CITY OF FRANKLIN

FRANKLIN, VA

REQUEST FOR PROPOSAL (RFP) #2021-02

Supervisory Control & Data Acquisition System Master Station Upgrade

Issue Date: February 22, 2021

Due Date: March 31, 2021 at 3:00 PM EST

Bid Meeting link for March 31, 2021 at 3:00 PM EST:

https://franklinva.webex.com/franklinva/j.php?MTID=mb84e2080e4773208f8cba7f1e21d23fb

Alternate meeting dial in: 1-408-418-9388

Meeting number: 129 547 3475 Password: 0000

Pre-Bid Meeting link for March 10, 2021 at 3:00 EST:

https://franklinva.webex.com/franklinva/j.php?MTID=m8ad7cf931a9d606b3bc7e8e9f9786689

Alternate meeting dial in: 1-408-418-9388

Meeting number: 129 243 6748 Password: 0000

Procurement Contact:

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I. PURPOSE AND INTENT

A. Scope of Contract

The purpose of this Request for Proposal (RFP) is to solicit sealed Proposals to establish contracts through competitive negotiation for Upgrading the City Electric Department's SCADA Master Station Upgrade and Remote Terminal Units for the City of Franklin, Virginia.

B. Period of Contract

The period of the Contract shall be for one (1) year from date of award and may be renewed for four (4) additional one (1) year periods.

C. Definitions

Capitalized terms that are defined in the Virginia Public Procurement Act (VPPA) or City Purchasing Policies have the same meanings in this Proposal as are given in that law or policy. Capitalized terms not defined in the VPPA or City Policy, but used in this Proposal have the following meanings, unless the context clearly requires otherwise. Undefined terms have their common meanings appropriate to their context.

1. ***Acceptable Surety***. For any bond required under this RFP, an acceptable surety may be any of the following:

   a. Corporate surety bond in form acceptable to the City; or

   b. Irrevocable letter of credit in form acceptable to the City; or

   c. Certified check or cash escrow.

   The successful contractors must furnish a performance and payment bond with a value of 100 percent (100%) of the contract amount.

2. ***Bidder***: Any party submitting a Proposal in response to this Request for Proposal.

3. ***City/Owner***: The City of Franklin, Virginia, or its authorized agents. Unless the context clearly requires otherwise, such as for an affirmative vote of the elected body, the Mayor, City Manager, Purchasing Manager, or other designee of City Council may always act on behalf of the City. Under Virginia law, no employee or agent may bind the City unless he or she has actual authority to do so; the doctrine of apparent authority has no application to municipalities.

4. ***City Policy***: The applicable provision contained in the City of Franklin Purchasing Policies, as amended.

5. ***Contractor***: The individual, company, firm, corporation, partnership, or other entity to whom an award is made by the City.

6. ***Due Date***: The date stated on the cover page of this Request for Proposal (RFP) for receipt of Proposals. There will not be a formal opening.

7. ***Insurance*** has the meaning given in Virginia Code § 38.2-100.

8. ***Nominal Value***: Having a fair market value or potential fair market value of no more than five dollars ($5.00). Something has potential value if it may produce value in the future. Examples of items with potential value include lottery tickets, stock in privately held companies, and business opportunities.

9. ***Non-Professional Services:*** All Services other than Professional Services, as identified in the VPPA.

10. ***Offeror***: Any individual, company, firm, corporation, partnership, or other entity submitting a Proposal on solicitations issued by the Purchasing Agent and offering to enter into contracts with the City.

11. ***On Call***: Services that a Contractor makes available at an Hourly Rate when needed by the City. No particular amount of work is guaranteed. If the Specifications do not give minimum response times or similar measures of performance, then it is implied that recognized industry standards or the Bidder's published standards apply, whichever is more beneficial to the City.

12. ***Procurement***: The receipt of Goods, Services, Insurance or Construction by a public body from a nongovernmental source with payment from the public body or a third party.

13. ***Proof of Insurance***: A copy of the relevant portions of the insurance declaration page, or its equivalent, showing continuing coverage at the required amounts.

14. ***Proposal***: The submission by an Offeror indicating its understanding of the work to be performed, how it plans to do the work, its pricing structure for doing the work (if permitted by VPPA), and any other information required by this RFP.

15. ***Purchasing Manager***: The head of the City Purchasing Division.

16. ***Request for Proposal (RFP):*** A request which is made to prospective suppliers (offerors) for their quotation on Goods, Services, Construction, or Insurance desired by the City. The issuance of an RFP will contain or incorporate by reference the specifications and contractual terms and conditions applicable to the procurement.

17. ***VPPA*****:** The Virginia Public Procurement Act, Virginia Code §§ 2.2-4300 et seq.

D. <u>Competition Intended</u>

It is the City's intent that this Request for Proposal (RFP) permits competition. It shall be the offeror's responsibility to advise the Purchasing Manager in writing if any language, requirements, specification, or any combination thereof, inadvertently restricts or limits the requirements stated in the RFP to a single source. Such notification must be received by the Purchasing Manager or appointed designee not later than seven (7) days prior to the Proposal Due Date.

The City reserves the right to reject any and all Proposals, to waive any and all informalities, and to disregard all nonconforming or conditional Proposals or counter Proposals. In evaluating Proposals, the City shall consider whether the Proposals comply with the prescribed requirements, plus all alternates or options requested. The City reserves the right to include or exclude any option or alternative(s). If interviews are necessary, interviews with selected respondents will be scheduled and conducted. If a Proposal is to be awarded, it will be awarded to the responsible, responsive respondent, but not necessarily the lowest bidder, whose evaluation by City indicates that the award will be in the City's best interests.

E. Type of Contract

The City of Franklin expects to award a fixed price Contract.

F. Order of Preference

Procurement by the City is governed by the City of Franklin Purchasing Policies, as amended, and the Virginia Public Procurement Act, Sections 2.2-4300 et seq. of the Code of Virginia, as amended. If an inconsistency exists between the specifications of this RFP, the General Provisions, Contract, or other included document, or the Purchasing Policies and State Procurement Law, the inconsistency shall be resolved by giving precedence to the following documents in the following order:

1. Virginia Public Procurement Act, as amended,
2. City of Franklin Purchasing Policies, as amended,
3. The Contract, which will incorporate and include the specifications of this Request for Proposal (Section II), except to the extent modified through negotiation permitted by VPPA and the general provisions of this Request for Proposal (Sections I, III-VI)

II. SPECIFICATIONS OF RFP

A. Purpose

The purpose of this RFP is to solicit sealed Proposals to establish a contract(s) through competitive negotiations for a qualified firm(s) to provide a complete SCADA Master Station Upgrade, including hardware and software, along with five (5) Remote Terminal Unit Upgrades and related professional services to the City of Franklin. The City of Franklin may award multiple contracts as a result of this RFP.

The services being solicited with this RFP have been divided up into two (2) categories of services:

1. SCADA Master Station Upgrade
2. Remote Terminal Unit Upgrade

Offerors do not have to provide all of the engineering services listed in the Scope of Contract or Scope of Services sections. Offerors will indicate which of the Categories described in the scope that they are offering as part of their submitted materials by completing and submitting the "Service Categories Being Offered Section" included as Attachment A of this RFP. All submissions will receive equal consideration with regards to the equipment and service(s) they offer, and the ability to offer multiple disciplines will not give advantage.

B. Background Information

Franklin is the southwestern most independent city in Hampton Roads, Commonwealth of Virginia. As of the 2010 census, the population was 8,582. The Bureau of Economic Analysis combines the City of Franklin with Southampton County for statistical purposes. The SCADA Master Station Upgrade and Remote Terminal Unit System Upgrade will continue to provide the Electric Department the necessary assistance in operating and maintaining the City's Electrical Distribution System.

The City's current SCADA System consists of a QEI, Inc. redundant SCADA Master running on HP Itanium Servers with VMS software and QUICS protocols to the remote terminal Units. The remote terminal units consist of 6CPP3/4 processors with

input/output boards such as 6SIP, 6AIP, and 6COP panels for connections to the substation equipment. It shall be the Contractors responsibility to familiarize themselves with the current operation of the existing SCADA System and the necessary programs which are currently running in order to provide a system which will replace or upgrade the existing SCADA System.

C. Scope of Services

1. General Scope of Work

The following scope of work items apply to ALL Contractors:

This document sets forth equipment and operational requirements for a Supervisory Control and Data Acquisition (SCADA) System to replace the Purchaser's existing master station equipment for the Electric department.

The Purchaser does not intend for the selected Contractor to design a new system to meet the requirements of these specifications, but rather receive a quote for a system of established and field proven design to replace the Purchaser's existing SCADA System. Minor variances between the Contractor's equipment and the specification may be allowed, but any exceptions not explicitly noted or that are in conflict with the requirements of the Specifications may be cause for the Contractor's bid to be deemed non-responsive. All exceptions and/or clarifications shall be indicated by means of a separate, paragraph-by-paragraph compliance statement which will be included as part of the Contractor's bid.

Initially, the Contractor shall be responsible for converting the Purchaser's existing database both at the Master and RTU levels, if required, with labor required to accomplish this included as part of the base bid. If required, all database single line diagrams shall be converted as well to meet the functioning requirements of the Contractors operating system.

Final acceptance of the proposed system shall be based on the successful operation of the new Master Station communicating to the existing RTUs complete with database, entered by the Contractor, which shall be configured to demonstrate that all delivered equipment, all equipment interconnections and that all remote station communication lines are functioning properly. The Contractor's maintenance contract shall clearly define the level of support that will be offered to the owner during entry and testing of the owner's database.

The Contractor's master server shall be required to communicate with the City's existing QUICS RTU's manufactured by QEI, Inc. currently operating on the City's existing SCADA System. Should additional hardware and software be required then the Contractor shall include the necessary equipment in the base bid. The City currently has five (5) RTUs communicating QUICS protocol over serial fiber.

Contractor shall include both DNP 3.0 and QUICS scan task in the base quotation in order to be compatible with the Purchaser's existing remote terminal units. Both protocols shall provide the ability for serial and TCP/IP communications to the Purchaser's RTU(s). Should the Contractor not be able to communicate QUICS protocol, then the Contractor, as part of the base bid, may include converting the

RTU's to DNP over IP and furnish all necessary equipment (hardware and software) required to do so for the conversion.

The Purchaser shall provide the selected Contractor with an Excel spreadsheet of database points via a Contractor provided PC editor if required. The Contractor shall also provide the Purchaser with a PC based editor for operator workstation screen interface development. The cost of the editors shall be included in the base quotation. Tape backups will also be provided to Contractor for database conversion.

The Contractor shall include, as an Option, in the Proposal an itemized list of spare equipment for any and all parts that are included in the design and not redundant as a part of the SCADA Master Station design.

The Contractor shall include, as an Option, five (5) days of factory training. This could be substituted with by the Purchaser for five (5) days of onsite training which shall include travel and living expenses by the Contractor.

The Contractor shall include, as an Option, five (5) days of commissioning which shall include travel and living expenses by the Contractor. Should commissioning take less than five (5) days, then the remaining time shall be spent with the City to optimize their system. System training shall be done during the following week or at a time to best suited with the customer's schedule.

Three (3) years of attendance for two (2) people at the Contractor's User's Conference, if any, shall be included in the base bid .

2. **SCADA Master Station Upgrade**

The SCADA Master Station Upgrade shall consist of central database and communication server(s) which maintain the core SCADA system database and communication software on a secure windows-based server platform. The secure SCADA servers shall be industrial quality machines designed for highly reliable 24x7 operations in a demanding and mission-critical computing environment. SCADA servers shall be based on true 64-bit computers capable of providing simultaneous, real-time service to many communication channels and operator workstations. SCADA servers shall utilize an operating system widely used by mission critical installations with a high degree of immunity to computer malware and viruses such as a WINDOWS SERVER 2012, or approved equal. Operating systems with a history of malware, viruses, worms, or those needed frequent patches and antivirus updates will not be considered acceptable for the central SCADA server(s).

The Bidder will state in their bid the number of Operating System patches and Antivirus updates experienced by the proposed server during the last calendar year.

As the user is interested in meeting NERC-CIP 002-009 requirements, the Contractor should address how all operating system updates and antivirus updates will be identified, tested, implemented, and documented in the proposed system. In accordance with NERC-CIP guidelines, automatic update of the operating system and antivirus profiles is not allowed or acceptable for the meeting of this

requirement. As a minimum, the SCADA system servers shall incorporate the following minimum design features:

- Demonstrated 24x7 software reliability and high availability, disaster tolerance and performance scalability when running real-time applications.
- A true 64-bit operating system with a real-time pre-emptive scheduling mechanism and interrupt-driven I/O subsystem designed for minimal latency, and capable of handling complex real-time events with an exceedingly high, sustained I/O throughput.
- Redundant 10/100 baseT Ethernet LAN/WAN interface with TCP/IP communication using SSL or SSH encryption security.
- Capable of being configured with up to four (4) fully synchronized SCADA system servers, which support automatic, prioritized, fail-over to standby servers of all gateway/RTU communication, printer driver and operator console services with no manual assistance or intervention.

3. Operator Workstations

Three (3) complete, fully functioning, tested, operator workstations shall be provided. The SCADA System Operator Interface shall be pixel resolution graphic display software running on standard Windows PCs with a current MS Windows operating system. All PC Workstations provided by the Contractor shall be supplied with IEEE 802.3/Ethernet compliant 100baseT LAN interface, and the SCADA application software shall be capable of supporting multiple operator workstations on industry Windows platforms deployed across the corporate LAN/WAN. Connections between the Windows operator consoles, and the central SCADA server shall be via any authorized TCP/IP connection (Ethernet, Internet, etc.). Operator workstation application software shall be designed to optimize performance and minimize network traffic by maintaining a local database on each Windows workstation. The operator HMI will adaptively update only the value of data points that are currently being displayed on that workstation in order to minimize network traffic.

The operator workstation monitors shall be high resolution, 32-inch, LCD flat panel color monitors with 2560 by 1440 minimum resolution and 32-bit colors. Workstations shall include a full alpha numeric keyboard with a minimum of 12 special function keys and a separate numeric key set and a 2-button mouse cursor control device.

Each operator workstation at a minimum shall include 3.2 GHz Dual Core CPU, 4 GB RAM, 500 GB hard drive, 1 GB graphics accelerator, DVD-CDROM, 10/100baseT network interface card, 32" LCD flat panel display, and the current Windows operating system software.

4. Remote Terminal Unit Upgrade

As an option, Contractor as a minimum shall include a DNP Scan Task in the base quotation for TCP/IP communications to the RTU. RTU is currently running serial QUICS protocol. If required, Contractor shall either convert the existing database to run on the new system being proposed or supply a new database to replace the existing database, both at the Master and RTU, for successful communications from the Master to the RTU utilizing DNP over TCPIP, single mode fiber and shall be

included in the base bid. Any extra hardware necessary for the RTU to communicate with the Master to complete the conversion shall be included in the base bid.

D. General Requirements

1. Contractor's Responsibilities

The Contractor shall be responsible for:

a. Design, document, and deliver a fully integrated SCADA system, with all hardware and software required to meet this specification.

b. Provide the Purchaser with documentation for review and approval including equipment lists, hardware and software design, system drawings, hardware and software manuals and acceptance test procedures.

c. Provide Purchaser with detailed information on the requirements of the equipment to be supplied: space, cabling, environmental controls, power, and communication circuits.

d. Support Purchaser in developing an implementation plan covering installation, testing and startup of the system.

e. Provide training courses covering Master Station database generation, and operation; and remote gateway database configuration and maintenance. Make courses available either at the Contractor's or the Purchaser's facilities.

f. Provide technical support during the Purchaser's construction of the Master Station and/or RTU configuration.

g. Perform a customer-witnessed, ISO 9002:2008 certified, site acceptance test, with all supplied equipment staged into an integrated functioning system.

h. Provide necessary onsite technical assistance as proposed during system start-up, commissioning, and testing.

i. Provide maintenance support and spare parts as proposed throughout the warranty period.

j. The Contractor shall provide with their Proposal a detailed description of the proposed system's architecture and operational features, as well as five (5) references of installed and operational systems similar to the one proposed, including contact names, phone numbers and email addresses.

2. City's Responsibilities

The City shall be responsible for:

a. Provide timely technical review of the Contractor's approval submittals: equipment lists, hardware and software designs, drawings, documentation, and acceptance test procedures.

b. Develop an implementation plan covering their portion of installation, testing and startup of the system.

c. Provide space, environmental controls, and power and communication circuits sufficient to accommodate the Master Station and Substation equipment supplied by the Contractor.

d. Provide the necessary assistance in order to construct the Master Station database and configure the substation gateway databases.

e. Provide all required substation field wiring and equipment external to any remote gateways.

f. Provide assistance to install all Contractors supplied equipment and connect all substation field wiring from controlled and monitored equipment to the Contractor supplied substation gateway terminations.

g. Perform onsite acceptance testing with assistance from the Contractor.

3. Standards

The Contractor shall apply the following standards, as applicable, in the design and manufacture of the proposed system:

a. NERC - North American Electrical Reliability Council (specifically NERC-CIP)

b. IEEE - Institute of Electrical and Electronics Engineers

c. IEC - International Electrical Code

d. ANSI - American National Standards Institute

e. NEMA - National Electrical Manufacturers Association
f.EPRI - Electrical Power Research Institute

E. Category Specific Type of Work

In addition to the General Scope of Work and General Requirements outlined above, the following apply to Contractors relevant to the service category for which a Proposal is submitted:

1. **Database Conversion**

The Contractor shall be responsible for converting the Purchaser's existing database both at the Master and RTU levels to meet the requirements of the new system prior to delivery, and it shall be included as part of the bid. If the Contractor supplies a completely new system, then it will be up to the Contractor to provide database at both the Master and RTU levels.

It is the City's intent to be able to create and enter future system and database points along with future single line diagrams after receipt of the necessary training from Contractor instructors. It is not the intent for the City to create any database or single line diagrams prior to the system being delivered. Training shall be scheduled at an appropriate time in the delivery cycle. Final acceptance of the system shall be based on the City's existing database, being entered by the Contractor, which shall be configured to demonstrate that all delivered equipment, all equipment interconnections and all remote station communication lines are functioning. The Contractor's maintenance contract shall clearly define the level of support that will be offered to the owner during entry and testing of the owner's database.

2. **Warranty & Support**

The SCADA Contractor's Customer Service Department shall be the Owner's single **point of contact for all system maintenance and shall follow an ISO 9001:2008 certified procedure to maintain the highest level of service quality.**

All customer contacts shall be entered into a computerized tracking system which is closely managed and monitored for quick and effective responsiveness. The Contractor shall offer maintenance contract options including both hardware and software maintenance agreements with telephone/TCP/IP link based technical support, on-site technical assistance, and printed circuit board repair. Contractor shall describe their Customer Service Support Team in detail and shall be included with the RFP.

a. <u>Master Station Server Hardware Maintenance Contract</u>

The Master Station SCADA hardware shall carry a three-year, (not including the first year) renewable maintenance contract to be executed by the SCADA Contractor. The Master Station server hardware shall consist of "open system" architecture with all hardware and operating system software manufactured by a nationally recognized computer supplier who can support the system with factory trained product specialist providing next day, on-site response from a local service center. The Contractor shall state the terms of the maintenance contract included in the master price and provide the address and telephone number of the nearest service center. Warranty upgrades should be available to provide same day 4-hour response or 24-hour/day, 7-days-a-week.

As a minimum, the SCADA Master Station Upgrade Server hardware maintenance contract shall include the following services:

- On call center for questions and repair services.
- On-site repairs provided by the server manufacturer's factory trained product specialists.
- Response within 4 hours, Monday through Friday, 8 a.m. to 5 p.m.
- Warranty upgrades should be available to provide same day, 4-hour response, or 24-hour/day, 7-days-a-week.

b. <u>Master Station SCADA Software Maintenance Contract</u>

The Master Station SCADA software shall carry a three-year, (not including the first year) renewable maintenance contract to be executed by the SCADA Contractor. Third party maintenance contracts for Master Station software products will not be considered. The proposed Master Station shall include a secured, diagnostic connection which allows the Contractor's service technicians full access to the SCADA system to perform monitoring, diagnostic and system configuration services and to install and/or update SCADA software modules. The SCADA Contractor shall maintain a full-time customer service staff capable of providing same day technical assistance. The Contractor shall submit, with the technical bid, a description of the software capability of the company including resumes of the customer service and software development personnel that will be associated with this project.

As a minimum, the Master Station software maintenance contract proposed shall include the following:

- On-call center for questions and repair services.
- Minimum of four (4) hour response.

- Unlimited telephone support and correction of any SCADA software problems.
- SCADA software Bug-fixes and upgrades as required.
- Technical assistance in the use of the SCADA system database editors.
- System restoration services, if required, following a hardware repair.
- A discounted rate for any required site-technical services.
- Maintenance agreement upgrades should be available to provide same day, 4-hour response or 24 hour/day, 7-day-a-week response.

3. Testing and Training

One week of factory training shall be included in the base bid. This could be substituted with one week of on-site training including travel and living expenses.

Five days of commissioning shall be included in the base price including travel and living expenses. Should commissioning take only a couple of the days then the remaining time shall be spent with the customer to optimize their system. System training shall be done during the following week or at a time to best suited with the customer's schedule.

Five years of attendance at the Contractor's User's Conference shall be included in the base bid for four people.

4. Master Station Operator Training Course

Operator training shall be a hands-on course using an online operator console on the owner's system. If the operator training course is conducted at the Contractor's facilities, each student shall be trained using an online operator workstation with a SCADA system server running the same version of the software as will be provided to the Purchaser.

The topics covered shall include as a minimum:

- Overview of SCADA System Database Structure and database editors
- Methods of Display Access & keyboard functions
- Use of graphic displays, menus and dialog boxes
- Use of system generated Data Point and Alarm Summary Displays
- Report Formatting and Scheduling
- System start-up and power fail recovery
- Database backup/restore and historical data archiving

5. Master Station Database Training Course

Database training shall be a hands-on course using an online operator console on the owner's system. If the database training course is conducted at the Contractor's facilities, each student shall be trained using an online operator workstation with a SCADA system server running the same version of the software as will be provided to the Purchaser.

The topics covered shall include as a minimum:

- Database structure and organization of the editor system

- Definition of communication line, remote stations, status/analog/control points
- Creation of calculations and process control sequences
- Structure and Generation of Graphic Displays
- Integration of DXF file maps and Live Data Points into Displays
- Definition of historical data collection sets and creation of historical graph displays
- Format and scheduling of reports, event logs and alarm messages
- Importation of Contractor supplied or user generated IED templates
- Library actions (store, retrieve, etc.) of Contractor supplied or user generated IED templates

6. Additional Options

As part of the Proposal the Contractor shall list additional SCADA software that may be included as part of the base Proposal for the City to review.

F. Project Overview

Contractor to include system overview drawing specific to Contractor's equipment for this project.

1. Master Station Equipment

The SCADA Master Station shall consist of central database and communication server(s) which maintain the core SCADA system database and communication software on a secure server platform. The secure SCADA servers shall be industrial quality machines designed for highly reliable 24x7 operations in a demanding and mission-critical computing environment. SCADA servers shall be based on true 64-bit computers capable of providing simultaneous, real-time service to many communication channels and operator workstations. SCADA servers shall utilize an operating system widely used by mission critical installations with a high degree of immunity to computer malware and viruses such as OPEN VMS, RED HAT LINUX OS, WINDOWS SERVER 2012 OS, or approved equal. Operating systems with a history of malware, viruses, worms or those needing frequent patches and antivirus updates will not be considered acceptable for the central SCADA server(s).

The Bidder shall state in their bid the number of Operating System patches and Antivirus updates experienced by the proposed server during the last calendar year.

The SCADA servers shall be completely separate from the operator workstations to be provided. Combination Server/Workstation units shall not be considered.

As the user is interested in meeting NERC-CIP 002-009 requirements, the Contractor should address how all operating system updates and antivirus updates will be identified, tested, implemented, and documented in the proposed system. In accordance with NERC-CIP guidelines, automatic update of the operating system and antivirus profiles is not allowed or acceptable for the meeting of this requirement. As a minimum, the SCADA system servers shall incorporate the following minimum design features:

Demonstrated 24x7 hardware and software reliability and high availability, disaster tolerance and performance scalability when running real-time applications.

A true 64-bit operating system with a real-time pre-emptive scheduling mechanism and interrupt-driven I/O subsystem designed for minimal latency, and capable of handling complex real-time events with an exceedingly high sustained I/O throughput.

Redundant 10/100/1000 baseT Ethernet LAN/WAN interface with TCP/IP communication using SSL or SSH encryption security.

Dual redundant SCADA Master Stations with the capability of being configured with up to four (4) fully synchronized SCADA system servers, which support automatic, prioritized, fail-over to standby servers of all gateway/RTU communication, printer drivers and operator console services with no manual assistance or intervention.

All equipment shall be completely configured and tested by the Contractor prior to shipment to the Purchaser.

Should any equipment delivered to the site not be tested prior to shipment, then it shall be the responsibility of the Contractor to make the necessary corrections at his own expense in order to bring the equipment into compliance.

2. Operator Workstations

The SCADA System Operator Workstations shall incorporate pixel resolution graphic display software running on standard Windows PCs with a current MS Windows operating system. All PC Workstations provided by the Contractor shall be supplied with IEEE 802.3/Ethernet compliant 100baseT LAN interface, and the SCADA application software shall be capable of supporting multiple operator workstations on industry Windows platforms deployed across the corporate LAN/WAN. Connections between the Windows operator consoles and the central SCADA server shall be via any authorized TCP/IP connection (Ethernet, Internet, etc.). Operator workstations application software shall be designed to optimize performance and minimize network traffic by maintaining a local database on each Windows workstation. The operator HMI will adaptively update only the value of data points that are currently being displayed on that workstation in order to minimize network traffic.

Three (3) complete, fully functioning, tested, Operator Workstations shall be furnished as follows:

Each operator workstation monitor shall be high resolution, 36 inch, LED flat panel color monitors with 2560 by 1440 minimum resolution and 32-bit colors. Workstations shall include a full alpha numeric keyboard with a minimum of 12 special function keys and a separate numeric key set and a 2-button mouse cursor control device.

Each operator workstation, at a minimum, shall include, as a minimum, a 3.2 GHz Dual Core CPU, 4 GB RAM, 500 GB hard drive, 1 GB graphics accelerator, DVD-

CDROM, 10/100/1000 baseT network interface card, 32" LED flat panel display, and the current Windows operating system software.

All workstations shall be completely configured and tested by the Contractor prior to shipment to the Purchaser.

Should any equipment delivered to the site not be tested prior to shipment, then it shall be the responsibility of the Contractor to make the necessary corrections at his own expense in order to bring the equipment into compliance.

2.1 Environmental

The Master Station servers and operator consoles shall consist of standard products designed to operate in a normal, indoor, office environment with no special space conditioning requirements.

- Operating Temperature: 10° to 40°C
- Humidity: 10% to 90%
- Voltage: 88 to 130 VAC
- Frequency: 47 to 63 Hz

2.2 System Capacity

At a minimum the SCADA system software shall be capable of accommodating the following:

- 10,000 status and analog points
- 100 remote stations
- 16 operator consoles
- 8 printers
- 32 RTU communication lines

3. SCADA Software Functions

3.1 Secure SCADA Server & Windows (PC) Operator Consoles

The SCADA system software shall support a client/server system architecture.

While standard Windows PCs are to be used for all system HMI (dispatch, editing, system management, etc.), the central SCADA database and communication functions shall reside on separate secure servers utilizing an operating system designed for demanding and mission-critical computing. The SCADA server will be safe from the security, update and malware vulnerabilities inherent in the Windows operating systems.

The SCADA display application software shall support multiple operator console windows, which can be moved, re-sized, tiled, cascaded, and minimized into icons, and an intuitive system of quick, mouse-oriented, pull-down menus and dialog boxes to execute all operator functions.

Each operator workstation application software shall be designed to optimize performance and minimize network traffic by maintaining a local database

on each workstation that adaptively updates only the value of data points that are currently being displayed on that workstation.

The SCADA server software shall allow the Purchaser to create complete image backups of each server on removable USB drives from the operator workstations. The backup procedure shall be menu driven in order to insure a user-friendly interface for this purpose.

Initially twelve (12) USB drives of adequate capacity shall be furnished for this purpose.

3.2 Communication

3.2.1 Gateway/RTU Communication Protocols and Features

The communication server software shall support multiple gateway/RTU protocols (serial and TCP/IP based) with multiple instances of each protocol operating independently on multiple communication lines. As a minimum, communication software licenses shall be furnished to support the following remote device protocols: DNP 3.0, and QUICS scan task.

As a minimum communication protocol functions shall include:

- Secure select-check back-execute controls with variable execution durations
- "fast scan" of controlled points until execution is confirmed.
- Rapid polling for data changes only
- Detect and report multiple changes of state between pole cycles
- Interleaving of multiple priority messages
- Master to remote acknowledgement of message receipt
- Freeze and read pulse accumulator poles at user-defined intervals
- Time synchronization of remote device clocks (and those of their subordinate IEDs) at defined intervals
- Sequence of Events monitoring and reporting
- Ability to support unsolicited communications

3.2.2 Communication Monitoring

The system shall maintain statistical communication values for each remote gateway which can be displayed, alarmed, printed in reports and stored as historical data. The system shall raise alarms distinguishing between failure of individual remote devices, entire communication lines, remotely interrogated IEDs, and failover to a backup communication line. A communication monitoring facility shall detect and document communication errors with date time stamps and a text message description, which can be scrolled to the terminal screen, spooled to a printer, or written to a workstation hard disk file.

3.3 Interfaces to Other Systems

The SCADA Master Station shall incorporate an "open system" architecture with demonstrated inter-operability with other hardware and software platforms.

The Purchaser intends in the future to add on an outage management system (OMS) to communicate with the SCADA servers. The Bidder shall describe as part of the Proposal the capability to provide connectivity to either their own OMS software or any third-party Contractor's software package for OMS capability. The description shall include a discussion of the protocols required for OMS system interface. The Bidder shall also provide a list of no less than five (5) systems that have successfully implemented the connectivity along with customer contact information for reference purposes.

3.3.1 Internet Web Reports for Live SCADA System Data

The Contractor shall quote a secure Web Report facility which displays live SCADA data on user PCs connected to the network using a standard Internet Browser such as Internet Explorer or Mozilla Firefox. Web Alarm and Event Reports shall be chronological lists of point names and alarm details. Web Analog and Status Reports shall list point names and parameters. Web History Reports shall create graphs or tables over a user-selected time range. Operators shall be able to actively filter the points displayed in a Web Report using pull-down menus to select time range, point and station names, zones of responsibility, alarm priority, state of acknowledgement, tagged state, alarm blocked, and off-normal state.

It shall be possible to export Web reports in HTML, Excel, Web archive, Acrobat PDF file, TIFF file, CSV (comma delimited), and XML file formats. It shall be possible to save, print, or email historical data graphs for a fixed point in time as a PNG file.

3.4 SCADA System Security Features

3.4.1 Synchronized Dual or Quad Server Redundancy

The proposed system shall be configured with dual redundant SCADA servers which are fully synchronized to include live RTU data, calculations, closed loop control algorithms, historical data, alarms, reports, and database changes. Peripheral and communications equipment shall be automatically transferred between SCADA servers with no operator assistance or intervention. The system shall be capable of using up to four servers for redundant SCADA database servers. These servers may be located at the primary master server or use offsite separate location(s).

3.4.2 Operator Passwords and Zones of Responsibility

It shall be possible to assign up to 128 zones of responsibility to user-defined operator passwords to restrict different operators' ability to execute controls, impose tags, or acknowledge alarm on different devices. These zone assignments will be possible down to the point

level (e.g. a gas system point would not be controllable by an electrical operator as they are assigned to different zones, etc.). These zones shall also filter alarm annunciation on the operator's console and alarm summary displays and alarm logging on printers.

3.4.3 Control Point Operator Interface and Select-Check back Security

A control dialog box shall appear when a point is selected presenting graphic and text indications of the status of the device and labeled pushbuttons for execution of the device's control functions (Open/Close, Tag/Un tag, Activate/Deactivate, Manually Set, Acknowledge Alarms/Block Alarming). Only one operator shall be able to select a point at a time, and that selection shall expire automatically if no commands are completed within a definable length of time. Controls shall execute with secure, multi-step handshaking between the master and remote gateway/RTU. The sequence shall be point selection, "check-back" to Master, control execution, acknowledgement of execution. RTUs or remote gateways shall be automatically polled in accelerated (fast scan) mode after a control action until the expected status change (or multiple user-scan) mode after a control action until the expected status change (or multiple user-defined changes) indicate the operation is complete. Control execution alarms shall distinguish between failure of the remote gateway or RTU to acknowledge a control, and failure of expected status change(s) to occur.

3.4.4 Secure Multi Level and Group Tagging

Tags for up to eight separate departments or individual operators shall inhibit control devices, without affecting the tags that another department has entered on the same device until all tags are removed. Tagging activities shall be automatically logged with date/time stamp and synchronized to all backup SCADA servers. A Tag dialog box shall display tags currently applied to a device with pushbuttons and fields to enter operator comments and to add, modify or remove tags. A Group Tag function shall apply a tag to multiple points by simply clicking on the desired devices in the SCADA system graphic display.

3.5 Windows Based PC Database Editors

All database editors used to define the SCADA system database and consequent dispatch shall run on standard Windows PC Workstations. These editors will use familiar Windows features such as pull-down menus, drag-and-drop, file operations and configuration selections. The editor windows themselves will be configurable on the PC desktop in such matters as dragging between screens, re-sizing, tiling, cascading, as is customary with the graphical and user interface capabilities inherent in Microsoft Windows.

3.5.1 Windows Based Display Generation Editors

All display generation editors used to define the SCADA system database and consequent dispatch shall run on standard Windows PC Workstations. These editors will use familiar Windows features such as pull-down menus, drag-and-drop, file operations and configuration

selections. The editor windows themselves will be configurable on the PC desktop in such matters as dragging between screens, re-sizing, tiling, cascading, as is customary with the graphical and user interface capabilities inherent in Microsoft Windows.

3.5.2 Communication Line Editors

Communication line editors shall define the protocol, and communication characteristics of LAN/WAN IP nodes or serial communication ports, and the remote gateways assigned to each node or port.

3.5.3 Control & Indication Point Editors

Control and indication point editors shall define the gateway/RTU/IED address and characteristics of each point: point name, description, address, type, zones of responsibility, normal state, control execute duration, control completion time, alarm severity, alarm annunciation delay etc. Control and indication point editors must be capable of export and import to MS Excel such that global editing of database points is possible.

3.5.4 Analog Point Editors

Analog point editors shall define the address and functional characteristics of each point to include point name, description, address, type, zones of responsibility, scale and offset factors, engineering units, clamp to zero, 3 high and 3 low level alarm limited (dead bands, severity codes) and rate of change alarm limit (dead bands, severity code). Analog point editors must be capable of export and import to MS Excel such that global editing of database points is possible.

3.5.5 RTU Configuration File Import

The Contractor's remote gateway or RTU configuration files shall be structured to allow direct importation into the SCADA Master Station database editor, eliminating the need to repeat database entry at the Master Station. Importation of the gateway/RTU configuration file will automatically create those points in the Master Station database to include associated housekeeping points, such as, percent communications, time-out values, security error counts, number of polls, etc.

3.5.6 Calculation and Control Sequence Editors

The system shall include a feature to define calculations and logical process control algorithms in a self-documenting editor format. The system shall include a library of electrical power calculation functions that only require the user to name the data source points and the calculation result destination point names. Control sequences shall be securely synchronized to the backup SCADA server and capable of continued execution after a failover.

A complete library of math/logic functions shall be provided including temporary variables, arithmetic (*,/,+,-), logical operators (AND, OR), magnitude comparison (>,<,=), square root, trigonometric (SIN, COS, TAN, ASIN, ACOS, ATAN), exponential, logarithmic, time/date, table look-up, AGA-3, 7 and 8 gas compressibility and flow, electric power calculation functions, and conditional (if-then-else) branching decisions.

3.6 SCADA System Full-Graphics Operator Interface

The operator's graphical user interface (GUI) shall run on PC Workstations and display multiple windows that can be re-sized, moved, or minimized to an icon, and can execute all operator functions with mouse point-click-drag functions, pull-down menus, and interactive dialog boxes. Performance shall be maximized, and network traffic minimized by maintaining a local database on each Workstation which adaptively update from the SCADA server only those points that are being actively displayed on the operators' screen at any point in time. It shall be possible to run the map display software on remote workstations over any TCP/IP link to the SCADA servers.

Graphic display editors shall support importation of .DXF format files of detailed vector-based, geographic images of the actual system and territory being monitored from CAD map sources such as AM/FM, GIS, and AUTOCAD systems. It shall be possible to incorporate these geographic images into layers of the SCADA system map displays to serve as backdrops onto which can be overlaid live SCADA status and control targets.

Full-graphic map displays shall display monitored equipment and territory in a large scale, continuous map display, which the operator can view through a movable window. These operator windows can pan in any direction and zoom in or out to view a smaller or larger area of that complete map display. Multiple maps can be used on the same operator console or different consoles without restrictions. This display system shall support multiple users, and departments with different responsibilities, by displaying a compilation of layers (like a stack of color transparencies), which can be turned on and off to display different aspects, equipment, or subsystems of the complete control system. Different display layers shall turn on and off manually by using pull-down menus or automatically as the operator zooms in and zooms out of the complete World Map display. Pull-down menus shall allow the operator to quickly select pre-defined views at specific map locations, levels of zoom, and selection of display layers.

Pixel-resolution, graphic elements in the displays shall be linked to live points in the SCADA system database and depict the current digital state or analog value of monitored devices such as RTUs, Gateways or IEDs. Telemetered, calculated or manually entered status, accumulator and analog points shall be displayed through user-defined graphic shapes, colors and text indications of the value, state and data quality of each point. Accumulator and analog

values shall be displayed with numerical values or expanding horizontal or vertical bars that are colored to indicate 3 levels of high and 3 levels of low limit alarming for each point. Colored letters shall annunciate each point's condition (Tagged, Manually Set, Alarm Blocked, Telemetry Failed). It shall also be possible to annunciate field conditions using lines or whole areas of the world map display which dynamically changes color or flashing state of database points. The system shall store a library of user-defined graphic symbols and text labels for use in developing displays and/or they may be imported from user CAD systems.

Historical data trend graphs shall appear on map displays as miniature, labeled graph icons. When selected, these icons shall expand into a pixel resolution trend graph window, which plots color-coded variables against time. Displayed graphs will be user configurable in terms of graph type, colors, graphed data values, and other parameters. The graphed values and the trend graphics themselves will be able to be cut-and-pasted to popular Microsoft applications such as Excel, Word and Access.

Control of points shall be initiated by clicking on a user-defined target area within or around a point's graphic display element. Selecting a point shall open an interactive dialog box, with which any authorized operator can Execute Controls (Open/Close, Trip/Close, Raise/Lower, Start/Stop etc), Add or Remove Tags, Set Group Tags, Acknowledge Alarms, Block an Alarm, manually set the state or value, Activate/Deactivate a point, or enter a user definable note.

3.6.1 IED Templates

The operator HMI shall include the capability to create, edit, cut, paste, and save (as a library entity) an IED template for use by an operator in visualizing the data collected from IEDs in the gas and electric stations and for the operation of these devices. Such IED templates (the IED faceplate plus the associated monitoring and control points) once defined, will reside in a library for use in creating future instances of that IED. This will serve as a rapid graphical user interface (GUI) development tool to build IEDs onto the system/substation map. The IED template shall be capable of being configured for operation and display of the same information as the device displays locally.

Bitmapped image files (*.bmp, *.jpg, *.gif, animated*.gif) will be useable for the creation of IED templates along with the status, analog, accumulator and control points associated with that IED or the overall system.

The Bidder will describe their library of IED templates provided with the proposed system.

3.6.2 Full Graphics Editing

A password configurable online, full graphics editor shall be provided for database generation and display at all local and remote consoles.

The system displays maps will exist on each workstation console, such that only dynamic data such as point values and alarms need be retrieved from the host server. This will minimize network traffic even for the largest of dynamic system maps. When editing is accomplished on a system console, the changes will then be published back to the system SCADA server(s) from where changes will be published to other consoles. Publishing of changes to all consoles can be manually initiated or automatic (as chosen by the system manager).

Importation of the underlying system map will allow any number of map layers. The layers of the original map will be maintained, and additional layers may be added to the map for SCADA purposes. As an operator zooms, the display will automatically de-clutter or enrich (turn on and off layers) depending upon the level of zoom. These de-clutter levels will be user definable.

The editor provided shall contain easy-to-use tools for layering, coloring and styling of text as well as duplication of elements (copy/cut and paste), stretching and re-sizing.

Connectivity information for the system map will be able to be stored in the SCADA system database to show dynamic topological data. (E.g. a breaker tripping will de-energize the feeder within the substation down that feeder on the system map to the end of the line. Entry of topological connectivity data will be through intuitive and user-friendly editors.

3.6.3 Data Quality

The quality of the telemetered points shall be available to the system for display and capture. The following data quality indications shall be present:

a. Point is failed
b. Point is manually set
c. Point is calculated from manually set or failed data
d. Alarm is blocked
e. Value is out-of-range
f. Point is tagged

3.6.4 Integration with Windows PC Operation

The SCADA system editors shall operate using a Windows PC interface.

The database editor shall provide a graphical tree-like representation of the complete database and shall support easy navigation throughout the database to items to be edited. Database items to be edited in this way

shall include Stations, Communication Lines, Communication Channels, RTUs, IEDs, as well as all the individual database points (analog values, status indications, accumulators, etc). These database editors shall be able to run on any properly configured PC that is connected to the host server via the network. With this arrangement, it shall be possible to manage the database maintenance from any suitably configured PC on the network without it being at the Master Station server(s) itself.

The database editors shall include features which will make it easy to create and modify the database such as:

1. Cloning an entire station or group of points through a straightforward copy and paste approach.

2. Copying, cutting and pasting of display elements (symbols, dynamic symbols, IEDs, entire stations or map sections, etc.) in a Windows environment.

3. Using this cut and paste capability to create points and other database elements that are based on previously created elements.

4. Using a Station Rename feature to copy a portion of an existing display, and to reassign all those dynamic points to points to a different station. Convenient pull-down boxes will be used to identify the source and destination station names.

5. Exporting, editing or modifying and re-importing the SCADA database to/from an MS Excel spreadsheet to speed "global editing" and duplication of points.

6. Master Station import of gateway/RTU configuration files directly, so as to eliminate the need to define the same point multiple times in the system.

7. Windows based applications will be directly callable from the operator's screen. (e.g. a system manager can place a target on any full graphic screen which launches a non-SCADA application such as an Excel spreadsheet or a browser).

All editing will be accomplished in an online manner (e.g., the real-time SCADA system need not be taken offline in order to complete or publish any editing function).

3.7 System Generated Displays

3.7.1 Fully Functional and Automatically Generated Tabular Displays

The SCADA system shall automatically generate text displays data for status and analog points for each station defined in the Master Station database. For each point these displays shall provide a line of color-coded text concisely listing all the point's relevant information,

including current status, value, tagged and alarm conditions. These text displays shall be capable of serving as a fully functional operator interface for the SCADA system. Operators shall be able to select points on these displays to control points, manage alarms, and adjust point attributes. Pull-down menus shall allow selection of the points to be listed by station, stations, tagged points, points in off-normal or points in alarm condition.

3.7.2 Operator Scratchpad and Message Log

An operator message facility shall allow operators to transmit messages to a dedicated message display window on a specific operator Workstation or to all Workstations. This facility shall maintain and display a chronological log of messages including time/date, and the operators sent to or received from. Multiple notes areas within the SCADA workstation displays shall provide scratchpads where operators can enter text notes. All entries shall be logged with a date/time stamp on the event logger and maintained in the display database until deleted.

3.8 Alarm Processing

3.8.1 Alarm Communication and Processing

Alarm processing shall proceed in a timely, secure and traceable manner. Gateways or RTUs shall be rapidly polled for changes only and shall retain all changes until the Master has acknowledged receipt of the changes. Each gateway/RTU shall buffer and report to the Master a minimum of 7 changes of state for occurring between polls of each status point. The system shall provide visible indication when the value of any point is not being updated because of gateway/RTU or communication line failure. Points calculated from telemetry failed points shall also be visibly flagged.

Alarms shall be time stamped immediately upon receipt at the Master, and alarms shall update on all displays in less than 2 seconds. Alarms shall be processed at a continuous rate of at least 60 per second, and excess alarms shall accumulate in a queue capable of buffering a minimum of 4,000 alarm events without loss. All processing of alarms shall be continuously synchronized in real time on the standby SCADA system server.

3.8.2 Alarm Definition and Priority

There shall be 5 alarm priority levels, assignable on a per point basis, with distinguishable annunciation characteristic. Alarm priority shall be included in logged alarm messages and identified by color coding on the system generated displays. A separate alarm priority shall be assignable for each direction of a status point change of state. Separate alarm priorities shall be assignable to an analog value's 3 high alarm level limits, 3 low level limits, and a rate of change limit.

Higher priority alarms shall require acknowledgement and shall sound audio alarm signals. The audio alarm signals shall consist of operator console WAV files that can be assigned to each priority. All alarms shall be logged regardless of priority to at least three destinations: alarm summary displays, event printers and operator log files.

For each status point, it shall be possible to define which state (0 or 1) is abnormal and to assign a separate alarm priority to each state. When either the select or execute check-back fails, the system shall generate a check-back failure alarm. If the check-back is successful, but the expected status change does not occur within a timeout period that is user-definable for each control, the system shall generate a control failure alarm.

The system shall provide the operator with a visible "telemetry failure" indication when the value of any displayed point is not currently being updated by the system because of an RTU or communication line failure. Any points that are calculated using, as inputs, the values of failed telemetry points shall also be marked as telemetry failed.

3.8.3 Alarm Summary Displays

Automatically generated alarm summary displays shall list alarm events, in reverse chronological order, with color and flashing indication of alarm priorities and acknowledged/unacknowledged state. Alarm summaries shall list the point names, description of alarm condition and data and time of each alarm occurrence and allow the operator to select points on to acknowledge or block alarms. The system shall automatically filter the alarms listed on these displays according to the zones of responsibility assigned to the workstation or the logged on under operator's password.

The following alarm summary displays shall be automatically generated by the system:

- Alarm/Event History Display of all alarms and events.
- A list of all alarms grouped by priority.
- A list of all alarms from which the operator can manually remove any alarm.
- A list of all alarms and events for each Station.
- A list of all unacknowledged alarms.
- A list of acknowledged alarms that have not returned to their normal state.
- A list of all points for which alarming is currently blocked.

3.8.4 Configure Alarm Viewer

In addition to those alarm views automatically generated by the system, an editor function shall be provided which allows operators to choose criteria for alarms that will be listed in new views. The operator shall

also be able to configure these views with different alarm selection criteria and save them for future use.

The operator shall easily be able to select criteria using the operator interface. Possible criteria will include chronological or reverse chronological presentation order, zones of responsibility, alarm priorities, blocked alarms, selected station(s), acknowledged and/or unacknowledged alarm(s) status, currently active status, currently cleared alarm status.

3.8.5 Zones of Responsibility

Up to 128 zones of responsibility shall be assignable to each point and to each user-defined operator password to control the annunciation of alarms on Workstations and to limit each operator's ability to control and manage alarms for different areas of the system. After a user-definable timeout period with no keyboard or mouse activity, Workstations shall automatically revert from the zones assigned to the logged-on operator's password to the default set of zones assigned to the Workstation.

3.8.6 Operator's Alarm Dialog Box

Selecting a telemetered point shall open a dialog box displaying the point's value and containing labeled pushbuttons to manage the points operation and alarm functions:

- Tag/Untag a Point
- Activate/Deactivate a Point
- Manually Set a Point Value
- Acknowledge Alarms or Block Alarming of that Point
- Set Point Alarm Limits (if analog)

A Manual Set function and a Set Limits function shall allow operators to adjust a point's manually set value or an analog point's three set of high or low limits by entering numeric values or by clicking and dragging lines on bar graphs that represent the manually entered value or the alarm limits.

3.8.7 Master Slave Alarm Suppression

Master-Slave alarm suppression shall be provided which can automatically suppress cascades of multiple secondary alarms that are known to result from a primary alarm condition. (e.g. suppress downstream low voltage alarms if a breaker trips and locks out). This user-definable function shall be able to either automatically acknowledge or block alarming for sets of points for definable time duration, or indefinitely, after a primary point goes into an alarm condition. Alarm suppression shall be definable in multiple levels to produce a hierarchal tree of master/slave alarm suppression.

3.8.8 Alarm Logging

Alarms shall be logged to system or user defined alarm views, to files on the SCADA server hard disk, to hard copy printers, and these loggings filtered by priorities and zones of responsibility assigned to the points in alarm. English language alarm messages shall be generated by the system based on the message formats defined by the utility. The user shall be able to define automatically those generated alarm messages to include these message elements in any desired sequence (name of point in alarm, station name of point in alarm, alarm priority level, point value or status, point's engineering units, point's description, strings of fixed text).

3.8.9 E-Mail and Text Alarm Annunciation

E-mails and cell phone text messages annunciating alarms shall be automatically sent to configured recipients when requested for specific times of day, days of the week, and holidays. Email recipients shall be able to create and select from pre-defined sets of email alarm groups which filter alarms based on lists of points or stations, alarm severity and zones of responsibility.

3.8.10 Group Alarm Acknowledgement

Capability will be provided for group generation and group acknowledgement of alarms. The Bidder will explain their method for accomplishing this feature.

3.9 Historical Data Collection

The system shall include a historical data collection facility, which allows the user to capture, store, edit, display and archive data collected by the SCADA Master Station and to enhance the data collected by the system with calculated averages, maximums, minimums and the time of max/min occurrence. It shall be possible to create derived (after the fact) historical data sets, which extract information from previously stored historical data sets. Editors shall allow the user to repair erroneous or missing historical data and any values that are manually entered in this manner shall be flagged as manually entered data.

In addition to scheduled, periodic data capture, the SCADA system shall allow definition of disturbance events that will trigger automatic collection of pre-defined sets of historical data both before and after the event. The events defined to trigger disturbance data collection shall be changes in multiple status points and/or multiple analog values exceeding predefined hi/lo limit levels. As a minimum, each utility shall have the ability to define the frequency and duration of data collection both before and after the triggering event, the time a "trigger" condition must exist to initiate a disturbance event, and the time after a disturbance event that the "trigger" condition will be ignored.

3.10 Report Generation and Scheduling

An automatic report generation facility shall provide flexible scheduling and formatting of the reports, including format of the report, selection criteria for

points included in the report and information to be listed for the points. Point selection criteria shall include as a minimum: point type, station group, zone(s) of responsibility, communication line, manually set points and analog values in over-range, tagged points and points in alarm. Point data that can be included in a report format shall include: (point name, type, description, current value or status, daily min/max values and the time of occurrence, 3 high and 3 low level alarm limits, rate of change limit, dead bands, scaling factor, engineering unit label, zones of responsibility, point transition count, calculated averages, sums, maximums, minimums and the time of occurrence).

A report schedule display shall allow users to view and modify the print schedule for all reports. Information listed on the report schedule display shall include report name and description, logging device(s) on which the report will print, report's automatic scheduling parameters, report's last and next scheduled generation time, and how long the report takes to generate. It shall be possible to designate a backup printer to which reports will be re-directed in the case of a printer failure. Any reports which cannot be output to a functioning printer shall be spooled to hard disk files which can be retrieved and printed at a later time.

This automated report generation capability will be separate and in addition to report generation available under the relational database publishing capability.

Additional user configurable software shall be furnished to allow the Purchaser to assign reports to files on the "Main" operator workstation. Any file capable of being printed shall also be capable of being sent to a folder as a user recognizable file that shall be name, date, and time stamped for user archiving, viewing, and printing.

3.10.1 Operator Event Log & Summary Display

Operation and Outage event files will be maintained for specified electric and gas system points recording all status changes, control actions, breaker outages, limits exceeded, etc. The system shall maintain a count of open and close operations and outages (stored as an analog database value for user definable open or close operations) for specified devices, raising alarm when the count exceeds a defined limit.

Operations Reports for each device will list:

- Point name, description and normal state
- Time and date of last event
- Number of operations - caused by operator or caused by protective relaying
- Operation count limit
- Percent of limit reached by actual operations
- Status of alarm: Ok, Warning, Exceeded

Outage Reports for a specified duration of time will list the following for each outage:

- Name and description of the device
- Time, date and duration of the outage
- Up to 10 user definable analog values for 5 seconds before the outage
- A summary of the accumulated total outage time for all devices

3.10.2 Sequence of Events & Event (SOE) Data Recording

Thirty (30) day event files shall be maintained for all status point change, all operator control actions, selected analog points, and SOE data for gateway/RTUs/IEDs equipped with sequence of events. Event data will be time-stamped to the nearest second; SOE data will be stamped to the nearest 1 millisecond.

3.10.3 Data Trending

The proposed system shall provide the ability to store and view any data value from the database in a trend graphical format. The system shall bring up pixel-resolution trend graphs of historical data. Sample rates as low as one (1) second must be supported. Trend graphs shall be displayed in separate windows that can be moved, re-sized, and minimized to an icon. The trend graph window shall include tools that allow the user to configure and customize the graph display.

A trend graph window shall have the ability to plot at least five points from the historical database. The trend graph displays shall be interactive allowing the operator to quickly adjust the time frame, duration and resolution of the graph.

It shall be possible to scroll backward or forward in time by selecting time parameters and it shall be possible to cut and paste the numeric values and the trend graphs themselves directly into MS office products such as Excel or MS-Word.

This trending function is separate from the one provided for by export to the external relational database or historian.

3.11 Load Management Software

3.11.1 Direct Load Control

The system shall be capable of automating direct load shedding and voltage reduction to defer power consumption from peak to non-peak usage periods. The system shall be capable of automatically distributing the requested load shed percentages equally among the devices in different load classes and shall permit the user to define alternate load shedding strategies to be implemented on different days of the week and on designated holidays.

The electric utility shall have the ability to define peak load shedding in a variety of operating modes:

- Time Mode: shed load % for fixed time intervals on weekdays, holidays or weekends.
- Threshold Mode: shed load to maintain the total load below a defined threshold limit.
- External Mode: initiate/control shedding scenarios based on signals from another system.
- Advisory Mode: recommend the next level of load shedding to the operator.

3.11.2 Automatic Power Factor Control

Power Factor Control software shall be capable of tracking all changes in the power distribution system's connectivity and maintaining an inventory of capacitor bank values associated with each feeder line. Using Watt and Var measurements to calculate power factor values for each feeder line, the program shall trigger corrective action based on upper and lower power factor limits. Corrective controls shall be issued sequentially based on the feeder lines with the worst power factor and available capacitors on each feeder line.

3.12 Special Function Applications

3.12.1 System Connectivity

A System Connectivity Program shall display the power distribution system connectivity, which has been calculated from the current state of breakers, switches and transformers. The program shall re-calculate connectivity whenever an interconnecting device changes state and shall annunciate whether power line sections are de-energized, energized, energized in parallel, energized in a loop or part of a de-energized loop. Appearance of new dead line, parallel fed, or looped line sections shall raise alarms identifying the exact switching event that caused the change. An automatic trace feature shall determine and highlight the connectivity path of any power line section selected by the operator back to its power source.

This function will permit live system maps and displays (e.g. when a breaker trips, a feeder and all connected elements will be de-energized and therefore change color).

3.12.2 Load Forecasting

A Load Forecast program will be provided which produces a short term (24 hour) and long term (7 day) demand forecast by comparing recent demand-weather trends and weather forecasts with similar historical weather-demand trends (a "best match" type program). It shall also be possible to apply correction factors to adjust the demand forecast to account for annual growth in the base system load, current temperature, humidity, wind chill factor and cloud cover.

The program shall account for holidays both in the historical data and in the forecasted demand period, such as excluding holidays from the comparison of the present and historical data and injecting a holiday demand schedule into a 7-day forecast using the nearest historical holiday or Sunday demand trends.

3.12.3 SCADA to Spreadsheet Conversion

A SCADA to Microsoft Excel Conversion Program (or approved equal) shall be provided to allow for converting database points, events, reports, and historical data to a Microsoft Excel spreadsheet. The ability to import database, events, reports, etc. to the SCADA system shall also be included.

3.12.4 Web Server

A view only full graphical interface program which allows for real time SCADA information to be pushed to users via a web browser without the special need for building custom web pages or maintenance of a separate system shall be provided.

4. Project Management

4.1 Implementation Plan & Schedule

The Contractor shall submit, as part of the bid, a project implementation plan and schedule that will ensure timely and coordinated integration, testing and delivery of a working system. The project implementation plan must include a detailed project schedule demonstrating how the proposed delivery will be met and identify any critical responses required of the owner to maintain the schedule.

As a minimum, the project schedule shall identify the following phases of the project:

- Initial project definition
- Approval submittals
- Design and procurement schedule
- Database generation and entry
- Staging and testing of the system
- Delivery of documentation
- Factory acceptance test
- Delivery and start-up
- Final acceptance

4.2 Submittal Drawings

Prior to purchasing equipment and assembling the system the Contractor shall submit drawings and documentation for the Purchaser's review and approval.

Documentation submitted for approval shall include:

a. System drawings showing physical layout, interconnection cables and Purchaser connection points for all equipment.

b. Parts lists and specification for all hardware and software products.

c. Detailed requirements of the equipment to be supplied: space, cabling, environmental controls, power, and communication circuits.

d. Hardware, software and operation manuals for all hardware and software products.

e. An optional training schedule and training course syllabus.

f. Contractor's factory acceptance test procedures.

4.3 Database Generation

Subsequent to order entry, the selected Contractor shall provide the Purchaser with PC based software to allow the Purchaser to create database point data and operator interface screens on the Purchaser's local PC. The resulting database will subsequently be furnished to the Contractor for data entry and verification.

The Bidder's Proposal shall clearly define the level of support that will be offered to the owner during creation, entry, and testing of the Owner furnished database.

5. Documentation

The Contractor shall provide documentation that completely and accurately describes all hardware and software components that comprise the delivered SCADA system.

The Contractor shall provide a System Manual showing all major hardware and software components of the SCADA system including a block diagram in sufficient detail to show the interrelationship and interconnection of all system components. The system manual shall clearly identify all deliverable hardware, software and documentation.

5.1 Hardware Documentation

5.1.1 Master Station Hardware Drawings and Manuals

Master Station drawings shall consist of:

- A block diagram showing the interrelationship of all components.
- Equipment mechanical layout drawings.
- Interconnection drawings showing all cables, connections and power terminations.
- A Master Station Configuration Specification documenting all the software licenses and configurations inherent in the Master Station hardware components including:
  - layered software products
  - SCADA software configuration
  - LAN nodes
  - port designations

- Original manufacturer's manual for all equipment not manufactured by the SCADA Contractor.

5.2 Software Documentation

The software documentation shall consist of the computer manufacturer's complete operating system software documentation on CD-ROM, and detailed manuals covering the functional application of the SCADA system software products.

5.2.1 SCADA Master Station Database Manual

The Contractor shall provide database generation manuals for the SCADA system software, and any layered software products, which clearly describe the structure of the SCADA system database and contain detailed information on all of the editors used to configure and maintain the SCADA system database.

The topics covered shall include as a minimum:

- Database structure and organization of the editor system
- Definition of communication line, remote stations, status/analog/control points
- Creation of calculations and process control sequences
- Structure and Generation of Graphic Displays
- Integration of DXF file maps and Live Data Points in Displays
- Definition of historical data collection sets & creation of historical graph displays
- Format and scheduling of reports, event logs and alarm messages

5.2.2 SCADA Master Station Operator's Manual

The Contractor shall provide operator manuals for the SCADA system software and any layered software products which clearly describe the use of the SCADA system from the perspective of an operator.

The topics covered shall include as a minimum:

- Overview of SCADA System Database Structure and database editors
- SCADA system screens and keyboard functions
- Display Access and use of graphic displays, menus and dialog boxes
- Use of system generated Data Point and Alarm Summary Displays
- Report Formatting and Scheduling
- System start-up and power fail recovery
- Database backup/restore and historical data archiving

6. Inspection & Testing

6.1 General Requirements

All aspects of the Contractor's manufacturing process, from system design to material procurement, production, product assembly, testing and shipping

shall be performed under the guidelines of a certified ISO 9002:2008 Quality Management procedure designed for early detection of any deficiencies and effective corrective action. The complete process shall result in a documented test report, which confirm that all system components and functions are thoroughly tested in a methodical and organized manner in accordance with a written test procedure.

All equipment and work performed shall be subject to inspection and testing to confirm that it is in compliance with this specification. Any items found not to be in compliance with the specification will be replaced, repaired or upgraded as necessary to correct the noted deficiencies at the Contractor's expense. After correction of a deficiency, the items shall be retested as necessary to ensure compliance with the specification. No deliverables shall be shipped until all inspections and testing have been completed, any deficiencies have been corrected and the Purchaser has approved all software and hardware items for shipment.

6.2 Factory Acceptance Tests

A Factory Acceptance Test (FAT) shall be performed by the Contractor, prior to shipping, to demonstrate the operation of the complete integrated system is in accordance with a written test specification approved by the Purchaser. The FAT shall be performed under the guidelines of a certified ISO 9001:2015 procedure. The Contractor shall perform the FAT and Purchaser representatives, if so desired, shall witness the FAT and perform hands on tests as desired to ensure conformance with this specification. Complete records of all factory acceptance tests, keyed to the test procedures, shall be maintained by the Contractor and delivered to the Purchaser. Each time a variance from this specification is detected, the Contractor shall generate a variance report documenting the date, variance and protective action to be taken.

As a minimum, the Factory Acceptance Test procedures shall include the following:

Visual inspection and inventory of all equipment for conformance to the specification and to the system documentation.

Demonstration of all Master Station client and server communication interfaces and protocols, using hardware to be provided under this contract, of test units provided by the Purchaser or certified simulation devices.

Demonstration of the proper function of all Master Station operator consoles, printers, LAN/WAN equipment and communication hardware.

Demonstration of failover to the redundant Master Station server.

Simulations to verify the systems reaction to communication failures, hardware failures and power failures.

Simulation of system rollovers associated with daylight savings time, new year and leap year.

Installation and demonstration of a Master Station test SCADA database or the database generated by the Purchaser.

Demonstration of the proper functioning of all functional features of the SCADA system software operator interface and database generation editors using a written SCADA software test procedures and check-off list.

Verification of all hardware and software documentation.

6.3 Field Acceptance Tests

Following installation of the system, the Purchaser shall provide remote Field Acceptance Test assistance as required to confirm operation of the basic system functions such as communication with gateways/RTUs and other subsystems, data acquisition and processing, operator interface displays, report generation, data archiving and diagnostic routines.

Following the initial Field Acceptance Tests, the Purchaser will perform a complete test of the system including communication with IEDs that were simulated in the factory, point-to-point verification of RTU functions from the field terminations to the Master Station database and operator interface displays.

G. Insurance Checklist

The minimum limits of the Contractor's Liability coverage shall be as provided in this section.

Insurance may be obtained from a single insurance company and policy or from multiple companies and policies. With all types of required insurance except Worker's Compensation, the Contractor must add the City as an additional insured. Proof of insurance showing the City as an additional insured are not required at the Proposal stage but are a condition precedent to the award of a Contract.

The Contractor shall provide a signed Proof of Insurance citing the contract number and such endorsements as prescribed herein and shall have it filed with the Purchasing Manager before a Contract is awarded.

No change, cancellation, or non-renewal shall be made in any insurance coverage without a thirty (30) day written notice to the Purchasing Manager. The Contractor shall furnish a new certificate prior to any change or cancellation date. The failure of the Contract to deliver a new and valid Proof of Insurance will result in suspension of all payments until the new certificate is furnished.

1. Worker's Compensation __X__ REQUIRED ____NOT REQUIRED
   a. Coverage to be in compliance with the Workers Compensation Law of the Commonwealth of Virginia.
   b. State……... Statutory
   c. Applicable Federal…… Statutory
   d. Employer's Liability……... $100,000

e. Benefits Required by Union Labor Contractors as Applicable

2. Commercial General Liability (coverage against losses resulting in bodily injury, personal injury and property damage caused by or arising out of the contractor's operations under the contract; including Contractual Liability; Products and Completed Operations; Premises Operations):

__X__ REQUIRED ____NOT REQUIRED

a. Combined Single Limit:

$3,000,000 : Each Occurrence, in primary policy or through use of Umbrella or Excess Limits.

If policy contains a general aggregate limit, it shall apply separately to each project.

b. Products and Completed Operations Insurance shall be maintained for a minimum period of one (1) year after final payment, and the Contractor shall continue to provide evidence of such coverage to the City on an annual basis.

3. Automobile Liability (Owned, Non-Owned, Hired)

__X__ REQUIRED _____NOT REQUIRED

a. $3,000,000 Each Accident

(Bodily Injury and Property Damage) in primary policy or through use of Umbrella or Excess Limits.

4. Professional Liability/Errors and Omissions:

__X__ REQUIRED _____NOT REQUIRED

Minimum Limits:

$3,000,000 Each Claim

H. Communications About & Revision of Specifications; Responsibility of Offeror

1. An Offeror may submit questions and comments regarding this Solicitation only to the Purchasing Manager by email to tspence@franklinva.com. To receive an answer, the Offeror must submit all questions and comments no later than seven (7) days before the due date. The City Manager, Purchasing Manager, or Purchasing Manager's designee may also issue clarifications or modifications of the terms of the Solicitation even if no Offeror requests it. The inquiry will be answered and returned to the Contractor, and the City will determine if an addendum is necessary.

2. Only the City Manager, Purchasing Manager, or Purchasing Manager's designee may revise the terms of the Solicitation. If the City revises the terms of the Solicitation, it will do so in the form of an addendum to the Request for Proposal posted on the City of Franklin website at https://www.franklinva.com/business/bidsrfps/ and eVa. Each offeror has the responsibility to insure it has any addenda that have been issued in connection with this RFP. The Offeror will not rely on any information provided orally, or from anyone other than the Purchasing Manager.

3. Each Offeror bears responsibility for thoroughly examining this RFP in its entirety. If an Offeror has any questions or comments regarding the proper meaning or intent of any aspect of the RFP or finds discrepancies in the plans and/or specifications, then it shall submit all such questions and comments in writing to the Purchasing Manager.

4. By submitting an offer in response to this RFP, the Offeror represents that it has thoroughly examined this RFP and all its attachments and incorporated documents, and that it has submitted any and all questions and comments it may have regarding the meaning or interpretation of this RFP to the City in the manner prescribed herein.

I. Method for Making Submission

1. The Offeror shall submit one (1) original and five (5) copies of their Proposal along with one (1) electronic copy in the form of a flash drive to the Purchasing Department. Offerors shall submit with their Proposal all pages of the completed Proposal Submission Form herein by the due date. The Offeror shall make no other distribution of the Proposal. Sealed Proposals shall be submitted to:

   Tracy Spence, Purchasing Manager
   City of Franklin
   207 W. 2nd Avenue
   Franklin, VA 23851

   No later than March 31st, 2021 at 3:00 PM EST

2. There will be a pre-bid WebEx meeting on March 10, 2021 at 3:00 PM EST. Link information is provided on the 1st page of the RFP.

The Proposal submissions with all the forms must be returned in a sealed envelope, marked or packaged and identified as follows:

From:

Name of Offeror	Due Date	Due Time
Street / Box Number	RFP Title	RFP Number
City	State / Zip Code	Purchasing Manager

Proposals sent via express delivery service should be sealed in an envelope inside the express container. The Offerors assumes the risk that an envelope not properly marked will be mistakenly opened, and thus rendered ineligible for consideration. No responsibility shall attach to the City for the premature opening of a Proposal not properly addressed and identified as specified herein. The City will not make any adjustments to the Proposal based on additions or deletions on the outside of the envelope.

2. Determination of Deadline
   The official time used in the receipt of Proposals is local Verizon time. Each Offeror must deliver its Proposal before the minute stated on the cover page of this Request for Proposal. For example, a due time of 2:30 means that a Proposal delivered at 2:29 is timely and one delivered at 2:30 is late.

3. Place for Submission
   Proposals must be received at the place stated on the cover page of the RFP. Offerors who use a delivery company, U.S. Mail, or courier bear the risk that the Proposal may not be received at the correct location by the deadline.

4. Extension of Deadline
   Before the deadline passes, the City may extend the date and time for receipt of Proposals or change the location of the receipt of Proposals if it believes it is necessary and in the best interest of the City to do so. If that happens, Offerors will be notified of the new date and time or new location and Proposals already received will not be opened until the new date and time. If the City of Franklin is closed unexpectedly on a Proposal due date, the Proposals will be opened at the same time and place the next business day that the City and Building are open unless notice is provided, by addendum, of a new due date, time, and place.

5. Process for Receipt of Proposals
   The Purchasing Manager shall receive Proposals and read aloud the names of the Offerors who submitted Proposals. Only the names will be read aloud. There will not

be a formal opening. Thereafter, the provision on Examination of Documents herein applies to the release of Proposal data.

J. General Proposal Preparation Instructions

1. All information requested should be submitted. Failure to submit all information requested may result in the City requiring prompt submission of missing information and/or giving a lowered evaluation of the Proposal. Proposals that are substantially incomplete or lack key information may be rejected by the City. Mandatory requirements are those required by law or regulation or are such that they cannot be waived and are not subject to negotiation.

2. Proposals should be prepared simply and economically, providing a straightforward, concise description of capabilities to satisfy the requirements of the RFP. Emphasis should be placed on completeness and clarity of content.

3. Each copy of the Proposal should be bound or contained in a single volume where practical. All documentation submitted with the Proposal should be contained in that single volume.

4. All pages of the Proposal should be printed on 8.5 x 11' paper, single spaced (1.5 or double spaced preferred), with type no smaller than 11-point font size.

5. Offers are required to submit (1) original, marked as the original, and five (5) copies of each Proposal together with an electronic copy (flash drive) to the Purchasing Department.

6. Information which the Offeror desires to present that does not fall within any of the requirements of the RFP should be inserted at an appropriate place or be attached at the end of the Proposal and designated as additional material. Proposals that are not organized in this manner risk elimination from consideration if the evaluators are unable to find where the RFP requirements are specifically addressed.

7. Ownership of all data, materials, and documentation originated and prepared for the City pursuant to the RFP shall belong exclusively to the City and be subject to public inspection in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by an Offeror shall not be subject to the public disclosure under the Virginia Freedom of Information Act; however, the Offeror must invoke the protections of Section 2.2-4342(F) of the Code of Virginia, in writing, either before or at the time the data is submitted. The written notice must specifically identify the data or materials to be protected and state the reason why protection is necessary. The proprietary or trade secret material submitted must be identified by some distinct method such as highlighting or underlining and must indicate only the specific words, figures, or paragraphs that constitute trade secret or proprietary information. The classification of an entire Proposal document, line item prices and/or total Proposal prices as proprietary or trade secrets is not acceptable and will result in rejection and return of the Proposal. The City is not responsible for any expenses incurred by an Offeror in preparing and submitting a Proposal.

K. Specific Proposal Preparation Instructions

Proposals should be as thorough and detailed as possible so that the City may properly evaluate the capabilities of the Offeror to provide the required Goods, Services,

Construction, or Insurance. Offerors are required to submit the following items for a complete Proposal:

Title

Table of Contents

Tab 1: Signed offer and RFP Agenda

1. Proposal Submission Form with all associated costs. .
2. Completed "Service Categories Being Offered Form", Attachment "A"

Tab 2: Executive Summary / Cover Letter (Maximum 2 Pages)

1. A cover letter identifying the offeror and the Proposal package being submitted.
2. The offeror's representative shall be identified by name, title, address, and telephone number, fax number, and e-mail address.
3. A brief history of the firm, including the number of years in business and current size. State the location of the office from which the work is to be performed.
4. Offeror's understanding of services sought through this RFP for the service category being offered and a description of the Offeror's underlying philosophy and approach to providing the services.

Tab 3: Qualifications and Credentials

(Maximum two (2) pages for General Scope, plus two (2) pages for each category offered)

1. Offeror's qualifications – Describe the Offeror's qualification and ability to fulfill the work that is required, documented success, and direct experience in providing similar services. Include the number of years providing services specific to the subject matter of this RFP and the category being offered, and the number of employees (full time and part time). Describe other relevant professional experience.
2. Proposed Team - Identify key personnel and associates (subconsultants and/or partners) including but not limited to those performing the services and involved in the quality assurance/control process. Clearly identify project managers who may be responsible for tasks assigned by the city under this contract. Provide names, credentials, qualifications, direct work experience, and description of proposed work responsibilities. Resumes and copies of licenses and certification may be included in the Appendix (Tab 7), but not in this section (Tab 3).
3. Number of Projects and Contracts – Give a summary of projects/contracts in which the Proposed team is currently involved. Include dollar amounts, scope of work, role of Proposed Team, and length of contracts.
4. Point of Contact – Identify a primary point of contact (i.e. contract or project manager) who will work with the City during the term of the contract.
5. Subconsultants and/or Partners – Identify all Partners and proposed subconsultants to be engaged by Offeror for any resultant task order. Describe relevant professional experience and capabilities to perform services under this RFP. Describe previous professional experience and history the Offeror has had with the proposed

subconsultant and/or partner. Resumes and copies of licenses and certifications may be included in Appendix (Tab 7) but not in this section (Tab 3).

6. Organizational Chart – Provide organizational chart with names and positions of staff. Highlight Proposed Team staff members and include Partner Firm(s) and/or subconsultants.

Tab 4: Related Project Examples (Maximum 12 Pages)

1. Provide a brief synopsis of successful projects undertaken by the Offeror in the last ten years which best reflect the Offeror's understanding of the City's needs and services. In selecting examples, the Offeror should consider projects of similar size, scope, and complexity as projects included in the City's Capital Improvement Plan, or projects that clearly demonstrate the skills, qualifications, experience, and services sought. Please submit this information for the prime engineer and each proposed sub-consultant(s), team member of a consortium, or joint venture.
2. For each project/contract provide the following information:
   a Name of project;
   b. Engineer's Cost Estimate;
   c. Bid amount of project; iv. Firm's contract amount;
   d. Dollar amount of cost overrun or under-run.
   e. Summary of scope of work, including when the design was completed and where it is located;
   f. Name, address, and telephone number of client's representative responsible for administering the contract;
   g. Number of Change Orders.
3. Briefly state how the Offeror addressed project challenges similar to those typically encountered on City projects such as work in urban area, public process/involvement, constructability and budget and schedule constraints.
4. Optional: Offerors may include up to four (4) photos per project in this Tab. Additional photos may be included in the Appendix in Tab 7.

Tab 5: Quality Assurance/Quality Control (Maximum 2 Pages)

1. Include an "executive summary" overview of the Offeror's Quality Assurance/Quality Control process including the date adopted, procedures, evaluation criteria, and how the Offeror's organization will assure conformance with the contract and tasks to be assigned under the contract. The offeror may include and reference relevant sample forms and checklists in the Appendix; however, a detailed Quality Assurance/Quality Control Plan will be required with the award of a contract.
2. Describe the approach to monitoring contract expenses and man-hours to avoid contract cost overruns and discuss the ability of the firm to track and meet schedules.

3. Identify who will be checking and coordinating the documents; how often the documents will be checked; and the proposed method of documenting quality assurance.

Tab 6: Client References (Maximum 2 Pages)

1. Include a minimum of four (4) references for whom the Offeror has performed similar work to that described herein. Do not include the City of Franklin as a reference.

2. For each reference, describe the services provided, the date of the beginning of the contract, the length of the contract, dollar value of contract, and a contact person (with name, direct telephone number, title and email address).

Tab 7: Appendices (Maximum 10 Pages)

1. Offerors may include documents in the Appendix that were referenced in other sections of the Proposal Guidelines. Material in the appendices section is limited to:

   - Resumes and copies of licenses related to Tab 3;
   - Additional project photos related to Tab 4 with a maximum of 5 pages per project; and
   - Areas not described in this RFP, but which the offeror believes to be essential to the performance and completion of these services may be addressed in the Appendices.

L. Offeror Certifications

1. The Offeror shall certify, through its submission and signature on the Proposals, that the following statements are true and not misleading:

   a. That the submitted Proposal is made without any kickbacks or inducements or any prior understanding, agreement, or connection with any corporation, firm, or person submitting a Proposal for the same Goods, Services, Insurance or Construction, and is in all respects fair and without collusion or fraud.

   b. That it is not currently debarred by the Federal Government, Commonwealth of Virginia, or the City from submitting proposals on contracts for the Goods, Services, Construction or Insurance that is the subject of this RFP, nor is the Offeror an agent of any person or entity that is currently so debarred.

   c. That it has not offered or conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than Nominal Value or minimal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

   d. That to the best of its knowledge no City official or employee having official responsibility for this RFP or member of his or her immediate family has received or will receive any financial benefit of more than Nominal Value or minimal value relating to the award of this contract. If such a benefit has been

received or will be received, this fact shall be disclosed with the Proposal or as soon thereafter as it appears that such a benefit will be received.

e. That it has submitted a single Proposal. For purposes of this provision, the term "Offeror" includes all departments and divisions of a Business and all its Affiliates.

f. That it is satisfied, from its own investigation of the conditions to be met, that it fully understands its obligations if the City awards it a Contract, and that it will not have any claim or right to cancellation or relief from the Contract because of any misunderstanding or lack of information.

2. If the Offeror becomes aware of any information which makes any part of the Offeror Certifications no longer accurate or complete or reveals that any part of my previously submitted information is misleading, the Offeror will immediately bring that information to the attention of the Purchasing Manager.

3. The City may declare an Offeror to be non-Responsible if the City discovers that the Offeror's certification contains any materially false statement. The City may also void any resulting Contract or reduce the payment under the terms of the Contract by the value of the benefit or potential benefit conferred on a City official or employee contrary to these terms.

III. EVALUATION OF RFP

A. Required Elements of Proposal Package

To be considered, a Proposal must contain the completed Proposal Submission Form(s) and any other documents, samples, or information required by the terms of the RFP. Any Offeror which submits a Proposal agrees that such Proposal becomes the property of the City and all costs incurred for its preparation are the responsibility of the Offeror.

1. Required permits, bonds and licenses:

   a. By submitting a Proposal, Offeror represents that it will have all necessary federal, state, and local permits and all necessary licenses, including licenses to use intellectual or real property. The date that Offeror shall have the necessary licenses and permits is the date of performance unless otherwise required by law.

   b. The successful Contractor is required to furnish a performance and payment bond with a value of 100 percent of the contract amount within fourteen (14) days after notification of intent to award. If a Offeror fails to obtain an Acceptable Surety for the required performance or payment bonds within the allotted time, the City may reject the Offeror's Proposal.

   c. All firms or individuals doing business in the City shall obtain a business license if required by the Code of the City of Franklin, Business, Professional and Occupational Licensing (BPOL) Tax, as amended. Questions concerning the BPOL Tax should be directed to the Commissioner of the Revenue _____.

2. Acknowledgment of receipt of all addenda:
   The Offeror must acknowledge receipt of addenda on the Proposal Submission Form unless such failure to acknowledge constitutes an Informality.

B. Evaluation Criteria

1. Proposals will be evaluated by the City using the following criteria:

a. Ability to provide a Windows based SCADA Master Station & Remote Terminals, or approved equal, as described in this RFP.

b. Costs Associated with the SCADA Upgrade and Remote Terminal units.

c. Maintenance Agreement with Customer Support, and associated costs. Give details about your customer support team and hours of availability.

d. Firm/Teams Experience and Performance in Similar Type of Services (Expertise, experience and qualification of team with respect to similar services and past record of performance on contracts with respect to such factors as control costs, quality of work and ability to meet schedules).

e. Proximity to or familiarity with the area in which the work is located.

f. Qualifications of Project manager for the contact (Expertise, experience and qualifications in project management as related to the scope of services).

g. Personnel (Experience, expertise, qualifications, professional integrity and competence and reputation of personnel)

h. Organizational Capability (Ability to complete work in a timely manner, size of firm(s) relative to size of potential projects, proposed project staff resources, proposed use of sub consultants).

i. Timeline for this installation.

Freight Terms: Quote FOB Central Warehouse
1050 Pretlow Street
Franklin, VA 23851

j. Freight prepaid & allowed.

k. Warranty details.

l. Payment Terms.

C. Determining if Offeror is Responsible

1. Award only to a "Responsible Offeror"
The City will only award a Contract to an Offeror that, through evidence submitted or information available to the City, has shown that it has the capability, in all respects, to perform fully the contract requirements and the moral and business integrity and reliability that will assure good faith performance. Prequalification by an entity other than the City is not relevant to this determination.

2. Additional Information
If the City requests it, the Offeror must present, within two business days, evidence satisfactory to the City of the Offeror's ability to perform the Contract and possession of necessary facilities, pecuniary resources, and adequate insurance to comply with the terms of this RFP and any resulting Contract. The City reserves the right to inspect the Offeror's physical facilities and conduct additional investigation prior to award to satisfy questions regarding the Offeror's capabilities.

3. Offeror in Default
No Proposal will be accepted from or Contract awarded to any Offeror that is in arrears or is in default to the City upon any debt, or that is a defaulter as surety or otherwise upon any obligation to the City, until all such debts are paid.

D. Proposal Acceptance Period

Unless the Offeror withdraws its Proposal as allowed under the terms of this RFP or agrees to one or more extensions, the Proposal is binding upon the Offeror for ninety (**90**) calendar days following the RFP Due Date. Offeror further agrees and understands that, except to the extent of the requirement to indemnify the City for costs incurred in protection of the Offeror's confidential information, there is no binding agreement, no contractual relationship, no understanding nor mutual assent until a Contract is executed and exchanged by and between the Offeror and the City. Unless authorized by a recorded affirmative vote of City Council, no City officer or employee is authorized to execute Contracts, and no Contract executed by an unauthorized officer is binding on the City.

E. Cooperative Procurement

This Request for Proposals ("RFP") is submitted for purposes of cooperative procurement, in accordance with § 2.2-4304 of the Code of Virginia, 1950, as amended. Pursuant thereto, other public bodies may participate in or purchase under any contract executed pursuant to this RFP.

IV. AWARD OF CONTRACT

A. The City will evaluate each Proposal on the basis of the evaluation criteria provided in the RFP.

B. The City shall engage in individual discussions with Offerors deemed fully qualified, responsible, and suitable on the basis of initial responses and with emphasis on the Proposal submitted, on costs and professional competence to provide the required service. Repetitive informal interviews may be permissible. Such Offerors shall be encouraged to elaborate on their Proposal, stating qualifications and performance data or staff expertise pertinent to the proposed project, customer support, as well as alternative concepts. Proprietary information from competing Offerors shall not be disclosed to the public or to competitors. At the conclusion of the informal interviews, on the basis of evaluation criteria published in the Request for Proposal and all information developed in the selection process to this point, the City shall select the company as determined to be the most advantageous to the City of Franklin and will make an award.

C. Upon the award or the announcement of the decision to award a contract as a result of this RFP, the Purchasing Division will post Notice of the Intent to Award or Notice of Award on the bulletin board outside the Purchasing Department, located at 207 W. Second Ave Franklin, VA 23851. The City will also send a notice to those submitting Proposals once a decision has been made.

V. CONTRACT AND RELATED DOCUMENTS

Differing Terms in Offeror-Supplied Forms or Letters

No term in an Offeror-supplied form or letter may alter, contradict, or supersede the terms in this RFP and the resulting Contract.

VI. MISCELLANEOUS

A. Authority of Agents

1. Offeror's Agent

Each Proposal, and any Contract, must be signed by a person authorized to bind the Offeror to a valid Contract with the City. For a sole proprietorship, the principal may sign. The City may require that any agent submit a power of attorney or other appropriate documentation showing the authority of the agent to act on the Contractor's behalf. If it later appears that the signatory was not authorized to act, the City may declare the Contract void if it is in the best interest of the City to do so.

2. City's Representative

The Purchasing Manager has the final responsibility and full authority for issuance of requests for proposals, negotiations, placing and modifying invitations, requests, purchase orders, and recommendations of award issued by and for the City of Franklin. The City Manager may add to, vary, or waive terms of the RFP.

3. Non-appropriation of Funds

The authority of representatives for the City is limited by appropriations. In subsequent fiscal years, the City may reduce or eliminate appropriations related to the procurement which is the subject of this RFP without liability to the Contractor or any third party.

B. Examination of Documents

All proceedings, records, contracts, and other public records relating to procurement transactions shall be open to the inspection in accordance with the Virginia Freedom of Information Act.

Trade Secrets

The City will take reasonable steps to protect from public disclosure an Offeror's trade secrets or proprietary information submitted in connection with a procurement transaction if the Offeror invokes the protection of Virginia Code § 2.2-4342 in writing prior to or upon submission of the data or other materials, identifies the data or other materials to be protected by some distinct method, and states the reasons why protection is necessary. By invoking such trade secret or proprietary information protection, the Offer agrees to indemnify the City for any costs, including attorney's fees, incurred defending that Offeror's information in any action under the Virginia Freedom of Information Act.

C. Nondiscrimination

1. In General

The City does not discriminate against Offerors on the basis of race, religion, color, sex, national origin, age or disability, nor does it discriminate against faith-based organizations on the basis of the organization's religious character or impose conditions that restrict the religious character of the faith-based organization,

except as permitted or required by law, or impair, diminish, or discourage the exercise of religious freedom by the recipients of such Goods, Services or disbursements. Any Offeror believing that it or another Offeror has been discriminated against on that basis should immediately make the Purchasing Manager aware of the basis for that belief.

D. Authority to Transact Business in Virginia

Pursuant to Virginia Code §2.2-4311.2, an Offeror organized or authorized to the transact business in the Commonwealth pursuant to Title 13.1 or Title 50 of the Code of Virginia shall include in its Proposal the identification number issued to it by the State Corporation Commission ("SCC"). Any Offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 of the Code of Virginia or as otherwise required by law shall include in its Proposal a statement describing why the Offeror is not required to be so authorized. Any Offeror described herein that fails to provide the required information shall not receive an award unless a waiver of this requirement and the administrative policies and procedures established to implement this section is granted by the City Manager. The SCC may be reached at (804) 371-9733 or at ttp://www.scc.virginia.gov. Offerors should consult the Code of Virginia for more information.

VII. PROPOSAL SUBMISSION

Pricing of Equipment and Services is requested with this RFP from the Contractor and should include all supporting documentation including pricing for all options.

A. Notice and Instructions to Bidders

The City of Franklin, Virginia (hereinafter called the "Owner") will receive sealed Proposals for furnishing the necessary labor, equipment, and miscellaneous materials for a Supervisory Control & Data Acquisition System Master Station Upgrade. The Proposals shall be publicly opened and read at the time and location shown below:

Location: City of Franklin
City Administration Building
207 W. 2nd Avenue
Franklin, VA 23851

Date: March 31, 2021

Time: 3:00 p.m. local time

Proposals received after the time and date specified for the opening of the bids shall be returned unopened.

Instructions

1. Bid Proposals and all supporting documents required to be attached thereto, must be submitted in a sealed envelope addressed to:

   Tracy Spence, Purchasing Manager
   City of Franklin
   207 W. 2nd Avenue
   Franklin, VA 23851

2. The name and address of the Bidder and the date and hour of the opening of the Proposals must appear on the envelope in which the Proposal is submitted. Proposal shall also be marked **"Sealed Proposal for the Supervisory Control & Data Acquisition System Master Station Upgrade."**

3. The Bidder hereby agrees that the submission of a Proposal constitutes acceptance of all requirements included in this RFP.

4. The Bidder hereby agrees that it is thoroughly familiar with the requirements of the specifications as well as the scope of the services described and specified in this RFP.

5. The Bidder hereby warrants that this Proposal is made in good faith and without collusion or connection with any other person or persons bidding for the same equipment and services.

6. The Bidder's Proposal must include provisions for the payment of all monies which will be payable by the Bidder or the Owner in connection with the Project on account of taxes imposed by any taxing authority upon the sale, purchase or use of materials, supplies or equipment to be incorporated in the Project. The Bidder agrees to pay all such taxes and to furnish to the Owner and all appropriate taxing authorities all required information and reports upon request.

7. The City of Franklin reserves the right to reject any or all Proposals and to accept any Proposal which is deemed to be in the best interest of the City of Franklin, Virginia.

B. Bidder's Proposal

TO: CITY OF FRANKLIN
FRANKLIN, VIRGINIA

Gentlemen:

The undersigned has carefully examined the Request for Proposal and hereby declares that it will furnish the necessary services and equipment as specified for the following price:

	Price	**Delivery**
Redundant SCADA Master Station	$_____	_____
Five (5) RTU Upgrades	$_____	_____
Three (3) Workstations	$_____	_____
TOTAL PRICE (including Hardware and Software)		$_____
VA State and Local Taxes	$_____	

OPTIONAL EXTENDED MAINTENANCE COST

Hardware Maintenance Cost (3 Year)	$_____
Software Maintenance Cost (3 Year)	$_____
VA State and Local Taxes	$_____

OPTIONAL TRAINING COST

Five (5) days of Onsite Training	$_____
Five (5) days of Optimization and Startup	$_____
VA State and Local Taxes	$_____

OPTIONAL EQUIPMENT

Recommended Spare Equipment	$_____
VA State and Local Taxes	$_____

Exceptions:

Clarifications:

SIGNATURE PAGE

Bidder	By
Address	Print Name
City State Zip	Title
Telephone	Email
Date	

C. Acknowledgement of Receipt of Addenda

I certify that I received and reviewed the following Addenda to the Request for Proposal and have included the provisions in this Proposal:

Number	Date
_____	_____
_____	_____
_____	_____
_____	_____

Please complete the following by checking the appropriate line that applies and providing the requested information.

A. _____ Offeror is a Virginia business entity organized and authorized to transact business in Virginia by the Virginia State Corporation Commission (the "SCC") and such Offeror's Identification Number issued to it by the SCC is _____

B. _____ Offeror is an out-of-state (foreign) business entity that is authorized to transact business in Virginia by the SCC and such Offeror's Identification Number issued to it by the SCC is _____

C. _____Offeror does not have an Identification Number issued by the SCC and such Offeror is not required to be authorized to transact business in Virginia by the SCC for the following reason(s): _____.

VIII. CERTIFICATIONS

This RFP is subject to the provisions of §§ 2.2-3100 et seq. of the Virginia Code, the Virginia State and Local Government Conflict of Interests Act, and Sections 2.2-4300 et seq. of the Code, the Virginia Public Procurement Act (VPPA).

By my signature on this form, I certify on behalf of the Offeror that I am not aware of any information bearing on the existence of any potential conflicts of interest or violation of ethics in public contracting provisions of the VPPA, Virginia Code §§ 2.2-4367 through 2.2-4377.

I further certify that this Proposal is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting a Proposal for the same Goods, Services, Insurance or Construction, and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of state and Federal law and can result in fines, prison sentences, and civil damage awards.

I further certify that the statements regarding debarment, ethics in public procurement, submission of a single Proposal, understanding of the conditions, and data on convictions contained in provision "Offeror Certifications" of the RFP are true and not misleading as to the Offeror.

I hereby certify that the responses to the above representations, certifications, and other statements, including all attachments, are accurate and complete. If after I sign these forms I learn of any information which makes any of the above representations, certifications or other statements inaccurate or incomplete, or reveals that any part of my previously submitted information is misleading, I will immediately bring it to the attention of the Purchasing Manager. I agree to abide by all conditions of this RFP and certify that I am authorized to sign for the Offeror.

COMPANY NAME (Please Print)	TELEPHONE NUMBER
ADDRESS	
FACSIMILE NUMBER	E-MAIL ADDRESS
SIGNATURE:	DATE
NAME: (Please Print)	TITLE

ATTACHMENT "A"

REQUEST FOR PROPOSAL

SERVICE CATEGORIES BEING OFFERED SECTION

CATEGORY 1 – SCADA MASTER STATION UPGRADE

☐ 1.1 Replacement of the City's existing SCADA Master Station

CATEGORY 2 – REMOTE TERMINAL UNIT UPGRADE

☐ 1.2 Upgrade of the City's existing RTUs