Okay
- RTU Intrusion Alarm

#### RTU Hardware at Pressure Reducing Stations:

Pressure monitor, with battery units

- Pressure Transducer
- Cellular Modem
- Cellular Antenna with surge protection
- Waterproof enclosure
- Replaceable Battery

Signals that should be monitored include:

- Pressure
- Pressure High Alarm
- Flow
- Vault Intrusion Alarm
- RTU Power Okay

### **Task 2 – SCADA Workstations**

This task consists of the installation and configuration of three SCADA workstations for the City's Public Works Department. Each of these workstations shall be standard reliable PCs with Windows 10 operation stations, equal to equipment commonly used for this purpose, and be accessible via a VPN remote desktop connection. Each shall all be installed on their own dedicated SCADA network.

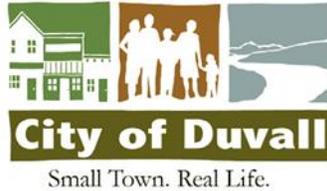
One of the workstations, located at the Engineering office, shall be designated as the primary station where the main HMI application and data logging occurs. It will communicate with the RTUs over a VPN cellular network. It will distribute this data via the HMI application to the other workstations. This primary station will also contain HMI development software, the main data logging and reporting software.

A second workstation will be installed in the Public Works Engineering Office in a location where multiple staff members can monitor it, such as the conference room, or other common area. This station will also be made available for remote access via a remote desktop connection (RDP).

A third workstation will be installed at a separate site, in the Public Works Maintenance and Operations (M&O) building. This station will be set up for remote access by M&O staff through a VPN and RDP connection.

### **Task 3 – SCADA Software**

The following software shall be installed on the SCADA workstations (city can provide preferred models if desired), configured and programmed for a fully functional system:



- HMI: Wonderware Intouch for HMI capabilities with the Historian add-on to access the data logging tool. Microsoft SQL will be used to store the data.
- Alarm: TopView by Exele for primary emergency alarm capabilities; to be installed on one of the workstations.
- Data Logging and Reporting: SyTech XLReporter, which uses Microsoft Excel to generate automatic and on-demand reports of logged data. See the SCADA Master Plan for data to be logged.

The following PLC programming software shall be used:

- Rockwell Studio 5000 PLC programming software to be used for the Allen Bradley CompactLogix PLCs. The System Integrator will be expected to use their own software licenses for the PLC software.

The project will include any and all costs necessary for the City to obtain appropriate software licensing.

#### **Task 4 – Alarm Management**

The following alarms shall be programmed into the HMI and emergency alarm systems:

##### Tolt 1 and Tolt 2

- Valve Vault Flood
- Flow Meter Vault Flood
- RTU Power Fail
- UPS Power Fail
- UPS Battery Low
- Intrusion
- High & Low Pressure
- Communications Failure

##### Crestview Estates Reservoir

- Reservoir Level High
- Reservoir Level Low
- Valve Vault Flood
- Flow Meter Vault Flood
- RTU Power Fail
- UPS Power Fail
- UPS Battery Low
- Intrusion
- High & Low Pressure
- Communications Failure

##### PRV Station

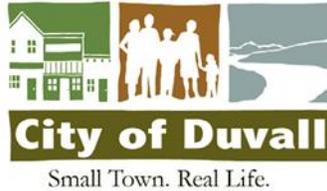
- High Pressure
- Low Pressure
- RTU Power Failure
- Intrusion
- Communication Failure

##### Chlorine Monitoring Stations

- Low Chlorine Level
- Intrusion
- RTU Power Failure
- Chlorine Monitor Fault
- Communication Failure

##### Big Rock Rd Reservoir & Pump Station

- Reservoir Level High
- Reservoir Level Low
- Valve Vault Flood
- Flow Meter Vault Flood
- RTU Power Fail
- UPS Power Fail



- UPS Battery Low
- Intrusion
- High & Low Pressure
- Communications Failure
- Pump #1 Fault
- Pump #2 Fault
- Pump #3 Fault
- Smoke Detector
- Utility Power Fail
- Generator Running
- Generator Trouble
- Generator Low Fuel
- Generator not in Auto
- Chlorine monitoring in tank

### **Task 5 – SCADA Cybersecurity**

The following security measures shall be implemented by the System Integrator and enforced and maintained by both them and the City.

1. Allow only trusted partners to establish a remote connection. Analyze each connection to the SCADA system to assess the risk and necessity.
2. Two-factor authentication to access the SCADA system
3. Strong passwords to avoid “brute force” attacks
4. Password changes at least twice per year
5. Role based access for HMI operation as follows:
  - a. Junior Operator – Can view the process but not change setpoints or acknowledge alarms
  - b. Operator – Can monitor/control the process, change basic setpoints and acknowledge alarms
  - c. Supervisor – Can change important setpoints and shelf non-critical alarms
  - d. Engineer – Can make programming and configuration changes to SCADA
  - e. IT – Can make changes to IT system, including changes to the firewall and remote login gateway
6. SCADA workstations remain dedicated to that purpose. Disable all unnecessary operating system services such as email and internet, unless deemed necessary.
7. Use static IP addresses for SCADA computers and devices
8. Install and maintain antivirus software, malware software, and a firewall. Proposal shall include any additional methods to protect against malicious attacks and describe such methods & recommendations in the operations manual

### **Task 6 – Maintenance**

At the City’s sole discretion, the selected System Integrator may be retained for ongoing support and maintenance of the SCADA system software and hardware. Tasks may include:

- Software patches, replacing computers, adding site and monitoring capabilities, and regular backup of databases.
- Evaluating SCADA computers once a year to ensure hardware and software are secure and operating reliably. The evaluation should identify any software security



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vulnerabilities, any software/hardware compatibility concerns, and any recommended upgrades.

- Maintain SCADA and control system documentation. This documentation will be stored in a secure file folder on the City's network. The SCADA network diagram should be updated when additional sites are brought onto the SCADA network.

## 5. PROJECT COST ESTIMATE

Proposals shall include detailed preliminary cost estimates separated by each task listed in the Scope of Work, at a minimum. A range of costs for each task can be provided, though the range should not vary by more than 20%. Cost estimates shall be provided in tabular format. The local WA State Sales Tax rate of 8.9% shall be applied to the sum.

Tasks 5 and 6 of the scope, Cybersecurity and Maintenance respectively, are ongoing procedures instead of singular actions. The costs for these two tasks shall be presented as estimated annualized costs, based on the personnel time, materials, and equipment needed to accomplish the items listed under each of these tasks.

## 6. SUBMITTAL CONTENT REQUIREMENTS

Consultants are encouraged to submit concise and clear responses to the RFP. Proposal lengths exceeding maximum page limits may result in disqualification of proposals. Proposals shall be submitted via email as PDF's to the City representative.

1. **Letter of Interest (1 page maximum):** Indicate interest and availability to address project elements.
2. **Project Approach (1 page maximum):** A brief description of the consultant's philosophy, approach to the project, and value-added services to offer the City.
3. **Scope of Work (2-3 pages maximum):** Describe approach to accomplish the tasks stated in the RFP. The consultant is encouraged to include suggestions or supplemental tasks which may enhance the project or streamline the scope of work and improve outcomes or cost effectiveness.
4. **Schedule (1 page maximum):** Include a timeline showing the estimated length of time required for completion of the tasks described in the scope of work. Text may be provided to describe the schedule.
5. **Cost Summary (1 page maximum):** Provide a preliminary cost summary of the work to be completed, in accordance with the Project Cost Estimate section of this RFP.
6. **Project Team (2 page maximum):** Identify the proposed team, including sub-consultants, qualifications, experiences, and references. Identify the project manager and principal contact who will be assigned to the project from start through project completion. Identify key team members proposed for this project including areas of expertise, years of experience, certifications, and a brief bulleted list of individual project experience.
7. **Relevant Experience (2 pages Maximum):** Describe the consultant's relevant experience with other projects with a similar scope of work. Include at least three recent projects the



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consultant has completed that are similar to the project described in this RFP. For each project, provide the following information:

- Name and location of project
- Year completed
- Name, email, and phone of client representative that is knowledgeable of the project.
- Elements of the project that are common to the elements described in this RFP.

## 7. EVALUATION OF PROPOSALS

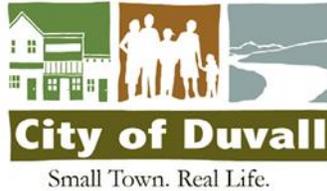
Each proposal will be evaluated and given a score based upon the quality of response to each of the following criteria. The maximum number of points that can be scored is 100.

1. Project Timeline/Availability – 10 points maximum  
Consultants will be rated on their availability to accomplish the work and ability to present a reasonable project timeline while meeting project goals.
2. Expertise – 25 points maximum  
Consultants will be rated on: 1) the qualifications of the members of the proposed team, including the responsibilities and skills of the each team member and the makeup of the team relative to the scope of the project, 2) demonstration that the project team clearly understands the project's objectives and technical requirements and 3) familiarity with this type of work.
3. Experience – 25 points maximum  
Consultants will be rated on their past experience and demonstrated success in performing work similar to that described in this request.
4. Thoroughness/Clarity of Proposal – 20 points  
Consultants will be rated based on the thoroughness and clarity of the proposal.
5. Project Scope and Cost Estimate – 20 points  
Consultants will be rated based upon the thoroughness of the detailed scope and cost estimate.

The City's selection committee will review all proposals based upon the above-stated criteria and may invite top scoring Consultants to make individual presentations.

## 8. SUBMISSION OF PROPOSAL

Interested parties are encouraged to submit clear and concise responses to the RFP. Proposals may be submitted via email to the City Contact listed below and are due no later than 11 AM on Wednesday June 30<sup>th</sup>, unless revised by addendum. It is the duty of the vendor to



## 9. ANTICIPATED TIMELINE FOR CONSULTANT SELECTION

It is the City's desire to select a consultant, complete competitive negotiations (per RCW 39.04.270), and execute the contract in general accordance with the following schedule:

June 30 <sup>th</sup> , 2021 –	Proposals Due
July 14 <sup>th</sup> 2021 –	Proposal Evaluations and Scoring Complete
July 21 <sup>st</sup> , 2021 –	Interviews (if necessary)
July 14 <sup>th</sup> to 28 <sup>th</sup> –	Negotiate Final Details of Scope and Price
July 28 <sup>th</sup> , 2021 –	Contract Negotiations Complete, Contract to Council
August 3 <sup>rd</sup> , 2021 –	Council Authorizes Mayor to Sign Contract

## 10. CITY CONTACT

For any additional information or questions regarding this RFP, or to request a copy of the RFP documents via email, please contact Shaun Tozer, Project Manager at 425-939-8046, or by email at [shaun.tozer@duvallwa.gov](mailto:shaun.tozer@duvallwa.gov). Documents will also be posted to the City's website at [www.duvallwa.gov](http://www.duvallwa.gov)

## 11. TERMS AND CONDITIONS

The City reserves the right to reject any and all responses to this RFP and to waive irregularities and informalities in the submittal and evaluation process. This solicitation for proposals does not obligate the City to pay any costs incurred by respondents in the preparation and submission of a response. This solicitation does not obligate the City to accept or contract for any expressed or implied services. Furthermore, the City reserves the right to award the contract to the next most qualified Consultant if the selected Consultant does not execute a contract within thirty (30) days after the award of the proposal. The City's standard contract forms will be the basis of all terms and conditions.

Under Washington state law, the documents (including but not limited to written, printed, graphic, electronic, photographic or voice mail materials and/or transcriptions, recordings or reproductions thereof) submitted in response to this RFP (the "documents") become a public record upon submission to the City of Duvall, subject to mandatory disclosure upon request by any person, unless the documents are exempted from public disclosure by a specific provision of law.

The City of Duvall in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, Part 21, nondiscrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises as defined at 49 CFR Part 26 will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin or sex in consideration for an award."