

# **AMENDED REQUEST FOR PROPOSAL**

## **Public Safety Microwave Network**

**DATE:** December 5th, 2011

**DUE DATE and BID OPENING:** Friday, January 27, 2012

**TIME OF BID OPENING:** 3:15 P.M. CST

**LOCATION OF BID OPENING:** 2561 Division St, Suite 101, Joliet, IL 60435

**TENTATIVE APPROVAL DATE:** February 23<sup>rd</sup>, 2012

### **PROPOSAL SUBMISSION:**

**NUMBER OF COPIES:** Submit one original copy of your bid and one electronic copy in a PDF format. All proposals will include a summary cover page to included total project cost, projected project duration, maintenance and monitoring costs, and a list of proposed subcontractors including company name and addresses.

**CLOSING DATE:** The closing date for the receipt of proposals is **3:00 PM, January 27, 2012**. Bids must be delivered to: Will County 9-1-1 System, 2561 Division St, Suite 101, Joliet IL 60435 prior to that time. Proposals or unsolicited amendments submitted after that time will not be accepted and will be returned to the vendor.

The bid opening will be held at 2561 Division, Suite 101, Joliet IL 60435 at **3:15pm** and is open to the public.

### **SEALED BID INSTRUCTIONS:**

All bids must be sealed and must be addressed to the Will County 9-1-1 System, 2561 Division St, Suite 101, Joliet IL 60435. **BID ENVELOPES MUST BE CLEARLY MARKED 'SEALED BID' AND SHOW THE PROPOSAL TITLE, OPENING DATE AND NAME OF BIDDER.**

### **OVERVIEW:**

**SCOPE:** The Will County 9-1-1 System, is soliciting bids to enter into a contract with a qualified vendor to configure, install, monitor and maintain a new public safety microwave backbone network. This RFP will target a configuration that will establish a microwave network with physical ring topology to the respective Public Safety Answering Points (PSAP) within Will County. This microwave network configuration will provide an interoperable communications foundation for regional partners and must be designed to support current and future radio, data, voice, and video system applications as defined in this RFP.

This section defines the specific services to be performed by the successful vendor in the management of the project, the interfaces between the successful vendor and the Will County 911 System. The successful vendor shall ensure that the personnel, material, equipment, services and facilities required to satisfy the requirements of this project are made available in a timely manner. In addition, the successful vendor shall have a project evaluation and control system that provides all information needed to manage the project satisfactorily, including as a minimum the milestone status, schedule, planning, and technical data.

**SINGLE POINT OF CONTACT:** The single point of contact for this RFP will be Jeremy DeVivo IT Manager. Email: jdevivo@willcounty9-1-1.com. All communications concerning this Request for Proposal (RFP) are to be addressed in Email to the attention of: Jeremy DeVivo IT Manager.

**BIDDERS' CONFERENCE:** There will be no bidders' conference.

**CONTRACT TERMS:** The selected vendors will sign a contract with the Will County Emergency Telephone System Board (ETSB) to provide the items named in their responses, at the prices listed. Minimum support levels, as well as terms and conditions from this RFP and the vendor's response will become part of the contract. This contract will be subject to review throughout its term. The ETSB will consider cancellation upon discovery that a vendor is in violation of any portion of the agreement, including an inability by the vendor to provide the products, support and/or service offered in their response.

### **DETAILED REQUIREMENTS:**

#### **Network Overview**

The network will consist of a physical loop or ring network topology. The ring microwave network participant sites are to consist of the following locations. (All site data is located in Attachment A)

#### **Scope of Services**

The successful vendor shall supply all goods and services described herein as a "turnkey" project and shall assume complete responsibility for all engineering, design, integration, installation, testing, commissioning, and delivery of a completely operational microwave system and associated applications as specified by this RFP and any resulting contract or agreement. The successful vendor shall be responsible for System performance, including a guarantee of microwave connectivity; installation of all equipment at sites (with the exception of those items specifically stated), optimization of the microwave backbone; and the training of system users and maintenance personnel where required.

#### **Work to be performed**

This section defines the baseline set of tasks to be performed by the successful vendor in support of the design, integration, installation, test, and delivery of the subject microwave system. This is considered to be a minimum set of tasks and the vendor may propose additional tasks if such tasks are deemed necessary to support the vendor's proposed methodology to complete the project.

**Subcontracts**

No portion of the work shall be subcontracted without prior consent of the Will County 9-1-1 System. If the successful vendor wishes to subcontract a portion of the required work only the following items will be considered; electrical/power and low voltage facility wiring. In the event that the successful vendor desires to subcontract these items, the successful vendor shall furnish the Will County 9-1-1 System Project Manager the names, qualifications, and experience of the proposed subcontractors. The successful vendor shall, however, remain fully liable and responsible for the work to be done by his/her subcontractor(s) and shall assure compliance with all the requirements of the contract.

No subcontracting will be allowed for continuous monitoring and maintenance of the system after completion and acceptance of the project.

**Physical Site and Path Surveys**

The successful vendor shall be responsible for the complete design of all microwave paths. The successful vendor will be responsible for performing physical path surveys as required.

The successful vendor shall be responsible for providing all personnel, maps, proper instrumentation and any other equipment or material necessary to perform the physical path surveys. In executing the path surveys, the successful vendor shall search for existing construction plans, permits, etc. for proposed structures along the projected path. If a particular location along the path is already developed with existing structures not likely to be re-built or extended/expanded, the Successful vendor shall state the pre-existence of these objects. If the new structure(s) are proposed, the successful vendor shall take the new construction into account in the microwave path calculations.

The successful vendor shall be required to provide results of the physical path surveys on every path. These submittals are to provide, as a minimum, the following information and material:

- Verified site geodetic coordinates in NAD27 and NAD83 formats
- Verified site elevations
- Microwave system schematic drawings
- Verified ground elevations along paths
- Obstruction heights along microwave paths
- Path profile characteristics, path clearances at critical points along the path, potential reflection points and natural/manmade shielding along the paths are identified /noted and discussed in detail
- Recommended and required improvements to site facilities to accommodate proposed design, e.g., AC power capacity or circuits, HVAC systems, backup power systems, etc.

Prior to installation of the system at each site, the successful vendor shall re-inspect each site including structures located thereon and shall identify, in writing, to the Will County 9-1-1 System any changes in sites and facilities since the initial inspection that may affect the system. If the successful vendor fails to re-inspect the sites prior to installation of components of the system, it shall thereafter be liable for any failure of the system to perform in conformance with this RFP and any resulting agreement caused, in whole or in part, by changes at any site.

### **System Design**

The successful vendor shall be solely responsible for the overall design of all systems and subsystems to be provided. The successful vendor shall provide a Design Specification allowing for traceability between the applicable system and subsystem specifications herein and the successful vendor's detailed design. System or subsystem acceptance shall be based upon verification against the approved Design Specification document in accordance with acceptance criteria in the relevant sections of the Technical Specifications and Requirements regarding factory and site acceptance testing. Any and all changes in the system required due to the system's inability to meet the system performance criteria shall be provided by the successful vendor at the successful vendor's sole expense.

### **Microwave Network Design and Path Analysis**

The successful vendor shall perform detailed design of the overall microwave network based on site and path surveys and information provided by the Will County 9-1-1 System.

The successful vendor shall agree to engineer, design, and implement microwave paths with reliability specified in the relevant sections of the technical specifications and requirements as part of the network design, and shall coordinate and obtain FCC licenses for all microwave frequencies required to implement the network in accordance with the requirements of this RFP and any resulting agreement.

Any additional sites or changes in antennas not contemplated by the successful vendor's response to this RFP or the resulting agreement that may be required to correct deficiencies because the Successful vendor has failed to satisfy the coverage requirements of this RFP and any resulting agreement shall be provided by the successful vendor at the successful vendor's sole expense.

### **Microwave Radio System Design**

The successful vendor shall engineer, design, and implement a microwave radio system to support the microwave network design goal of a public-safety level availability of 99.999%. The microwave radio design shall also meet the technical requirements given in the specification section of this document.

**Microwave Antenna Systems**

The successful vendor shall install all newly required microwave antennas and associated antenna supports, ice shields, cable trays, etc. to support the microwave antenna system as required at each site.

**Microwave Radio Systems**

The successful vendor shall install all required microwave radio equipment and associated equipment racks, cable and wiring, cable trays, etc. to support the microwave radio system as required at each site.

**Will County 9-1-1 System NOC Connection**

The successful vendor shall provide and install appropriate router equipment required to provide the proper connection to the Will County 9-1-1 System Public Safety Network.

**Testing and Acceptance**

The successful vendor shall demonstrate to the Will County 9-1-1 System compliance with all technical requirements listed in the specification section of the RFP and any resulting contract or agreement.

**Site Acceptance Testing**

Once all system components have been installed, the successful vendor shall conduct a formal Site Acceptance Test (SAT). The Will County 9-1-1 System Project Manager and Operations Manager shall witness SAT and the successful vendor shall coordinate closely with the Will County 9-1-1 System and the other jurisdictions, if needed, to schedule testing and provide appropriate notification of each test event.

**Technical Specifications and Requirements**

This section of the RFP defines the technical specifications and requirements of the new digital microwave communications network and associated applications systems and subsystems to be provided by the successful vendor and shall form a part of any resulting agreement or contract. The successful vendor will use these specifications and requirements as the basis for design, integration, installation, and test of the Will County 9-1-1 System Public Safety network and all associated components provided to the Will County 9-1-1 System. The technical specifications and requirements herein as incorporated into the resulting agreement or contract constitute the set of minimum requirements and the provided systems and subsystems must meet or exceed these specifications and requirements. These specifications and requirements are to be implemented in accordance with the Scope of Services, which defines the work to be performed.

**General Specifications**

Unless otherwise modified herein, materials, design, and construction procedures shall be in accordance with the standards, regulations, and codes listed below as well as all Federal, State and Local building codes applicable to each site.

Installation of all electrical equipment, power distribution, lighting and outlet assemblies, alarm and grounding systems, including associated wire ways and wiring, shall comply with the most recent edition of the National Electrical Code (NEC), National Fire Protection Association (NFPA), and Occupational Safety and Health Administration (OSHA) standards and requirements.

All electrical equipment and devices shall be listed, approved, or certified by Underwriters Laboratories (UL).

All microwave radio equipment and microwave path design and construction shall comply with the latest editions of the following rules, regulations, and specifications:

**Standards, Regulations, and Codes**

- a) Federal Communications Commission (FCC)
- b) American National Standards Institute (ANSI) Standards
- c) Motorola R56 - Standards and Guidelines for Communication Sites (68P81089E50-A)
- d) National Electrical Code (NEC)
- e) Local, State, and National Building Codes

**Interference from Transceivers**

- TIA/EIA-222-G – Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
- RS-252-A – Standard Microwave Transmissions Systems
- TSB-10-F – Interference Criteria for Microwave systems
- EIA-195 (revision C) – Electrical and Mechanical Characteristics for Terrestrial

**Microwave Relay System Antennas and Passive Reflectors**

- EIA- 210 – Terminating and Signaling Equipment for Microwave Communications Systems
- EIA-310 – Racks, Panels, and Associated Equipment

**Frequencies**

The RF paths determined for the digital microwave network shall utilize Federal Communications Commission (FCC) 47 CFR Part 101 frequencies assigned for full-period service in the 11 or 18 GHz band for connectivity to ring sites. Additional higher frequencies listed in Part 101 may be utilized for connectivity to extension sites. To the greatest extent possible, consideration shall be given to minimizing differences in product lines and types. All frequencies shall be licensed.

For certain extension sites with shorter distances that may not require the full network capacity, the successful vendor may consider using the 4.9 GHz or other public safety band only with the prior approval of the Will County 9-1-1 System project manager.

**Path Outage**

All sites in the system will be designed for a minimum two-way path reliability of 99.999% EFS (error free seconds) per year. This is equivalent to 315 SES (severely errored seconds) per year, two-way path outage.

**Monitor and control system tests**

The successful vendor shall demonstrate that the monitor and control systems and associated Network Management System is fully operational in accordance with specifications and that all delivered functionality can be executed. This shall include fault insertion/failure simulation, fade margin alarms, system configuration, circuit provisioning, etc. Certain functionality may be tested in conjunction with other areas of acceptance testing, such as validation of appropriate fade alarms during the fade test. The successful vendor will be required to monitor and control the entire public safety network remotely.

**Warranties and Maintenance Support**

The successful vendor shall guarantee that all equipment supplied pursuant to this RFP shall be new and of first quality throughout. Warranty shall commence upon formal system acceptance by the Will County 9-1-1 System.

All items shall be warranted for a minimum of one (1) year after date of final system acceptance, unless otherwise specified. The Maintenance and support shall include all parts and labor, 7X24 coverage, 3 hour on-site response including electronic component items and Cabling. All maintenance support must be performed by the successful vendor and cannot be subcontracted.

**Extended Maintenance Support**

The successful vendor shall offer options for full maintenance support on hardware and software in the form of a recurring annual extended maintenance support program.

**Microwave Network Performance Requirements**

The final microwave network design shall support the following performance requirements

- Site Reliability: 99.999%
  
- All radio paths shall have a 100 Mb/sec payload capacity upgradable to minimum 200 Mb/sec
  
- The microwave ring shall use OSPF routing protocol to reroute around an equipment failure and/or unavailable path(s).

## **Installation Requirements**

### **General**

The successful vendor shall engineer, furnish, and install complete and fully operational microwave radio sites necessary for the proposed public safety microwave network. It is the Successful vendor's responsibility to evaluate the adequacy of the supplied shelters.

The successful vendor shall be responsible for a complete and fully operable installation in accordance with the latest version of the National Electrical Code, local building codes, environmental laws, zoning and planning regulations or ordinances, land use restrictions, Federal Aviation Administration and Federal Communications Commission rules and regulations, and all other applicable local, State, or Federal codes, regulations, laws and/or ordinances. In all cases, in the event of conflict, the most stringent requirement shall apply unless otherwise approved by the Will County 9-1-1 System in writing.

Materials furnished by the successful vendor shall be new and of first quality as defined in industry standards. The successful vendor shall not make substitutes unless prior approval has been obtained from the Will County 9-1-1 System Project Manager.

The successful vendor assumes full responsibility for materials and equipment employed in construction of the project and agrees to make no claims against the Will County 9-1-1 System for damages to such materials and equipment except for that which is caused by the Will County 9-1-1 System, its employees or agents. The Successful vendor shall be responsible for storage of all materials purchased by the Will County 9-1-1 System until such time as the equipment is installed at each site.

The successful vendor shall clean up and remove from the work site on a daily basis (or sooner if directed by the Will County 9-1-1 System Project Manager) all rubbish and construction debris, resulting from the Successful vendor's own work. The successful vendor shall supply a dumpster or similar trash storage/removal device wherever a substantial amount of construction debris is generated.

Upon completion of work, the entire job site areas shall be left clean and free of trash, debris, mud, dirt, dust, and scrap or excess materials. Radio equipment shelters and rooms shall be thoroughly cleaned (including walls and floors) to the satisfaction of the Will County 9-1-1 System Project Manager upon completion of installation and construction work.

The successful vendor shall coordinate the work of all the trades under the successful vendor's responsibility to ensure that interference between electrical conduits, cable support trays, grounding wire, structural, and the radio system components shall be avoided.

The successful vendor shall keep up-to-date marked-up prints of the Project Drawings. Markings indicating changes to the drawings shall be red or green and clearly visible. Project Drawings shall

also be supplied electronically in Visio format and PDF format readable by Adobe Acrobat Reader software.

The successful vendor is responsible for obtaining frequency coordination, FCC construction permits or licenses, FAA approvals, local planning or zoning approvals, building permits, environmental approvals or other governmental authorization to proceed with implementation of the system.

**UPS Power Protection**

The successful vendor shall supply and install one (1) Rack Mount 750 UPS Systems for each radio installed.

**Grounding Systems and Lightning and Surge Protection**

Where the successful vendor is installing newly established grounding systems, surge protection, and/or surge protection for towers, equipment shelters, outdoor equipment enclosures, RF transmission lines, electronic equipment and racks, cable trays and conduits, etc., such installations shall conform to best industry practices, standards, regulations and codes for each type of installation. The successful vendor shall demonstrate at the detailed design review that all such new installations conform to the required standards and codes. In addition to applicable state and local codes and regulations, all supplied grounding systems and lightning and surge protection systems shall be installed in accordance with the following:

- NFPA 70 - National Electrical Code
- NFPA 780 - Standard for the Installation of Lightning Protection Systems Page 28
- ANSI/EIA/TIA-222-G - Structural Standards for Steel Antenna Towers and Antenna

**Existing Tower Considerations**

On existing towers, the successful vendor shall install any and all new antennas; radio's, cabling and support hardware.

Successful vendor shall also be responsible for performing structural analyses in individual cases, which required. All equipment shall be installed in accordance with manufacturers' instructions and specifications as well as all applicable standards.

**Invoicing:**

All invoices are to be rendered by the Contractor on the vendor's standard billhead and forwarded directly to the Will County 9-1-1 System at 2561 Division St, Suite 101, Joliet IL 60435.

## **Attachment A**

<b>PSAP and Tower Location</b>	<b>Lat/Lon</b>	
Eastcom PSAP	41.444229	-87.632992
Crete Monee HS Water Tower	41.440399	-87.650990
Steger PSAP	41.470139	-87.638366
Monee Water Tower	41.425280	-87.757636
Frankfort FAA Tower	41.476105	-87.893051
Frankfort Water Tower	41.492543	-87.868911
Lincolnway PSAP	41.503291	-87.884032
Mokena Water Tower	41.503164	-87.897724
Will County SO (Laraway)	41.481749	-88.025680
Lockport Tower	41.565877	-88.062423
High RD Tower	41.644053	-88.037203
Joliet PSAP	41.522406	-88.085991
Wescom PSAP	41.620913	-88.217891
Bolingbrook PSAP	41.696415	-88.080736
Bolingbrook Water Tower	41.682183	-88.076735
Romeoville PSAP	41.642445	-88.112880
Will County 9-1-1 NOC	41.529908	-88.080776
Bolingbrook High School	41.689420	-88.088310
Joliet Westfield Mall Water Tower	41.571801	-88.156894
Joliet Fire St #5	41.536380	-88.098619
Will County 9-1-1 System Admin Ofc	41.581526	-88.148318

## **Proposed Microwave links**

Steger PSAP to Frankfort WT

Steger PSAP to Crete-Monee HS WT

Crete-Monee HS WT to Eastcom PSAP

Eastcom PSAP to Monee WT

Monee WT to Frankfort FAA Tower

Mokena WT to Lincolnway PSAP

Lincolnway PSAP to Frankfort WT

Frankfort FAA Tower to Laraway Tower

Mokena WT to Lockport Tower

Lockport Tower to High Rd Tower

High Rd Tower to Bolingbrook WT

Bolingbrook WT to Bolingbrook PSAP

Bolingbrook PSAP to Bolingbrook HS

Bolingbrook HS to Romeoville PSAP

Romeoville PSAP to Wescom PSAP

Wescom PSAP to Joliet Mall WT

Joliet Mall WT to 911 Admin Office

Joliet Mall WT to Joliet FD St 5

Joliet St #5 to Joliet PSAP

Will County 9-1-1 NOC to Lockport Tower

**Current Links to be used in the design**

Will County NOC to Joliet PSAP

Joliet PSAP to Laraway Tower