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This is not an advertisement.

Miami-Dade County, Florida *Project Title: SCADA Telemetry System*

SCOPE OF SERVICES

A. Introduction

Miami-Dade County, hereinafter referred to as the County, as represented by the Miami-Dade Water and Sewer Department (WASD), is soliciting Proposals for a comprehensive SCADA Telemetry System upgrade and maintenance solution (Solution) to support the County's water and wastewater treatment and pumping facilities. Through the use of the Solution, the County intends to enhance the security and functionality of its SCADA radio infrastructure, modernizing the system to improve monitoring and control capabilities across a 43 square mile coverage area. The Solution shall include all necessary hardware, software, migration services, spare parts, programming service applications, support services, workstations, repairs, and ongoing staff training, as further described herein. The County intends to enter into an agreement with a Contractor that provides a turnkey solution encompassing all hardware and services required to successfully implement, support, and maintain the SCADA Telemetry System for the duration of the Contract.

B. Services to be Provided

The Miami-Dade Water and Sewer Department (WASD) is responsible for providing reliable, high-quality drinking water and efficient wastewater treatment services to approximately 2.7 million residents across 34 municipalities in Miami-Dade County. To enhance the operational efficiency of its infrastructure, WASD is seeking to procure a new SCADA Telemetry System to replace its aging radio infrastructure. The new system will include hardware, software, and services required to monitor and control remote pump stations, wellfields, and plant operations. This system upgrade is critical for ensuring real-time monitoring, maintaining operational efficiency, safeguarding public health, and meeting regulatory compliance.

1. Objectives

The County has established the following objectives for the SCADA Telemetry System upgrade and maintenance project:

a) A Modernized and Fully Functional SCADA Telemetry System:
Implement a turnkey solution that replaces the existing SCADA infrastructure with modern technology, enhancing system performance, reliability, and scalability.

b) An Experienced, Responsive, and Responsible Contractor:
Engage a Contractor with proven expertise in deploying, managing, and maintaining SCADA Telemetry Systems, ensuring a ensuring a smooth transition, and providing reliable support throughout the contract term.

c) Enhance System Security:
Integrate robust cybersecurity measures to protect the system against unauthorized access and ensure integrity of system operations.

d) Expanded System Capacity and Coverage:
Enhance the system's capacity and geographical coverage to effectively manage and monitor operational data from critical infrastructure components, supporting both current and future operational needs.

e) Minimized Operational Disruption:
Ensure a well-planned migration to the new system that minimizes downtime and operational disruptions during the transition, while maintaining continuous monitoring and control.

f) Comprehensive Support and Maintenance:
Provide long-term system reliability through comprehensive support services, including 24/7 technical support and regular updates to address any system issues.

g) Effective Training and Knowledge Transfer:
Deliver comprehensive training programs to County staff to ensure they are equipped to operate, maintain, and troubleshoot the system efficiently.

h) Cost-Effective Implementation and Maintenance:
Achieve a cost-effective approach to system implementation, maintenance, and support, with payments structured to align with the County's budget priorities and based on the successful completion of key project milestones.

i) Seamless System Integration:
Ensure seamless integration of the new SCADA Telemetry System with existing network infrastructure, supporting both Serial and Ethernet communications, and enabling efficient data exchange and interoperability.

2. Current Operating Environment

2.1.1 Key Components and Features

WASD operates a complex infrastructure, including:

- Three regional water treatment plants, 14 smaller water treatment plants, and over 8,000 miles of water lines.
- Three regional wastewater treatment plants and over 1,000 sewer pump stations.

The SCADA Radio System, which comprises over 1,160 GE Grid Solutions radio devices, facilitates continuous 24/7/365 monitoring and control of these critical facilities. The system enables WASD to monitor key operational parameters such as wet-well levels, alarms, water distribution pressures, power failures, pump statuses, and flows, ensuring real-time control and oversight.

2.1.2 Operational Challenges

Aging Infrastructure:
Key components of the SCADA system are no longer adequate to support current operational demands and must be modernized to prevent system failures or inefficiencies.

Security Concerns:
The current system requires enhanced cybersecurity measures to protect against potential threats, ensuring the integrity of control signals and operational data.

2.2 Solution Functionality

The proposed solution for the SCADA Telemetry System upgrade and maintenance project must encompass the following functionalities to ensure comprehensive and effective operation:

Real-Time Monitoring and Control:
Enable continuous 24/7/365 monitoring and control of remote pump stations, plant operations, and wellfields, providing real-time data collection and transmission of key operational parameters.

Advanced Security Features:
Implement robust cybersecurity measures, including future-ready security capabilities to protect against unauthorized access and potential threats, and integrating data encryption.

High Reliability and Availability/Redundant Configuration:
Utilize redundant configurations to maximize system reliability and uptime

Network Integration:
Support both Serial and Ethernet communications for seamless integration with the existing network infrastructure, enabling efficient data exchange and interoperability.

Comprehensive Support and Maintenance:
Provide ongoing support services, including technical assistance, regular updates, and emergency response to ensure the long-term functionality of the system.

Training and Documentation
Supply training for County staff on system operations and maintenance, along with comprehensive documentation such as user manuals, system architecture diagrams, and maintenance guides.

Compliance and Reporting:
Ensure the system complies with all relevant regulatory requirements, generating comprehensive reports and logs for regulatory compliance, system performance, and maintenance activities.

2.3 Hardware Specifications

The proposed SCADA Telemetry System upgrade and maintenance project requires the following hardware specifications to ensure optimal performance, reliability, and security:

Equipment Manufacturing and Assembly:
All equipment must be manufactured and assembled in the United States of America to ensure compliance with quality standards and regulatory requirements.

Frequency Range:
The system must operate within a frequency range of 928 to 952 MHz to ensure effective communication and compatibility with existing infrastructure.

Data Rates:
The system must support the following data rates:

- Up to 20 kbits/s using QPSK Modulation.
- Up to 40 kbits/s using 16 QAM.
- Up to 60 kbits/s using 64 QAM.

Channel Size:

The hardware must operate on a channel size of 12.5 kHz to ensure efficient use of the frequency spectrum and optimal data transmission.

Operating Modes:
The system must support Master Station, Repeater Station, and Remote Station operating modes to ensure versatile and scalable network configuration.

Dual Transceivers and Hot-Swappable Power Supplies:
The hardware must include dual transceivers to provide redundancy at the component level, automatically switching to the standby transceiver in case of failure. It must also feature hot-swappable power supplies to allow for maintenance or replacement without shutting down the system, ensuring uninterrupted operation and availability.

Redundant Configuration:
Radios at Master and Repeater sites must be installed in a Hot Standby redundant configuration to ensure seamless and automatic transition to a backup radio in case of failure, maintaining continuous operation of the overall system and maximizing reliability for critical communications.

Modular Components:
Key components, such as duplexers and alarm cards, must be modular and field-replaceable to facilitate easy maintenance and reduce downtime.

Cybersecurity Features:
The hardware must include advanced cybersecurity features, including data encryption, to ensure secure communication and protect against unauthorized access.

Network Integration:
The hardware must support both Serial and Ethernet communications to ensure seamless integration with existing network infrastructure and efficient data exchange.

Signal Handling Capacity:
The hardware must be capable of handling the traffic for over 120,000 signals, including vital operational data such as wet-well levels, alarms, water distribution pressures, power failures, pump statuses, pressures, and flows.

2.4 Licensed Software

The selected Proposer shall provide and maintain the licensed software required for the SCADA Telemetry System upgrade and maintenance project. The following outlines the requirements for the licensed software:

2.6.1 Types of Software Required

Diagnostic and Maintenance Software:
The management and monitoring software should provide comprehensive diagnostic and maintenance tools to facilitate system diagnosis, troubleshooting, and maintenance of the system.

Key features should include:

- Real-time monitoring of system performance
- Fault detection and resolution
- The ability to send configuration parameters to devices

- The execution of routine maintenance tasks, such as firmware upgrades to end devices, to ensure optimal system functionality. Additionally, the software should be capable of generating reports based on customizable thresholds and send automated email notifications to alert users of system issues.

Equipment embedded Software:
The software must incorporate robust security measures to protect the SCADA Telemetry System from unauthorized access and cyber threats.

Essential security features include:
- Data Encryption
- Access control and authentication mechanisms to ensure the integrity and confidentiality of system data.

2.6.2 Software Licensing

License Model:
The County prefers an Enterprise License model that does not require user counts/radio counts; however, other software licensing models will be considered. The proposed licensing model must be clearly described and justified.

License Grant:
The selected Proposer shall grant the County a perpetual, non-exclusive, non-transferable license to use the software for the SCADA Telemetry System. This license shall cover all software components, including any customizations, interfaces, and third-party software necessary for the operation of the system.

License Scope:
The software license shall permit the County to use, copy, and configure the software as necessary for its operations. The license shall cover all County facilities, including remote sites, and shall allow for an unlimited number of users and devices under the preferred Enterprise License model.

Third-Party Software:
If the solution includes third-party software, the selected Proposer shall ensure that the necessary licenses are included in the proposal. The Proposer shall also ensure that the third-party software is compatible with the SCADA Telemetry System and supports all required functionalities.

License Fees:
The proposal shall clearly outline any one-time or recurring license fees associated with the software. Any additional costs for upgrades, updates, or additional users and devices must also be specified.

2.5 Migration Services

The successful implementation of the SCADA Telemetry System upgrade requires comprehensive migration services to ensure a seamless transition from the existing system to the new, enhanced infrastructure. The Contractor must provide the following migration services:

Detailed Migration Plan:
Develop a well-defined migration plan outlining the step-by-step process for upgrading the SCADA Telemetry System, including timelines, resource allocation, risk assessment, and mitigation strategies.

Minimal Downtime:

Ensure the migration process results in no more than one (1) hour of downtime, maintaining continuity of operations with existing frequencies and antennas.

Pre-Migration Assessment:
Conduct a thorough assessment of the current SCADA Telemetry System, including hardware, software, and network infrastructure.

Equipment Staging and Testing:
Stage and test all new equipment prior to installation to verify functionality and compatibility with existing systems.

Data and Configuration Migration:
Migrate all relevant data and configurations from the existing system to the new SCADA Telemetry System, ensuring data integrity and consistency.

Parallel Operation:
Implement a parallel operation phase where the new system runs alongside the existing system to verify functionality and performance.

Cutover Execution:
Execute the final cutover to the new SCADA Telemetry System in a controlled and coordinated manner.

Post-Migration Support:
Provide immediate post-migration support to address any issues or concerns that arise after the cutover.

Training and Knowledge Transfer:
Conduct comprehensive training sessions for County staff on the operation and maintenance of the new SCADA Telemetry System.

Performance Monitoring:
Implement monitoring tools to track system performance and ensure optimal operation during and after the migration.

Compliance Assurance:
Ensure that the new system complies with all relevant regulatory requirements, providing documentation of compliance for County records.

2.6 Solution Testing and Acceptance

The Contractor must ensure that the upgraded SCADA Telemetry System meets all specified requirements and performs reliably before final acceptance by the County. The following testing and acceptance criteria must be met:

Comprehensive Testing Plan:
Develop a detailed testing plan outlining all necessary tests to verify the functionality, performance, and reliability of the new SCADA Telemetry System. The testing plan shall include propagation testing for the SCADA Telemetry System and should be conducted at critical junctures after awarding the contract to ensure optimal functionality. Initial testing should occur immediately after the system's installation to check basic functionality and initial performance. Further testing is needed during system integration to ensure all components work cohesively. Before the system goes fully operational, thorough testing is essential to confirm it can handle real-world conditions and meets all specifications. Additional tests should follow any major upgrades to verify continued system integrity.

Pre-Installation Testing:
Conduct pre-installation testing of all hardware and software components to ensure they meet required specifications and are free of defects.

Installation Verification:
Perform thorough testing during and after installation to ensure all components are correctly installed and integrated.

Functional Testing:
Execute functional tests to ensure the system performs all required operations.

Performance Testing:
Conduct performance tests to evaluate the system's response times, data transmission rates, and overall efficiency.

Reliability and Redundancy Testing:
Test the reliability and redundancy features of the system, including dual transceivers and hot-swappable power supplies.

Security Testing:
Perform security tests to ensure robust cybersecurity measures are effectively implemented.

Integration Testing:
Conduct integration tests to ensure the new SCADA Telemetry System seamlessly integrates with the existing network infrastructure.

User Acceptance Testing (UAT):
Facilitate User Acceptance Testing with County personnel to validate that the system meets all operational requirements.

Final Acceptance Criteria:

All equipment within the SCADA Telemetry System must be individually validated based on the following criteria:

- Each device must successfully power up and perform its primary function as expected.
- Radio signal parameters, such as RSSI (Received Signal Strength Indicator) and SNR (Signal-to-Noise Ratio), must meet or exceed the minimum thresholds established for both Base/Master Stations and the Remote Stations being replaced.
- The system must undergo testing for a period of 30 to 60 days to identify any potential issues. Once this testing phase concludes with no major incidents, Final Acceptance will be signed, transitioning the radio system to the warranty phase.

Documentation and Training:
Ensure all relevant documentation is provided to the County and conduct comprehensive training sessions for County staff.

Final Acceptance:
Obtain formal acceptance from the County upon successful completion of all testing and verification processes.

2.7 Training

The Contractor must provide comprehensive training to ensure that County personnel are fully equipped to operate, maintain, and troubleshoot the upgraded SCADA Telemetry System. The training program should cover all aspects of the system and include both initial training and optional ongoing training services. The following outlines the training requirements:

2.9.1 Initial Training

Training Plan Development:
Develop a detailed training plan that outlines the training objectives, schedule, and materials. Customize the training program to meet the specific needs and skill levels of the County's personnel.

Training Materials:
Provide comprehensive training materials, including user manuals, maintenance guides, system architecture diagrams, and step-by-step operation procedures. Ensure all training materials are clear, concise, and easy to understand.

Training Sessions:
Conduct initial training sessions for all relevant Scada Division staff, including field technicians, specialists, and engineers. Training sessions should include both classroom instruction and hands-on practical exercises to ensure thorough understanding and proficiency.

System Operation:
Train County staff on the day-to-day operation of the SCADA Telemetry System, including monitoring and control of remote pump stations, plant operations, and wellfields.

System Maintenance:
Provide training on routine maintenance procedures, including inspection, troubleshooting, and replacement of modular components such as transceivers, power supplies, duplexers, and alarm cards. Ensure staff are knowledgeable about preventive maintenance schedules and best practices.

Security Protocols:
Train personnel on the implementation and management of cybersecurity measures, including data encryption. Ensure staff understand the importance of security protocols and how to maintain system integrity.

Emergency Response:
Develop and deliver training on emergency response procedures to handle system failures, power outages, and other critical incidents. Ensure staff are prepared to implement redundancy features, such as Hot Standby configurations, to maintain system operation during emergencies.

User Support:
Provide training on how to access and utilize the Contractor's technical support services, including how to report issues and request assistance.

2.9.2 On-Going Training

During the life of the resulting contract, the County may, at its sole discretion, require additional training hours or sessions for new users or as a refresher. Proposers should provide pricing options per hour, per diem, and for both on-site and remote sessions, as these additional trainings will be requested as needed by the County.

The proposed Solution shall provide the following:

Refresher Training:
Offer periodic refresher training sessions to ensure County staff remain proficient in using and maintaining the SCADA Telemetry System. Update training materials and sessions to reflect any system upgrades or changes.

Advanced Training:
Provide advanced training sessions for experienced users who require deeper knowledge of system functionalities and capabilities. Cover advanced troubleshooting techniques, data analysis, and optimization strategies.

Customized Training:
Develop customized training programs based on specific needs or challenges faced by the County. Address any unique operational requirements or scenarios to ensure staff are fully prepared.

Training Documentation:
Maintain and regularly update a repository of training documentation, videos, and online resources that County staff can access at any time. Ensure these resources are easily accessible and user-friendly.

Feedback and Improvement:
Implement a feedback mechanism to gather input from County staff on the effectiveness of the training programs. Continuously improve the training materials and methods based on feedback and evolving needs.

2.10 Software Maintenance Services

At a minimum, software maintenance services shall include updates and upgrades to the proposed Solution. Such updates and upgrades shall encompass the correction of substantial defects, fixes for any minor bugs, resolution of conflicts with mandatory operating system security patches, enhancements to Solution functionality, and upgrades to new version releases. These updates must maintain compatibility with all customizations and interfaces. The software maintenance plan may include the option of installation of new releases by the selected Proposer. Any Solution downtime associated with maintenance services must be conducted during non-business, off-peak times and requires preapproval from the County.

All maintenance services as outlined below shall be provided for the proposed Solution in its entirety, including any modifications, customizations, and interfaces:

- All software shall be of the most recent release, and all software upgrades issued by the selected Proposer shall be available to the County at no additional charge.
- Access to the proposed Solution shall be designed so that an upgrade or change to the Solution does not require staff to manually update each computer.
- Periodic updates of the Solution may incorporate:
    - Corrections of any substantial defects.
    - Fixes for any minor bugs.
    - Fixes for conflicts with mandatory operating system security patches, resolved as Severity Level 1.
    - Enhancements to any Solution components that the County has licensed.

Additionally, updates to the Solution shall be provided as required by legally mandated changes, such as amendments to local, state, or federal laws.

2.11 Hardware Warranty Services

Hardware warranty services shall include all necessary break-fix, parts replacements, and labor required for the continued uninterrupted operation of the Solution in accordance with established standards. This service will cover all equipment and parts without requiring traditional on-site maintenance. The selected Proposer's support personnel shall be available to provide the County with backup support and fulfill all warranty obligations described within the finalized Scope of Services. This includes testing, isolation, and repair or replacement of failed parts and assemblies found to be defective in materials and workmanship, ensuring a quick return to full operation.

In the event that the selected Proposer cannot repair the Hardware within one (1) month of receipt, the Proposer shall replace the item with an equal or superior part, subject to the County's approval. Repaired or replaced items will be returned to their inventory locations, and County approval will be required for non-OEM parts.

The selected Proposer shall keep records of warranty repair actions to determine Hardware performance and adherence to performance standards during the warranty period as specified in this Solicitation.

2.12 Support Services

The selected Proposer shall be responsible for providing technical support services to ensure optimal performance of the proposed Solution, including all components, throughout the term of the resultant contract, including any optional renewal periods. The selected Proposer shall have technical support services available in the form of unlimited email and/or telephone support as well as live help desk support twenty-four (24) hours per day, seven (7) days per week, including holidays. The selected Proposer shall also provide on-site technical support when required. This on-site support may be requested when it is determined the problem cannot be corrected by telephone/remote support. Proposers shall include a description in the proposal response outlining the support services offered and any limitations thereof.

The County's preferred escalation process is outlined in Table 1 below

Table 1

Severity	Definition	Response Time	Resolution Time	Status Frequency Update
1=Critical	A critical component of the System, whether hardware or software, is in a non-responsive state and affects Users' productivity or operations. A high impact problem which affects the Users.	Fifteen (15) minutes	One (1) to Three (3) Hours depending on complexity of the issue	Thirty (30) minutes
2=Urgent	Any component failure or loss of functionality not covered in Severity 1, which is hindering operations, such as, but not limited to: excessively slow response time (exceeds maximum defined response times); functionality degradation; error messages; backup problems; or issues affecting the use of a module or the data.	One (1) Hour	Three (3) to Five (5) Hours	One (1) hour

Severity	Definition	Response Time	Resolution Time	Status Frequency Update
3=Important	Lesser issues, questions, or items that minimally impact the workflow or require a work around.	Four (4) hours	Twenty-Four (24) Hours	Six (6) Hours
4=Minor	Issues, questions, or items that don't impact the workflow. Issues that can easily be scheduled such as an upgrade or patch.	Twenty-four (24) hours	Seventy-two (72) hours for an acceptable work around until final resolution and final solution within two (2) weeks	Daily Status Call

2.13 Technical Support Communication

The County requires an electronic support request ticketing system with the ability to add attachments, which will be in addition to the live help desk outlined above that is live person answered (an Interactive Voice Response system may not have more than one (1) selection to reach the live person). Additionally, the County requires, at a minimum, a weekly report of all outstanding, open service tickets and a reporting tool that enables customized reporting. Such reports may include and be searchable by:

- Ticket number
- Location or site
- Date/time opened
- Date/time of initial vendor response
- Date/time closed (if applicable)
- Opened by Username
- Division or Business unit (as defined by the County)
- Severity level
- Brief description of issue
- Agency point of contact/lead
- Vendor assigned point of contact
- Date/time of resolution
- Description of resolution