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October 29, 2019

City of Santa Clara
1705 Martin Avenue
Santa Clara, CA 95050

Attention: Franz Mortensen

Reference: **HSQ MISER SCADA System Upgrade – Phase 1**
                        City of Santa Clara
                        HSQ Quotation No. 1910-00XX-MP - DRAFT

Gentlemen:

HSQ Technology is pleased to offer you the following quotation for upgrading your HSQ MISER SCADA System. The quote is only for the Phase 1 upgrade, which includes new servers and workstations, MISER software upgrades, MISER graphics conversions, new networking hardware, dedicated server and workstation racks, and necessary communication infrastructure installation. Also included are new master radio systems and converting all existing SCADA graphics screens.

Per our most recent meeting with you on 8/12/19, and in review of the previous emails and budgetary quote, HSQ Technology has detailed a plan for upgrading your HSQ MISER SCADA System, including labor and material summaries.

HSQ MISER System Hardware Upgrade Sequence Description

1. Coordinate and upgrade HSQ MISER software on the two (2) existing HSQ MISER Servers, in the Electric Control Room and library, and two (2) existing Workstations, in Electric Control Room and EOC, in conjunction deployment of the new HSQ MISER Servers.
2. Concurrently, HSQ Technology will, optionally, install the new server/workstation racks, one (1) in the SCADA Building, one (1) in the Library, and one (1) in the EOC, and install new Ethernet cable for racks as needed.
3. Eight (8) current model rack mounted HP Switches will be provided to facilitate redundant communication between the Library, Electric Control Room, new SCADA building, EOC, the City Hall Data Center, and City Hall office. The City Hall Office will be connected to the redundant switches in the City Hall Data Center. HSQ will install and configure network components to bring HSQ SCADA network to the Library, Electric Control Room, new SCADA building, the EOC, City Hall Data Center, and City Hall office. Existing fiber communication installed and commissioned by City of Santa Clara, will be utilized for the communication.

4. Procure, configure, install and deploy new redundant HSQ MISER Servers, two (2), to replace existing servers, STCVSA and STCVSB. New servers will be located in the SCADA Building (STCVSA), and City Hall Data Center (STCVSB).

5. Procure, configure, install and deploy HSQ MISER Workstations, three (3), to replace existing workstations STCVS1 and STCVS4 and new workstation STCVS2. Workstations will be located in Library (STCVS1), SCADA Building (STCVS2), and EOC (STCVS4). One (1) workstation, STCVS1, will be configured as the primary MISER Windows PC Client Server, with an additional workstation configured as a backup MISER Windows PC Client Server.

6. Procure, configure, install and deploy HSQ MISER Xview Windows PC clients, four (4), to be STCVS3, STCVS5, STCVS6, and STCVS7. Three (3) Xview Windows PC clients will be located in Library and will be small PC clients with a single monitor. Using KVM hardware, HSQ will locate one Monitor, Keyboard, and mouse set within the library, and two Monitor, keyboard, and mouse sets within the Electric Control Room. All KVM hardware will include audio and a set of speakers. Existing Ethernet network within the building will be used for the KVM extender hardware. One (1) Xview Windows PC client will be located at City Hall Office and will not require KVM hardware.

7. Each of the three (3) new SCADA network and hardware racks will be provided with a rack mount UPS to power all rack mounted hardware for fifteen (15) minutes upon power outage. A rack mount UPS will be provided for installation in the existing City Hall Data Center Rack.

8. After successful installation and deployment of new HSQ MISER Servers, including verification of full HSQ MISER System functionality with the existing HSQ RTUs and associated existing communications infrastructure, migrate active monitoring and control of City of Santa Clara facilities with existing HSQ RTUs to the new HSQ MISER Servers by changing the data source of the existing workstations from existing HSQ MISER Server to the new HSQ MISER Servers.

9. After successful migration of the existing Servers and Workstations data source, the existing HSQ MISER Servers and workstations will be removed from the system. The existing servers and workstations will not be reconfigured as workstations due to the age of the computers.

10. During this process, the Server and Workstation computer hardware will be upgraded to new, rack mountable models and relocated to a designated computer racks location in the Library (Workstation Only), SCADA building, City Hall Data Center (Server Only) and EOC building (Workstation Only).

11. After the MISER SCADA hardware and software upgrades are complete and operational, HSQ will, optionally, complete upgrade to thirteen (13) existing MISER SCADA Graphics screens.

12. Concurrently, HSQ will supply and install new master radios, and associated antenna and cable accessories, at the SCADA building and Electrical Shop (Master Radio Only), with optional installation of the antenna and cabling on existing mast at the SCADA Building. HSQ and City of Santa Clara will work together for all FCC related license and permitting. Radios will be setup for an Online/Standby configuration

HSQ MISER SCADA System Upgrade Scope of Work

HSQ will provide two (2) new rack mounted HPE rx2800 i6 servers running the latest version of VSI OpenVMS operating system and HSQ MISER software at time of delivery. These systems will each have 16GB RAM, a 146 GB system drive, and a 300GB history drive. These servers will also be provided with redundant power supplies.

HSQ will provide three (3) new rack mounted HPE rx2800 i6 workstations running the latest version of VSI OpenVMS operating system and HSQ MISER software at time of delivery. These systems will each have 16GB RAM, a 146 GB system drive. One workstation will be setup as the Windows PC Xview Server to facilitate adding Xview Windows PC clients. These workstations will also be provided with redundant power supplies.

HSQ will provide four (4) new Xview Windows PC Clients, running Windows 10 Pro x64 and the latest version of XView for Windows, Exceed Edition. Windows PC basic specs will be a Dell Optiplex 5070, 24" Monitor, Intel Core i5 processor, 8 GB Ram, and a 1 TB Hard Drive. Exact specifications will be confirmed at the time of order.

HSQ will provide eight (8) HP Aruba 2540 Switches with Fiber ports, to provide network redundancy for your upgraded network that has the additional flexibility of accommodating any Layer 3 transports for future isolation and control of the SCADA network, including the ability to add encrypted tunnels and support DECnet across your network. Switches will have 1 Gbps Copper Ethernet Ports and 1 Gbps Fiber Ethernet Ports.

HSQ will provide two (2) new GE MDS Master Radios, with required cabling, antennas, and accessories. The new master radios will be installed within the rack at the new SCADA building and the Electrical Shop.

HSQ will, optionally, upgrade thirteen (13) existing SCADA graphics screens to the currently available MISER graphic offerings. HSQ will provide a submittal package with upgrades to screens for approval. Upon approval, HSQ will install and test the upgraded graphic screens. The new SCADA graphic screens are functional, the existing SCADA graphics screens will be removed from the system. HSQ has allotted three (3) days per screen for the above work.

At our Hayward office, we will upgrade a recent backup of your system to the current MISER

thirty-five (35) characters, and install a SNMP driver (SNMPNCC) to allow SCADA to directly monitor your network devices. The new servers and network router/switches will be configured and tested at our Hayward Office.

Once tested, the new HSQ MISER configuration will be prepared for the upgrade of the existing HSQ MISER Servers and Workstations. A plan to minimize downtime will be developed, and our installation engineers will be scheduled for two (2) days of startup to complete the upgrade of the existing HSQ MISER Servers and Workstations and to field test the upgraded system.

Once all MISER SCADA Hardware and software is upgraded, including network switches, and fully operational, HSQ will, optionally, work with the City of Santa Clara to upgrade thirteen (13) existing SCADA Graphics screens. HSQ as accounted for thirteen (13) screens and has allocated three (3) days of work per screen for coordination, submittal of upgraded screens for approval, installation and testing of new screens, and eventual removal of existing screens.

Bill of Material and Cost Summary

MISER SCADA Software, Hardware and Networking Upgrades
- Hardware - $151,070.00
    - Two (2) HPE rx2800 i6 servers, rack mounted, running the latest version of VSI OpenVMS operating system and HSQ MISER software, 16 GB RAM, 146 GB system drive, 300 GB history drive, redundant power supplies
    - Three (3) HPE rx2800 i6 workstations, rack mounted, running the same version of VSI OpenVMS operating system and HSQ MISER software, 16GB RAM, 146 GB system drive, redundant power supplies
    - Four (4) HSQ MISER Xview Windows PC clients, Windows 10 Pro x64, Dell Optiplex 5070, 24" monitor, Intel Core i5 processor, 8 GB Ram, and a 1 TB Hard Drive.
    - Three (3) 19", full height, floor mount rack
    - Five (5) 24" HP Monitors
    - Four (4) 24" Dell Monitors
    - Eight (8) HP Aruba 2540 Switches with 1 Gbps Copper Ethernet and 1 Gbps Fiber ports
    - Four (4) N-Tron Fiber/Ethernet Media Converters
    - Eight (8) KVM Extender pairs for Server and Workstation connection to desks (Monitor, Keyboard, Mouse) with sound and speakers
    - SCADA Network cabling
    - Four (4) rack mounted UPS, 120V, 2000VA, 10 outlets

- Software - $16,100.00
  - One (1) Miser Upgrade License for new Servers (Redundant) (Replacing existing)
  - Two (2) Miser Upgrade License for new Workstations (Replacing existing)
  - One (1) Miser Full License for new Workstation
  - Four (4) Miser XView for Windows, Exceed Edition, Full Version for Windows PC
- Labor - $36,800.00
  - Field investigation of existing conditions related to network and server rack location
  - Network device configuration
  - MISER software and database upgrade and graphics conversion
  - Existing server and workstation field upgrades for MISER
  - New networking hardware installation and cutover, including KVM hardware
  - New server and workstation field deployment and installation, including existing system functionality with new equipment
  - Cutover from existing servers and workstations to new servers and workstations

Master Radio Upgrades at SCADA Building and Electrical Shop
- Hardware - $35,000.00
  - Two (2) GE MDS Master Radios
  - One (1) set Antenna, Cable, and Accessories
- Labor - $23,000.00
  - Master Radio installation and configuration support
  - FCC License coordination and procurement

Project Management and Expenses (For all mandatory and optional scopes)
- Project Management and Expenses (For all above scopes) - $56,150.00
  - Project Management
  - Project Administration
  - Submittal prep and consumables
  - SCADA Network Upgrade Planning and Drawings
  - Drawing Drafting
  - Freight in and out

Optional Work Scopes
- Optional MISER SCADA Graphic Screen Upgrades (13 screens @ 3 days per screen)
  - Labor - $62,410.00
    - SCADA Graphics Screen upgrades (drafting)
    - SCADA Graphics Screen upgrades submittal and approval
    - SCADA Graphics installation, testing and removal of exiting screens

- Optional MISER SCADA System and Graphics Screen Development Training
  - Labor and Expenses - $11,400.00
    - Three (3) days of training for two (2) City of Santa Clara Employees
      - One (1) day of system training and two (2) days of graphics training
      - Includes training course development, preparation time, and lunch
- Optional Network Cabling and Server Rack Installation
  - Labor - $14,450.00
- Optional Master Radio Antenna and Cable Installations at SCADA Building
  - Labor - $23,470.00

Sales Tax
- City of Santa Clara Sales Tax – 9% on $250,039.00 = $22,503.00

Excluded

- Fiber optic cable installation and testing
- Bonds
- Permits
- Submittals – other than 'Plans' included above

The total lump sum for the above HSQ MISER Central System Upgrade Scope of Work is as Follows;

MISER SCADA Software, Hardware, Networking, and Radio Upgrades:	$318,120.00
Estimated Sales Tax on Hardware, Software, and Subcontractor	$22,503.00
Optional MISER SCADA Graphics upgrades:	$62,410.00
Optional MISER SCADA Graphics Screen Development Training:	$11,400.00
Optional network cabling and server rack installation is an additional:	$14,450.00
Optional Master Radio antenna and cabling installation is an additional:	$23,470.00

Total lump sum including options and sales tax: **$452,353.00**

Total lump sum above is a not to exceed amount, unless modified by an approved change order.

The quote is valid for a period of ninety (90) days. The HSQ MISER Central System Upgrade Scope of Work, as described above, will be completed according to a schedule mutually agreed upon between HSQ Technology and the City of Santa Clara.

HSQ appreciates the opportunity to provide you with this quotation and looks forward to working with you to finalize the scope of work, pricing, and any required adjustments to the phasing plan scheduling for upgrading your HSQ MISER System.

Please contact the undersigned if you have any questions and/or ready to proceed with the HSQ MISER Central System Upgrade Scope of Work.

Sincerely yours,

HSQ TECHNOLOGY

Matt Puskas
Senior Estimator

MP

Attachments: 1. HPE Integrity rx2800 i6 Server Data Sheet
2. HP Aruba 2540 Switch Data Sheet
3. GE MDS Master Radio Data Sheet
4. APC UPS Data Sheet