

# **Jefferson County, Wisconsin**

## **Public Safety Radio System**

### ***Request for Proposals for a County-Wide Simulcast P25 Conventional Radio System***

June 26, 2019

**Issued by:**

**Jefferson County Wisconsin**

#### **Mandatory Pre-proposal Meeting**

9:00 a.m. CST on Thursday, July 18, 2019

#### **Proposal Due Date**

4:00 p.m. CDT on Friday, September 20, 2019

Prepared by:



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# 1 Proposal Submittal Overview

## 1.1 *Request for Proposal (RFP)*

- 1.1.1 Jefferson County Wisconsin is requesting proposals for new analog and digital voice radio systems and an analog paging radio system including all associated supporting elements as described in this RFP.

## 1.2 *Due Date, Submission Requirements and Review Timeline*

- 1.2.1 Proposals will be due no later than 4:00 p.m. CDT on Friday, September 20, 2019.
- 1.2.2 Proposals in a signed hard copy form must be received at the Jefferson County Administration Office, Room 111 by the due date to be considered.
  - 1.2.2.1 One (1) signed original, two (2) paper copies and an electronic copy of the proposal shall be sent to Jefferson County, one (1) copy of the proposal and an electronic copy shall be sent to the County's consultant.
- 1.2.3 Proposal organization shall be as described in Section 6.2.
- 1.2.4 The packages must be marked:
  - County-Wide Radio System
- 1.2.5 Jefferson County will not accept submissions submitted by electronic mail, telegraph, or facsimile. County is not responsible for delays or losses caused by the U.S. Postal Service or any other carrier or delivery service. Proposals submitted after the submission deadline will be returned unopened and not considered.
- 1.2.6 Proposals are to be prepared on standard 8.5" by 11" paper. Foldouts containing charts, spreadsheets, and oversize exhibits are permissible. The pages shall be placed in a binder with tabs separating the major sections of the submission as defined in Section 6.2.
- 1.2.7 An electronic version (pdf or docx) of the entire proposal shall be provided on a portable USB drive. All narratives describing system operation, compliance and any other requests in response to the RFP shall be searchable using common search tools.

### 1.3 *Timeline*

RFP issued	Wednesday, June 26, 2019
Mandatory Pre-proposal conference	Thursday, July 18, 2019 at 9:00 a.m.
Questions due by	Friday, July 26, 2019
Question response by County by	Friday, August 2, 2019
Proposals due by	4:00 p.m. CDT on Friday, September 20, 2019
Proposal review period	Remainder of September, early October, 2019
Negotiations with selected radio system bidder	TBD may begin mid October 2019
Goal of contract award	November 2019 dependent on negotiation progress, legal review and County authorization.

### 1.4 *Mandatory Pre-proposal Conference*

- 1.4.1 A mandatory pre-proposal conference will be held at the Jefferson County Sheriff's Office on Thursday, July 18, 2019 at 9:00 a.m. Address: 411 South Center Avenue, Jefferson, WI.
- 1.4.2 After the meeting, tours of current County sites will be conducted. Attendees will provide their own transportation. No other visits to County sites will be offered after the site tour. Attendees should be prepared to collect all site details during the tour. If any sites are not accessible by car the group will park as close as possible and hike to the site for inspection. After the tour, Bidders are then invited to visit possible radio repeater sites and any other locations deemed appropriate.
- 1.4.3 Anyone wishing to receive answers to questions raised at this conference and future correspondence concerning the project shall email the point of contact designated in Section 1.5.1.

### 1.5 *Questions*

- 1.5.1 A Bidder will register by sending an email to the point of contact (POC), John Thompson (john.thompson@tncg.com), who is the lead technical consultant on the project with the following information.
  - 1.5.1.1 Full Name of primary contact
  - 1.5.1.2 Full Name of Bidder
  - 1.5.1.3 Email address
  - 1.5.1.4 Business address
  - 1.5.1.5 Telephone #
- 1.5.2 Questions can be asked verbally at the pre-proposal conference and site visit or until the end of the questioning period. All questions, including those asked at the mandatory pre-proposal conference shall be submitted in writing (email submission is acceptable) to the designated point of contact in section 1.5.1. All registered bidders will be provided submitted questions and responses via email.

Similar questions may be consolidated for response purposes.

- 1.5.3 Verbal answers to questions posed at the pre-proposal conference shall not be considered the official County position or answer unless the answer is provided in writing.
- 1.5.4 An attempt will be made to issue a consolidated response to questions within five (5) business days of the last date/time for questions.
- 1.5.5 Bidders shall not contact staff from any Jefferson County participant agencies and shall direct all questions and inquiries to the designated point of contact, John Thompson, True North Consultant Group, via email: [john.thompson@tncg.com](mailto:john.thompson@tncg.com).

**END OF SECTION**

## 2 Project Scope

### 2.1 *Understanding of Project Outcomes*

- 2.1.1 Under the scope of this project the radio system successful bidder will engineer, furnish, install, test and commission the land mobile radio systems and associated ancillary components required for operation.
- 2.1.2 For all systems and subsystems as provided under the contract the radio system successful bidder shall provide searchable electronic as-built documentation for review and approval by County's consultant. Once approved electronic and 1 printed copy of as-built documentation will be delivered to the County prior to final acceptance of bid.
- 2.1.3 The radio system successful bidder will also provide the required specifications and oversight of any civil work performed by or contracted by the County related to this bid including, but not limited to, structural support construction required for antenna installation to ensure that the construction will meet the specifications necessary for the radio system to function as represented in this RFP.
- 2.1.4 The radio system successful bidder will provide programming, system updates, training and ten-year maintenance for all system elements proposed in response to the RFP.
- 2.1.5 All bids must include the costs for a new conventional P25 simulcast radio system infrastructure.
- 2.1.6 All bids must include the costs for a new analog simulcast tone and voice paging system infrastructure.
- 2.1.7 All bids must include the costs for a new and updated backhaul system to support County communications systems.
- 2.1.8 All bids must include the costs of replacement for all interoperability base stations.
- 2.1.9 The radio system successful bidder will demonstrate and document coverage per standard test procedures for voice and paging radio systems per the performance requirements stated in this request for proposal (RFP).
- 2.1.10 The project will provide a centralized alarm and monitoring system for all system infrastructure elements.
- 2.1.11 Any required civil construction work required including, but not limited to, antenna structure, shelter, primary commercial power, generator power and associated grounding systems will be provided by the County.
- 2.1.12 The County desires that the new radio system infrastructure elements continue to be directly controlled by the existing configuration of the Mindshare radio dispatch console system.
- 2.1.13 If any upgrade, update or additional hardware or software is necessary for P25 operation on the current Mindshare console system is proposed by bidder, this shall be designated in the bid as an alternate solution and clearly noted.
- 2.1.14 If a completely new radio console system of Mindshare or any other bidder is proposed this shall be designated in the bid as an alternate solution and clearly noted.

## 2.2 *Request for Proposal*

- 2.2.1 The intent of this document is to provide information to allow qualified bidders to provide a proposal for the turn-key radio system requirements found in Section 25.
- 2.2.2 Proposed pricing for all items will be completed in the pricing form provided with this RFP.
- 2.2.3 Bidder selection will be based on the following criteria as described in Section 7.5.
  - 2.2.3.1 Bidder's Ability to Both Install and Support System after Installation
  - 2.2.3.2 Technical Design Merit
  - 2.2.3.3 Bidder's Experience, Qualifications, Quality of Response & Financial Viability
  - 2.2.3.4 Cost
- 2.2.4 All proposals meeting the performance specifications provided in the RFP and found to be in the best interests of the County will be considered. The County evaluation team will use the defined scoring system set forth herein to assist in selecting a bidder to enter negotiations. If negotiations are not successful, the second-place bidder in the scoring may be chosen for negotiations. Once negotiations are successful, with a contract in place, the selected bidder will become the radio system successful bidder.
- 2.2.5 The radio system successful bidder will identify their project manager which will work with the County and the County's consultant throughout the design, civil, construction, testing and acceptance phases of the project.
- 2.2.6 Before the system is accepted the radio system successful bidder will demonstrate that all systems and subsystems meet or exceed the performance criteria and testing requirements as specified in this Request for Proposal and the proposal per the contract.
- 2.2.7 Bidders shall provide comprehensive proposals addressing all aspects of the requirements, with the selected radio system bidder responsible for all contracted radio system related work (not including civil work such as shelters, generators or towers and site development).

## 2.3 *Alternate Proposals*

- 2.3.1 Any Alternate to the Primary proposal shall be a design that provides a distinctly different solution that can be shown to provide a beneficial solution to the needs of Jefferson County.
- 2.3.2 Alternate proposals will only be considered upon submittal of the Primary proposal.
- 2.3.3 If an alternate proposal is provided for consideration, a detailed narrative shall be provided addressing how the alternate proposal provides a better overall solution for the County along with a complete system narrative as provided with the primary proposal. Any functions, features or limits in operation included in the RFP that an alternate solution does not provide must be clearly identified.
- 2.3.4 Any alternate proposal shall include an alternate system price matrix that



includes all products and services proposed like the primary proposal.

## **2.4 *County-Wide Radio System Interests and Requirements Overview***

- 2.4.1 Minimum acceptable coverage performance for the specified portable field unit is considered 95% of the area with 95% reliability.
- 2.4.2 For portables and pagers coverage performance will be based on a unit radio worn on the hip.
- 2.4.3 For mobiles, coverage performance is based on a  $\frac{1}{4} \lambda$  antenna mounted to the vehicle roof with 17 feet of transmission line and N-type RF connector.
- 2.4.4 Digital coverage performance will be demonstrated with an automated drive test using TSB-88c procedures.
- 2.4.5 For digital operation the minimum performance criteria is  $\leq 2.0\%$ -bit error rate (BER).
- 2.4.6 Full details concerning coverage requirements are found in Section 26.9.

## **2.5 *Training for County End Users/City Staff***

- 2.5.1 Bidder shall offer a training program detailed for the various agencies utilizing the radio system where the offered program is not generic but rather focuses on the end user's needs.
  - 2.5.1.1 System Management training (system programming, system monitoring, system usage reports, etc.)
  - 2.5.1.2 Direct group training of dispatchers and dispatch supervisors.
  - 2.5.1.3 Train the trainers
  - 2.5.1.4 User group training
  - 2.5.1.5 Alarm monitoring subsystem operation for supervisors and dispatchers.
  - 2.5.1.6 Logging/Recording subsystem operation

## **2.6 *System Acceptance Testing and Commissioning***

- 2.6.1 All systems and subsystems as provided under the contract shall be fully verified for proper operation and shall be commissioned as per the directions of the design and agreed to by the County and its consultant with this requirement for whatever the solution offered.

## **2.7 *Documentation of all Supplied Systems***

- 2.7.1 All systems and subsystems as provided under the contract shall be included in the written documentation plan as supplied by the radio system successful bidder.

**END OF SECTION**

### 3 Project Overview

#### 3.1 *New Radio Systems Overview*

- 3.1.1 The new voice radio system shall utilize standards-based P25 Phase 1 conventional protocol for its operation. However, where possible, system equipment shall be capable of being upgraded by software to Phase 1 or Phase 2 trunked operation in the future.
- 3.1.2 The new paging system shall be an update and redesign, if necessary, of the sites and antenna placement for the current countywide simulcast paging system and replacement of the base station radio equipment used for the current tone and voice system analog VHF system.
- 3.1.3 All RF sites should use a DC plant to power, in addition to the microwave, the LMR station equipment and use DC to AC convertors to power AC only equipment.
- 3.1.4 The new systems will be used by all Public Service/Safety Agencies associated with Jefferson County. The list of current users is found with a mobile and portable field equipment inventory in Estimated Inventory and Field Unit Distribution Summary on page 134.
- 3.1.5 The dispatch console system at the County is a Mindshare system and it is the desire of the County to maintain this investment to the greatest extent possible. The final system design shall support the requested P25 conventional systems, interoperability stations and P25 control stations for backup operation.
- 3.1.6 Control station backup communications for each dispatch position for the new system shall be provided whereby a radio control head allowing direct air interface operation to the radio system thus bypassing the console and associated microwave connectivity.
- 3.1.7 Mutual aid and interoperability control station systems shall provide the County the highest level of interoperability communications.
- 3.1.8 Backup power systems provided assuring continuous system reliability and redundancy during power failures until generator support can be activated.
- 3.1.9 The new radio and microwave systems are anticipated to be a new-build from bottom up with likelihood of all new repeater sites located where they best serve Jefferson County public safety users.
- 3.1.10 Simulcast technology shall be employed for the County Radio Systems.
- 3.1.11 All inter-site connectivity shall be offered which is to be IP-based microwave with minimum 100 Mbps throughput though upgradable to 150 Mbps via software only.

- 3.1.12 The microwave and network components shall be programmed to utilize IP traffic separation that meets FIPS 140-2 requirements such as MPLS providing Jefferson and Watertown dispatch centers to access each other's secure system data (CAD, NCIC, etc.) if the local secure connection or system would fail. This configuration could also support secure traffic on other secure systems in the future.
- 3.1.13 An alarm system shall be an integral part of the design allowing for remote sensing of all elements including, but not limited to, radio system, microwave network, DC power, commercial AC power, generator health, fuel tank level and environmental issues of the sites.

### **3.2 Comprehensive Responses**

- 3.2.1 For the County-wide VHF Radio System infrastructure responses, Bidders shall offer a new simulcast VHF P25 Conventional radio system infrastructure, microwave backhaul, network hardware, centralized alarm monitoring and alarm sensing equipment, all dispatch center needs and system redundancy throughout.
- 3.2.2 All necessary systems design, site selection, equipment / hardware, installation including antennas and transmission line, software, installation management, licensing support, warranty, maintenance, commissioning, acceptance testing, and training shall be included.
- 3.2.3 A final detailed design for the system will be required to be completed after award.
- 3.2.4 Any necessary site civil and new tower work will be done according to Jefferson County Purchasing Ordinance. . The specification documents and bidding for this civil/structural work will be performed by a Civil Engineering firm with input by the radio system successful bidder.
- 3.2.5 All elements of the radio system successful bidder's work shall be considered final costs as proposed with change orders only accepted due to required changes or modifications due to changes in site locations or due to changes outside the control of the successful radio system successful bidder and the approved design.
- 3.2.6 Bidders shall factor into the timeline a reasonable amount of time for site acquisition and site development as based on an average of time required for past projects of this type.
- 3.2.7 All required elements beyond the actual hardware to develop and offer a completed and operational system shall be included in the offer thus making the system "turn-key" to the County.
- 3.2.8 Training of both technical support and operational staff shall be included per the requirements as described herein.
- 3.2.9 As a part of the response, the Bidder shall develop and offer a complete one (1) year 100% warranty (parts and labor) plus a nine (9) year extended maintenance and support plan that includes items such as phone support, routine maintenance, routine software upgrades and emergency response to system issues/problems.

### **3.3 Coordination with Customers consultants**

- 3.3.1 During the entire process of the work related to this project, True North Consulting Group will serve as the owner's advocate.

- 3.3.2 The County will be retaining a Civil/Structural Engineering firm who will be responsible for the creation of site design drawings and specifications, bidding and work oversight of the construction elements.
- 3.3.3 The selected radio system successful bidder is required to be responsive to and collaborate with True North Consulting Group and the selected Civil/Structural Engineering firm retained for this project.

## **END OF SECTION**

## 4 Instructions to Bidders

### 4.1 *Bidders are required to provide a point-by-point response to each sub-section indicating one of the following:*

- “Proposed solution is compliant.”
- “Proposed solution is non-compliant.”
- “Proposed alternate solution is offered.”

If you wish to take an exception or if your solution is partially compliant but not fully compliant, please note that and explain the details in your response.

Issues of non-compliance will be analyzed and evaluated for impact. Significant issues of non-compliance will negatively affect a Bidder’s overall evaluation and may be deemed to make the proposed solution and design unacceptable for consideration.

For any other Section of this RFP, there will be an assumption that the Bidder intends to fully comply unless an exception is clearly noted.

### 4.2 *Definitions*

<b>30-Day Test Period</b>	Upon completion of the Commissioning and coverage testing and when Bidder states the system is ready for use testing, the 30-day use period by a non-public safety group shall begin to allow the County to become satisfied the system is ready for final cutover. This use shall not be considered beneficial use.
<b>Alarm System</b>	A system which will monitor sensor inputs from critical points in the field and display, prioritize and contact service as required to ensure system performance.
<b>As-Built Documentation</b>	The complete package of reference documents that describe how the entire system infrastructure is constructed, licensed and programmed along with all base line measurements and final settings for operation. Includes civil drawings, system and site block diagrams, tables, photos. Includes information on baseline code plug parameters for operation of each system channel.
<b>Civil Engineer, Civil Engineering Consultant</b>	Firm or individual hired to develop the design and specifications for bidding tower, shelter and any backup generator system plus associated site development. Refers to civil engineering firm retained by County or County’s Consultant to develop bid specifications for all civil, structural and site construction work.
<b>Civil Work</b>	The work required to prepare the radio system sites for the radio system infrastructure proposed. Includes the work required for antenna structures, equipment space, electrical power, HVAC, access, security, etc. Bidders will specify their requirements and provide oversight to ensure civil work supports the system proposed.
<b>Client</b>	Jefferson County
<b>Contract Manager</b>	Refers to the designated Jefferson County project manager.
<b>County</b>	Refers to Jefferson County, located in the State of Wisconsin.
<b>County Contact</b>	Refers to the Jefferson County Radio representative.
<b>County’s Consultant</b>	Refers to True North Consulting Group

<b>Customer</b>	Jefferson County
<b>DAQ</b>	Delivered Audio Quality
<b>Documents</b>	The complete package of Proposal and Contract Requirements.
<b>Greenfield</b>	This term defines a new site where there is no tower or any equipment in place by any organization.
<b>Owner</b>	Jefferson County
<b>Paging System</b>	A First Responder alerting system used by Fire and EMS that provides alerting service across the County as specified in this RFP.
<b>Paging System Failure</b>	For the 30-Day test if paging fails in a covered area due to any infrastructure malfunction of the paging system then a failure exists in the system.
<b>Potential Bidder</b>	A firm or individual that submits a proposal in response to provide the radio system and equipment requested in this RFP.
<b>Proposal</b>	The document received by the County from a responder expressing the desire to provide the radio system and services as specified in the RFP at a given price. An expression indicating a desire to provide the radio system and equipment proposed by the Bidder at a given price.
<b>Proposal Bond</b>	A financial guarantee that the Bidder will carry out a contract at the Proposal price upon award of the Proposal, and, if required, post the appropriate performance and payment bonds, providing financial assurance that the Proposal has been submitted in good faith.
<b>Bidder</b>	A firm or individual that submits a proposal in response to provide the radio system and equipment requested in this RFP.
<b>Qualified Bidder</b>	A Bidder that meets the qualifications described in Section 7.6.
<b>Radio System</b>	The term system describes the complete end-to-end solution for operation including, but not limited to, voice, paging, alarm system, backhaul and associated field units.
<b>radio system successful bidder</b>	Refers to the Selected Bidder who is contracted for the work.
<b>Bidder</b>	A firm or individual that submits a proposal in response to provide the radio system and equipment requested in this RFP.
<b>RFP</b>	Request for Proposal.
<b>Selected Bidder</b>	A Bidder that best meets the best value criteria and is chosen by the County for negotiation of a contract.
<b>Selection Committee</b>	A selected group of personnel from Jefferson County and True North Consulting Group.
<b>Simulcast</b>	A RF system technique that transmits signals on the same frequency at multiple sites by very accurately controlling the frequency, modulation level and launch time of the transmission. Optimization of a simulcast system sets the launch time of each site such that signals are in phase in low signal level areas. Although not perfect the benefit of simulcast is efficient use of frequencies over a wide area. The current state of the art allows designers to meet the public safety guideline of 95% coverage with 95% reliability over the required service area.
<b>Structural Engineer</b>	Refers to the firm or individual who provides loading analysis on an antenna structure.

<b>System Failure</b>	<p>If during the 30 day test a radio terminal user is not capable of voice communications in a covered area due to any infrastructure failure of the radio system from terminal to terminal, terminal to dispatcher or dispatcher to terminal, then a failure exists in the system. The following criteria is used to determine the level of failure.</p> <ul style="list-style-type: none"> <li>• Minor – Any failure that does not impact coverage or capacity no more than 25%.</li> <li>• Major – Any failure that impacts coverage or capacity no more than 50%.</li> <li>• Catastrophic – Any failure that requires backup procedures and equipment to be activated for operation.</li> </ul>
<b>Time Domain Interference (TDI)</b>	<p>The interference caused by the arrival time of two or more RF signals at a field radio antenna from multiple infrastructure sites in a simulcast system. If received signals are out of phase destructive interference will occur and a receiver will not be able to decode. If one signal has a level significantly higher than any of the others it will capture the receiver. Low level interfering signals are ignored and the higher-level signal is decoded.</p>
<b>Turn-key</b>	<p>The term turn-key refers to the provision of a complete radio communications system as defined by the RFP that at completion and acceptance is ready for immediate use. The civil work is being completed outside the scope of the radio communications system project, but the Selected radio system bidder will be responsible for the operational specifications and oversight of the civil construction activity assuring system standards are met.</p>
<b>Bidder</b>	<p>A firm or individual that provides radio system and equipment and services as requested in this RFP.</p>
<b>Voice System Failure</b>	<p>For the 30-Day test if voice communications fails in a covered area due to any infrastructure malfunction of the radio system from terminal to terminal, terminal to dispatcher or dispatcher to terminal, then a failure exists in the system.</p>
<b>Work</b>	<p>The provision of products and/or services to meet the requirements specified in these documents.</p>

#### 4.3 *Examination of Site and Documents*

Bidders shall examine all documents and shall visit the site(s) and record their own investigations during the mandatory pre-proposal conference. Bidder shall be aware of all conditions under which the work is to be performed, including the work site(s), the structure(s), the obstacles that may be encountered and all conditions of the sites. This includes the time of completion and all relevant matters that may affect the work or the Proposal process.

#### 4.4 *County Procurement Policy*

All aspects of this Request for Proposals will be in accordance with County Purchasing Ordinance.



#### 4.5 ***Public Announcement and Selection Process***

It is the policy of the County to publicly announce all requirements for supplies, materials, equipment, services, and construction and to negotiate such contracts based on demonstrated competence and qualifications and past performance with existing contracts as determined in prequalifying procedures. In the procurement of supplies, materials, equipment, services, and construction, the County shall request firms to submit a statement of qualifications and performance data. All information submitted in response to the Request for Proposals shall constitute a Public Record upon award of this contract.

As previously noted: All site construction work associated with towers shall be considered a Public Works Project and shall follow bidding rules of the County's Purchasing Ordinance. The County will retain its own engineering firm to develop necessary specifications, drawings and bid documents.

#### 4.6 ***Questions***

Inquiries concerning any aspect of this RFP and contract award shall be submitted to the following contact person in writing via email:

John Thompson  
True North Consulting Group      Email: [john.thompson@tncg.com](mailto:john.thompson@tncg.com)

Telephone calls will not be accepted. All written questions will receive written responses. The last date for receipt of written questions will be on the date indicated in Section 1. Responses to questions will be issued by the consultant on behalf of the County.

#### 4.7 ***Economy of Preparation***

Submissions shall be prepared as simply and economically as possible while providing straightforward and concise delineation of the Bidder's capabilities and intent to satisfy the requirements of the RFP. Technical literature about the Bidder products shall be included, but the emphasis of the submission shall be on completeness and clarity regarding the chosen solution or solutions. To expedite the evaluations, it is essential that specifications and instructions contained in this document be followed as closely as possible. Additional information that may be helpful to the evaluation process, but is not specifically requested in this RFP, may be included as an Appendix in the Bidder response.

#### 4.8 ***Submission Signature***

Each submission shall be signed by a principal of the Bidder's firm or another person who is fully authorized to act on behalf of the Bidder.

#### 4.9 ***Modification or Withdrawal of Proposal***

Unauthorized conditions, limitations, or provisions attached to a submission may cause its rejection. No oral, telephonic, or facsimile (FAX) submissions or modifications will be considered. The only submissions that will be considered are those that are hand delivered or delivered to the County by US Mail, UPS, FedEx or another similar carrier. Electronic copies of the submission are to be included with the hard copy original.

Proposals will remain subject to acceptance for a minimum of 90 days after the due date of the proposal submission opening. Each Bidder so agrees in submitting a Proposal. Any such



modification, withdrawal, or cancellation shall be submitted in writing to the County at the address contained in Section 4.19 herein.

Prior to the time and date designated for receipt of submissions, no submission may be released or physically withdrawn, but any submission may be modified, canceled, or withdrawn by written notice to the County at the place designated in Section 1.1.3. Such notice shall be in writing with the signature of original Bidder. The updated Proposal shall be mailed and received on or before the date and time set for receipt of submissions and shall be so worded as a replacement for the previous submission. Written withdrawal or cancellation by Bidder of a submission prior to the Proposal opening will nullify the submission. However, the original submission shall not be physically returned to the Bidder until after the time for receipt of the submissions.

Withdrawn or canceled Proposals may be resubmitted up to the time designated for the receipt of submissions, provided that the resubmitted Proposal is in conformance with this RFP.

#### **4.10 *Extension of Time***

The County reserves the right to extend the Proposal due date.

#### **4.11 *Addenda***

The County reserves the right to add, change, or delete any provision or statement in the RFP at any time prior to the Proposal due date. If it becomes necessary to revise any part of the RFP, addenda to the RFP will be provided to all Bidders who received a copy of the RFP.

To ensure receipt of RFP addenda, prospective Bidders shall register with the County by sending an email to the contact person listed in Section 1.5.1. The email shall include the following information:

- 4.11.1 In the subject line: Prospective Bidder for Jefferson County County-Wide Simulcast VHF P25 Conventional Radio System.
- 4.11.2 Name of designated contact person for prospective Bidder.
- 4.11.3 Name of firm.
- 4.11.4 Email address.
- 4.11.5 Telephone contact number.
- 4.11.6 The above furnished information will be utilized to send any addenda electronically via email.
- 4.11.7 In addition to registering with the point of contact, bidders must go to [www.jeffersoncountymi.gov/rfp](http://www.jeffersoncountymi.gov/rfp) to obtain and register for a copy of the RFP and to receive any future addenda.

#### **4.12 *Right to Withdraw RFP***

Jefferson County reserves the right to withdraw, cancel, and/or amend, in part or entirely, this RFP for any reason and at any time with no liability to any prospective Bidder for any costs or expenses incurred relating to the RFP or otherwise.

#### **4.13 *Contact Between Bidder and County***

From the time of the RFP is released until a radio system successful bidder is selected All contact between the Bidder and the County will be directed to the person designated in Section 4.6. No information provided verbally, or by any other personnel, will be considered binding. All Bidders must use this written document, its addenda, its attachments and information obtained at the Bidder conference as the sole basis for their submission. If a Bidder makes contact or attempts to contact any County employee after the Bidder Conference and prior to award, unless authorized by the listed contact person, the County reserves the right to reject the Bidder's response.

#### **4.14 *Gratuities and Kickbacks***

It shall be unethical for any person to offer, give, or agree to give any elected official, employee or former employee, or for any elected official, employee or former employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer for employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the contents of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceedings or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefore.

It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a radio system successful bidder's subcontractor under a contract to the radio system successful bidder or a higher tier radio system Contractor's subcontractor or any person associated therewith, as an inducement for the award of a subcontract, or order.

#### **4.15 *Non-Appropriation of Funds***

Notwithstanding anything contained in this contract to the contrary, no Event of Default shall be deemed to have occurred under this contract if adequate funds are not appropriated during a subsequent fiscal period during the term of this contract to enable the County to meet its obligations hereunder, and at least thirty (30) days written notice of the non-appropriation is given to radio system successful bidder.

#### **4.16 *Interpretation of Documents***

If any Bidder contemplating submission of a Proposal response is in doubt as to the true meaning of any part of the Proposal, the Bidder may submit to the County, at the address noted in Section 4.6, a written request for an interpretation thereof. Replies to inquiries will be published in the form of addenda to the Proposal if in the sole determination of the County it would benefit all potential Bidders. Bidders shall rely only on the Proposal specifications, instructions in the Proposal, any Proposal addenda that may be issued in preparing and submitting a Proposal response and information contained at the Bidder Conference.

#### **4.17 *Americans with Disabilities Act Compliance***

In connection with the performance of work under this contract, radio system successful bidder agrees that no qualified individual with a disability, as defined by the Americans with Disabilities Act, shall, by reason of such disability, be excluded from participation and the benefits of services, programs, or activities, including employment, or be subjected to discrimination. Radio system successful bidder is specifically notified that it is subject to all employment requirements listed under Title I of the Americans with Disabilities Act by virtue

of its contract with Jefferson County, a public entity. Radio system successful bidder is specifically notified that it is subject to federal requirements to assure participation and access to public facilities, programs, and activities under Title II of the Americans with Disabilities Act by virtue of its contract with Jefferson County, a public entity. These requirements mandate separate or special programs or reasonable modification of existing programs, services, and activities without surcharge to disabled individuals as long as safety is not compromised. The radio system successful bidder shall provide a similar notice to all its subcontractors.

#### 4.18 ***Errors***

Shall the Bidder believe that an error appears in the RFP documents, Bidder shall notify the County in writing, at the address noted in Section 4.6, no later than the closing date for questions.

#### 4.19 ***Submission of Proposals***

Each Bidder must submit an original and three copies of the written submission plus two electronic copies on a CD or USB thumb drive as stated below in accordance with Section 6.1. The County must receive Proposals no later than 4:00 p.m. CDT on Friday, September 20, 2019.

The original, two copies, and an electronic copy (USB drive) must be sent to the following address:

Jefferson County Administration  
311 South Center Avenue, Room 111  
Jefferson, WI 53549

One copy of the proposal plus an electronic copy (USB drive) shall be sent to the County's consultant:

True North Consulting Group  
Attn: John Thompson  
15672 Highview Drive  
St. Paul, MN 55124

The package must be marked:

#### **County-Wide Radio System**

The County will not accept submissions submitted by electronic mail, telegraph, or facsimile. The County is not responsible for delays or losses caused by the U.S. Postal Service or any other carrier or delivery service. Proposals submitted after the submission deadline will be returned unopened and not considered.

Proposals are to be prepared on standard 8.5" by 11" paper. Foldouts containing charts, spreadsheets, and oversize exhibits are permissible. The pages shall be placed in a binder with tabs separating the major sections of the submission as defined in Section 6.2.

**END OF SECTION**

## 5 Proposal Conditions

### 5.1 *Public Record*

Jefferson County abides by the laws of the State of Wisconsin.

### 5.2 *Award*

The County reserves the right not to award a contract to any Bidder. The award, if any, will be based on the best interests of the County.

### 5.3 *Ownership of Materials Submitted*

All material submitted becomes the property of the County and will not be returned.

### 5.4 *Materials and Services*

- 5.4.1 The complete system including but not limited to the radio communications systems, supporting network, alarm system and microwave portion of project shall be offered as a “turn-key” Proposal which should be taken to mean change orders will only be accepted for action due to changes required not under the control of the radio system successful bidder shown to be unknown at the time of initial project negotiation.
- 5.4.2 The civil and structural portion of the project will be completed by others though assistance from the awarded radio system successful bidder shall be offered to assist the County and their civil/structural engineer to bid in a manner that follows state statutes for Public Works construction.
- 5.4.3 All materials and products provided shall be new and unused, with full manufacturer’s warranties.
- 5.4.4 Materials and products shall be based on the functional and performance requirements in this document.
- 5.4.5 Bidder shall provide additional system components typically and reasonably required to make the system operational even though not specifically indicated.
- 5.4.6 Bidder is assumed to have a clear understanding of the project if a proposal is submitted.

### 5.5 *Bidders’ Costs*

The County shall not be responsible for any costs incurred by Bidders relating to this RFP. Bidders shall bear all costs associated with the Proposal preparation, submission, attendance at the proposal conference and site survey, and any other activity associated with this RFP or Proposal preparation.

### 5.6 *Missing Information*

Bidder is responsible for obtaining any information that is not supplied in this RFP but is necessary to provide a complete and responsive submission. The RFP has been written with every effort to be as complete as possible, but the Bidder assumes responsibility for any missing information, especially with regards to existing frequencies, sites and equipment. It is the Bidder’s responsibility to ask appropriate questions and to participate in the Bidder Conference and any Site Visits.

### **5.7 *Acceptance and Rejection of Proposals***

The County reserves the right to accept or reject Proposals on each item separately or as a whole, to reject any or all Proposals without penalty, to waive informalities or irregularities, and to contract as the best interests of the County may require obtaining the system, equipment and services that, in the County's judgment, best meets the needs of the County as expressed in this RFP.

### **5.8 *Use of Proposal Ideas***

The County reserves the right to use any or all Bidder design or service ideas presented. Selection or rejection of the submission does not affect this right.

### **5.9 *Pre-Proposal Conference and Survey of Sites***

The County will conduct a mandatory Pre-Proposal conference and mandatory site tour to answer questions on the RFP and the information contained therein. See Section 1.4 for date, time and location. All interested Bidders must attend this conference. The conference will consist of a short RFP presentation, a question/answer period and a tour of 911 Communications and all County radio sites. Submittal of proposals from Respondents who do not attend the pre-proposal conference will not be considered.

### **5.10 *Site Availability***

Bidders shall consider all existing County, listed municipal and other defined sites and properties. The County encourages Bidders to utilize existing County facilities to minimize ongoing operational costs. Non-County owned facilities may be included by Bidder, but any realistically estimated rental or lease costs must be clearly stated in Bidder's response to the RFP.

### **5.11 *Pricing Validity***

Bidders must clearly state how long RFP pricing is valid. The pricing must be valid for at least 90 days for the radio system.

As the County is in the process of finalizing the funding mechanism for the project, the County will give preference to those Bidders whose pricing extends beyond 90 days regarding the purchase of infrastructure and beyond three years for end user equipment, accessories and optional features.

### **5.12 *Shipping and Storage***

Proposal pricing shall be FOB destination. All shipping, handling, storage and insurance costs associated with moving and storing manufactured equipment from the radio system successful bidder's location(s) to the location of installation shall be included in the Bidder's response to the RFP. In the event there is a need for temporary storage of equipment, the County will work with the radio system successful bidder to secure places where storage can take place.

### **5.13 *Subcontractors***

If the submission represents offerings to be provided by different firms or other organizations, the contract will be solely with the radio system successful bidder, who will be required to assume responsibility for the total project. Any proposed subcontractors will be subject to the County's approval.

### **5.14 *Performance Standards***

If awarded the contract, the radio system successful bidder warrants and agrees to use its best efforts to perform all services in accordance with the contract terms and in accordance with generally accepted professional standards. The prospective radio system successful bidder further warrants and agrees that it shall employ whatever resources are necessary to meet the requirements specified in such contract.

### **5.15 *Construction Licenses and Permits***

The radio system successful bidder shall be required to obtain any necessary construction licenses and permits and shall comply with all Federal, State, and local laws, codes, and ordinances without cost to the County.

### **5.16 *FCC Licensing***

The radio system successful bidder shall work with the County to obtain/modify FCC licenses for the radio system. County staff will provide the FRN information, signatures, etc. if needed for FCC licensing of the radio and microwave frequencies.

### **5.17 *Proposal Bond***

Each Proposal shall be accompanied by a separate envelope containing an acceptable Proposal Bond or check to the County and a copy of the Bidder's license or certificate of renewal issued by the Secretary of State. The Bond shall be payable to Jefferson County in an amount equal to five percent (5%) of the full amount of the Proposal, executed by the Bidder as principal and by a Surety, authorized to do business in the State of Wisconsin meeting the requirements of the Request for Proposal, conditioned that if the principal's Proposal is accepted and the contract awarded to the principal, the principal, within fifteen (15) days after Notice of Award, shall execute a contract in accordance with the terms of the RFP and Proposal Bond as required by law and regulations and determinations of the County.

### **5.18 *Performance and Payment Bonds***

The radio system successful bidder may be required to produce a performance bond and a payment bond each in the amount of 100 percent of the value of the contract at the time of award at no additional cost to the County. The bonds must be furnished within 10 days of award, if requested. If it is determined either bond is not required, the cost of the bond will be deducted from the proposed price.

### 5.19 *Insurance*

The radio system successful bidder or anyone providing services herein shall be required to comply with insurance provisions contained in the contract.

### 5.20 *Award Discretion*

While the County may ultimately decide to enter into a contract with the person or firm with which the County can make the most satisfactory arrangement for meeting its needs, the County is not obligated to award any contract or respond to Proposals submitted, nor is it legally bound in any manner whatsoever by the submission of a Proposal.

### 5.21 *Submission of Contract Documents*

Within **fifteen (15)** days after receipt of contract award and receipt of the contract forms, the successful Bidder(s) shall execute two duplicate originals and return them to the County. Such contract shall be prepared by the County, and the contract terms shall be consistent with this RFP (and all addenda thereto and all material attached to and made a part of the RFP), the terms of the Proposal as such terms are finally accepted by the County, as well as all other provisions that the County agrees may be included in the contract.

### 5.22 *Failure to Execute Contract*

The County reserves the right to award to another Bidder(s) if the successful Bidder fails to execute and return the contract (two duplicate originals) within **fifteen (15)** days after receipt of said award notification. The re-award to another Bidder shall be in addition to any other right or remedy available to the County under this RFP, contract law, statute, and/or in equity.

### 5.23 *Change Orders*

The scope of the services to be performed under this Contract may be amended or supplemented by mutual written agreement between the parties to the Contract. This amendatory provision shall not operate to prevent the County from exercising its reserved right to establish reasonable time schedules of and for any of the work or services to be performed by radio system successful bidder hereunder, nor to cancel any of the services not performed at the time notice is given to radio system successful bidder of the cancellation of such services or portion of the work to be performed hereunder.

### 5.24 *Non-Waiver of Defaults*

Any failure by the County to enforce or require the strict keeping and performance of any of the terms and conditions of the contract shall not constitute a waiver of such terms and conditions, nor shall it affect or impair the right of the County to avail itself of such remedies as may be available for any breach of the contract terms and conditions.

**END OF SECTION**



## 6 Content of Proposal

### 6.1 *Preparation of Proposal*

- 6.1.1 Bidders shall submit their Proposals in both hard copy and electronically. Hard copy submissions must consist of one original and three (3) copies in binders or hard bound documents complete with required submittals plus any additional information included by the Bidder. Two electronic submissions of the Proposal shall also be provided including all required submittals in a searchable PDF format.
- 6.1.2 Tab 9: Cost Submittal – Pricing will be placed in a sealed 9” x 12” envelope and marked “Pricing”. The sealed envelope shall include the printed Pricing Matrix and the electronic copy in MS Excel in the .xls or .xlsx file format and any other pricing information Bidder feels is necessary.
- 6.1.3 Electronic copies shall be submitted via USB thumb drive. No email submissions will be accepted. Proposals should be provided as requested in Section 4.19.
- 6.1.4 No email submissions will be accepted.
- 6.1.5 The Bidder must submit with their Proposals all catalogs, drawings, specifications, descriptive information, and other details of equipment or materials included in its submission, including manufacturer and model number in this specification, so that the consultant may determine the merits of the various designs. Failure to comply may be cause for rejection. Equipment data sheets and other external documents included with the hard copy submission may be included as part of the electronic copies on USB drive. However, if they are not included, an informational note shall be placed into the electronic submission advising that they appear in the hard copies but not in the electronic copy.
- 6.1.6 Submittals must contain the signature of an authorized agent empowered to bind the Bidder in a contract. The original hard copy submission must contain original signatures and be labeled accordingly.

### 6.2 *Required Submittals with Proposal Response*

Bidders shall submit their documents with tabs identified by the numbers listed below.

- 6.2.1 **TAB 1: Letter of Transmittal (limited to one page)** - Briefly state the Bidder’s understanding of the services/system to be provided and a positive commitment to perform the services as defined in the RFP. The officer of the Bidder’s company or a designated agent empowered to contractually bind the firm shall sign each Proposal and any clarification to the Proposal.

- 6.2.2 **TAB 2: Firm Experience** - Include a description of the organization submitting the Proposal, including its size, organization, legal status (corporation or partnership, etc.), major type of activity or areas of work, and its recent (past five years) experience in the design, delivery, installation, optimization and commissioning of similar P25 simulcast Conventional system projects for public safety agencies. Identify the individual(s) in your firm who are anticipated to be involved in key roles if your firm is selected and briefly explain their role and relevant background and experience.
- 6.2.3 **TAB 3: References** - Provide a list of all radio communications projects completed in the last three years and at least five references of recent clients that have completed a similar project. Each reference must include the name, telephone number, address, and email address of a person who may be contacted and who has direct knowledge of your firm's capabilities and past performance. Also include a brief description of the project, including the start and completion dates.
- 6.2.4 **TAB 4: Demonstration/Proof of Bidder's Financial Stability** - Formal certification on Bidder's stationery signed by the owner or authorized officer of the company indicating the proposing firm is not subject to a currently pending bankruptcy in any form, nor are there any current intentions of filing any type of bankruptcy proceedings. In the event a Bidder has or is considering filing bankruptcy of any type, formal certification will take on the form of a written explanation of such filing, complete with history and status.
- 6.2.5 **TAB 5: Statement of Compliance for Insurance** - Provide a Statement that Bidder will meet all insurance requirements as stated in Section 21 if selected as an equipment and services provider.
- 6.2.6 **TAB 6: Response to Requirements** - The Bidder must include a point-by-point response for each numbered and lettered item in this Request for Proposal. The Bidder shall indicate understanding and compliance or take exception and explain the reason for each item. Additional system descriptions and/or drawings that further describe the capability of the Bidder's offering are encouraged.
- 6.2.7 **TAB 7: Details of Proposed Solution** - A narrative of the solution proposed including high level site diagrams of the proposed solution showing network connectivity, redundant systems and representative diagrams of site equipment, space and power requirements. This description shall include but is not limited to:
- 6.2.7.1 A complete written narrative of the offering with a global list of major elements in LMR system, paging, microwave, IP network, alarm system.
  - 6.2.7.2 Block diagrams showing interconnection of the elements of the complete infrastructure, sites, network, alarm system and microwave topology
  - 6.2.7.3 A table listing the coordinates of each site by name and ASR (if applicable) with LMR and Microwave antenna models, gain, antenna heights, azimuths and transmission line for transmit and receive, and ERP values.
  - 6.2.7.4 Propagation predictions predictions should include the RF parameters used to meet BER requirements in the prediction.

- 6.2.7.5 Microwave path profiles for each link.
- 6.2.7.6 Delay spread predictions to include parameters used to generate the prediction.
- 6.2.7.7 Preliminary engineering details, combining system parameters, acceptance testing procedures, proposed coverage test procedure and cutover procedures.
- 6.2.7.8 A description of requirements related to shelter space, commercial power and HVAC.
- 6.2.7.9 Field unit and configuration proposed for each type of subscriber unit.

6.2.8 **TAB 8: Implementation Plan and Schedule** - The Bidder shall provide an implementation plan and schedule that minimally includes:

- A. Major Task/Phase
  - i. Detailed design phase proposed beginning and end dates
  - ii. Interface with County's consultants (technical and civil)
  - iii. Site/tower expectations
  - iv. Parts, ordering and delivery of equipment
  - v. Factory Acceptance Test
  - vi. System installation plan
  - vii. System programming and testing
  - viii. System Optimization
  - ix. System Commissioning
  - x. System Technical Training
  - xi. System Operator Training
  - xii. System acceptance testing
  - xiii. 30-day burn-in and validation
  - xiv. Transition/Cutover
  - xv. Customer acceptance
  - xvi. System documentation
- B. Start date, finish date and duration of each task/phase
- C. Responsibilities (Bidder and County/agency)
  - i. Overall project management (radio system successful bidder)
  - ii. Overall project coordination (consultant)
  - iii. System build through Commissioning (radio system successful bidder)
  - iv. Site acquisition (County)
  - v. Site/tower development (County)

## D. Dependencies

- i. Initial verification of selected sites by photos or other means
- ii. FCC licensing and Regional Planning Committee approval
- iii. Site power requirements
- iv. Microwave path issues

## E. Deliverables

- i. Detailed Design Report/Drawings
- ii. Factory Acceptance Test/Results
- iii. Commissioning Test/Results
- iv. Fully operating radio system infrastructure
- v. All punch list items completed
- vi. Final documentation

## 6.2.9 TAB 9: Cost Submittal

The Bidder shall provide a complete breakdown of costs by item as described in the attached pricing matrix and using this matrix as a submittal. No other pricing formats will be accepted. A cost for each sub-item shall be included for all equipment if stated. If an item is to be furnished at no charge, the item shall be marked "No Cost" in the description or "0" in the per unit cost column. In addition to the total system cost, and other requested cost data, any optional or additional recommended equipment or services costs shall be listed. Add additional rows to the spreadsheet if required. Check all formulas for accuracy. The County desires to know the entire cost of operation for the first 10 years after acceptance. Year One 100% warranty plus nine (9) years of extended maintenance support. Submit as requested in Section 6.1.2

6.2.10 **TAB 10: Additional Work** - Include a list of items including hourly installation costs to be charged to the County in the event additional work is required beyond the scope of service stated. The County must authorize any additional work in writing before additional costs may be incurred.

6.2.11 **TAB 11: Change Orders** - It shall be understood that due to the complexity of the project and some of the unknowns that change orders will be necessary with the major one occurring at the time of the detailed design review when sites are known and believed to be securable. Bidder shall place a statement to that effect signed by offer acknowledging the requirement.

6.2.12 **TAB 12: Exceptions** - If exceptions to any item of any part of any section of this Request for Proposal are taken, they must be clearly identified as exceptions. The stated exceptions and any alternatives offered must be included in the Bidder's response. Submission of a Proposal indicates acceptance by the Bidder of the conditions contained in this Request for Proposal, unless clearly and specifically noted in the Proposal submitted and confirmed in the contract between the County and the Bidder (radio system successful bidder) selected. The County may decide to accept or reject any of the alternatives. If an exception is not taken and a contract signed the radio system successful bidder shall be responsible to provide at no additional cost to the County any portion or piece of equipment not specifically included in their proposal needed to meet expected performance.

Taking an exception to a stated requirement may not automatically reduce evaluation points, rather the results of the exception on system expected performance may result in evaluation point adjustments.

- 6.2.13 **TAB 13: Coverage Alternates** - If Bidder elects to offer any complete alternative solution, then it shall include a narrative of operation and to the differences of the stated performance expectations as outlined, a high-level block diagram, coverage expectations and complete price matrix to be considered thus making the alternative a standalone proposal.
- 6.2.14 **TAB 14: Specification sheets** - Include spec sheets for infrastructure components, terminals, etc.
- 6.2.15 **TAB 15: Sample Contract, Terms and Conditions** - Proposed contract for the County to consider.

## **END OF SECTION**

## 7 Best Proposal Selection

### 7.1 *Proposal Recommendation*

True North Consulting Group will provide a technical analysis and make technical recommendations to the County's Selection Committee based on analysis of proposals received.

### 7.2 *Bidder Selection*

The Selection Committee will select the Selected Bidder using the selection criteria in this section and make a recommendation to the Jefferson County Board of Supervisors who shall have final decision-making authority regarding award of all contract(s) resulting from this RFP.

7.2.1 Proposals will be reviewed for compliance with the specifications and criteria within the RFP and any addendums.

7.2.2 Proposals will also be reviewed for completeness, organization, clarity and conciseness. Extraneous information that is not responsive to the RFP is discouraged.

### 7.3 *Conditions of the Selection Process*

7.3.1 **Criteria Compliance** - The County reserves the right to determine, in its sole and absolute discretion, whether any aspect of a Proposal satisfactorily meets the criteria established in this RFP.

7.3.2 **Submission of Alternatives** - Although this RFP specifies minimum requirements for completion of the Project and shall be responded to in all respects, Bidders are invited and encouraged to submit alternatives that may be of interest to the County from an operational, timing, financial and/or long-term upgrade point of view.

7.3.3 **Additional Information Requests** - The County reserves the right to request additional information from Bidders during any phase of the Proposal evaluation process. During the evaluation and selection process, the County may require the presence of Bidder's representatives to make presentations and answer specific questions. Notification of any such requirements will be given as necessary.

7.3.4 **Conditions of Award** - The County may elect not to award a contract solely based on this RFP and will not pay for the information solicited or obtained. The information obtained will be used in determining the alternative that best meets the needs of the County.

### 7.4 *Evaluation Process*

7.4.1 **Full RFP review** - The County will review the functional, technical, and Bidder requirements in each valid proposal received.

7.4.2 **Points** - Points will be given in each of four categories (see 7.5) based on the initial response submitted. If additional information is requested, the County may adjust the points given but will not impact the category point total for the Cost category.

### 7.5 *Evaluation Criteria*

This is the form the County will use to evaluate each proposal.

<i>Evaluation Criteria</i>	<i>Evaluation Method</i>
<b>POINT-BASED CRITERIA</b>	<b>Possible Points</b>
<b>INSTALL/SUPPORT</b>	<b>30</b>
<b>TECHNICAL MERIT</b>	<b>30</b>
<b>BIDDER EXPERIENCE, QUALIFICATIONS and QUALITY of RESPONSE</b>	<b>20</b>
<b>TEN YEAR SYSTEM and OPERATIONAL COST</b>	<b>20</b>
<b>SUBTOTAL</b>	<b>100</b>
<b>EXCEPTIONS –</b>	<b>Deduct 1-5 points each depending on potential impact on the County and/or additional duration of contract negotiations.</b>
<b>ERRORS OR MISSING INFORMATION IN RESPONSE -</b>	<b>Deduct 5 points each</b>
<b>TOTAL</b>	

- 7.5.1 **Bidder's Ability to Both Install and Support System after Installation** - This evaluates pre- and post-installation support and service and local presence. Site visits and reference checks may be utilized for this evaluation. Bidders will be evaluated on their ability to execute the project on time with minimal interruptions to the agencies involved. Support after installation will be at least half of the points as the Bidder will be expected to enter in the primary role providing extended maintenance.
- 7.5.2 **Technical Design Merit** - The technology evaluation shall use criteria such as compliance to standards, development and execution environments, application architecture, extensibility, scalability, and integration. A review of the submitted proposal and overview design provided as a part of submittal will be key.
- 7.5.3 **Bidder's Experience, Qualifications, Quality of Response & Financial Viability** - Proposals will be evaluated on the firm's track record in fielding similar P25 simulcast Conventional systems, the firm's financial capabilities and following the requested response organization.
- 7.5.4 **Cost** - Costs will be evaluated for initial and ongoing costs. The financial evaluation will be based on the total (life cycle) cost of the system. The costs used will be those provided in the Bidder's response to this RFP and as established by the County for hardware/software and system operation plus care in site selection/design as to number of leased sites, greenfield sites and makeup of antennas on the towers. The County reserves the right to adjust cost submissions to reflect factors that, in the County's judgment, would result in more accurate costs in their environment.

## 7.6 *Bidder Qualifications*

Bidder will be considered a Qualified Bidder if the following qualifications are met:

- 7.6.1 Bidder shall be certified to install the system being proposed and have a minimum of three years' experience in the application, installation, and testing of the proposed systems and equipment with a successful record of at least three systems matching the complexity/size having been completed in the last five years.
- 7.6.2 Supervisors and all installers assigned to the installation of the proposed system or any of its components shall have factory certification from each equipment manufacturer thus proving they are qualified to install and test the provided products.
- 7.6.3 All installers assigned to the installation of this system or any of its components shall have a minimum of two years' experience in the installation of the specified systems.
- 7.6.4 Bidder (or Bidder's subcontractor) shall hold all necessary valid licenses and certifications for the work being performed as described.
- 7.6.5 Bidder to be a direct seller of the offered major system components thus being authorized to do warranty service on the proposed system.
- 7.6.6 Bidder offers an acceptable solution for supporting the installation after acceptance via the extended maintenance offered.
- 7.6.7 Bidder has the needed test equipment that has been recently calibrated to be used in the set up and on-going maintenance of the proposed system.
- 7.6.8 Bidder maintains a support facility and trained technical staff allowing service personnel to easily be dispatched to the County and arrive on-site within two hours of being called for assistance.
- 7.6.9 Bidder meets the financial requirements to develop, acquire, install and offer the long-term support requested by the County for the system being proposed.

**END OF SECTION**



## 8 General Provisions

### 8.1 *Project Management*

The radio system successful bidder shall appoint a radio system successful bidder's Project Manager and a backup to the PM who will be the main point of contact regarding the project for the County and the consultant.

The Project Manager is responsible for the following:

- 8.1.1 The successful completion of the contract in a timely manner.
- 8.1.2 The work and performance of all employees and subcontractors that have been hired by the radio system successful bidder.
- 8.1.3 Direct interface with County selected site construction successful bidder by assuming role of project management.
- 8.1.4 Completing and submitting all required submittals and documentation.
- 8.1.5 Attending all project coordination meetings as may be required by the County and/or consultant. The radio system successful bidder is responsible for taking minutes of these meetings and distributing copies to all participants. At a minimum, there is expected to be a kickoff meeting, monthly update meetings and a closeout meeting.
- 8.1.6 Coordination with the County's consultants and engineers to ensure smooth flow of work and on-time project completion.
- 8.1.7 Providing of a periodic written progress update report to the County and consultant that is specified by the County in a determined report format, such as Microsoft project or similar.
- 8.1.8 Reporting all unexpected conditions and problems that may result in delay or expense to the County and consultant immediately upon discovery.

### 8.2 *Implementation Plan / Schedule*

- 8.2.1 The radio system successful bidder must develop a realistic implementation plan that will include at least the following elements:
  - 8.2.2 Significant Tasks
  - 8.2.3 Start date, finish date, and duration of each task
  - 8.2.4 Responsibilities
  - 8.2.5 Dependencies
  - 8.2.6 Deliverables
  - 8.2.7 Estimated Completion Date
- 8.2.8 When accepted and approved by the County, the implementation plan shall be the documentation for measuring contract performance and progress, and as such, shall become a contract document to which the radio system successful bidder shall adhere.
- 8.2.9 The Bidder shall provide an initial proposed Implementation Plan with their submission.

### 8.3 *Delays and Extensions of Time*

- 8.3.1 If the radio system successful bidder is delayed at any time in the performance of the contract by written and mutually agreed to changes in the contract, labor disputes, fire, flood, or other natural disasters, unusual delay in transportation, adverse weather conditions not reasonably anticipated, unavoidable casualties, or any other causes beyond the radio system successful bidder's reasonable control and without fault or negligence of the radio system successful bidder, then the Contract Manager may, but shall not be required to, extend the contract time or performance dates or times for such reasonable time as the Contract Manager may determine.
- 8.3.2 A claim for extension will not be allowed unless the radio system successful bidder, not later than the end of the County's second business day following the day on which the claim arises, shall have informed the Contract Manager —via email, a follow up phone call may then be place, but the initial contact shall be in email—about the full details of the cause(s) necessitating such a claim. Within six (6) calendar days following any such email, the radio system successful bidder shall also send to each of the County's contact personnel a communication specifying in detail the cause(s) of the delay. The communications shall be sent to the address stated at the top of said cover sheet.
- 8.3.3 Radio system successful bidder's failure to comply with the above procedures shall constitute waiver of any claim for an extension of time.
- 8.3.4 The herein provisions will not preclude the County from canceling or terminating the contract regardless of any act or event beyond the radio system successful bidder's reasonable control, as aforesaid, provided that the County shall have given the radio system successful bidder thirty (30) days prior written notice of the County's intention to so cancel or terminate, and that during said period, the radio system successful bidder shall have failed to cure such delay or failure in performance.

### 8.4 *Suspension of Work*

- 8.4.1 The County shall have the right to suspend the work, or any part thereof, for non-compliance, for refusal to carry out the requirements of the agreement, or for public safety reasons.
- 8.4.2 The Contract Manager shall provide written notice to radio system successful bidder regarding the reason or reasons for such suspension. Work shall be suspended until the reason for the suspension has been corrected.

### 8.5 *Extension*

- 8.5.1 Unless otherwise provided in the contract documents, the contract period may be extended for additional periods with the mutual consent of the County and the radio system successful bidder. Each approved extension period shall be governed by the original contract terms.
- 8.5.2 If the County wishes to extend the contract, the Contract Manager will so advise the radio system successful bidder before expiration of the contract or any extension period.

### 8.6 *Survivorship*

- 8.6.1 All transactions executed pursuant to the authority of this Contract shall be bound

by all the terms, conditions, price discounts, and rates set forth herein, notwithstanding the expiration of the initial term of this Contract or any extension thereof.

8.6.2 The terms, conditions, and warranties contained in this Contract that by their sense and context are intended to survive the completion of the performance, cancellation, or termination of this Contract shall so survive.

8.6.3 The terms of the sections titled Software License, Disputes and Remedies, Warranty, and Indemnification shall survive the termination of this Contract.

## 8.7 *Taxes*

8.7.1 As the parties recognize that the County is a nonprofit entity exempt from payment of sales taxes pursuant to Wisconsin Statutes, Section 77.54(a), the County (not the radio system successful bidder) shall be responsible for all Wisconsin Sales or Use Taxes (if any are imposed) on any direct purchases of materials or supplies made by the County.

8.7.2 Proposals shall include all Wisconsin Sales and Use Taxes in effect at the time the proposal is submitted for taxable items which are not purchased directly by the County. Bidders who are uncertain as to what items are subject to tax, or who require further explanation or clarification, are requested to contact the Wisconsin Department of Revenue.

## 8.8 *Applications for Payment*

Applications for payment may be in the form of the radio system successful bidder's standard invoice. The application shall contain the order/contract number, an itemized list of commodities or services furnished, the description of each item occurring in the contract documents, the RFP item number for each item, the delivery point, and the date of shipment. Invoices for any service or commodity not identified in the contract will be disallowed.

### Proposed Payment Schedule

8.8.1 **First Payment** – radio system successful bidder may invoice the County for an amount not to exceed 15% of the value of the contract for Jefferson County Radio System upon contract execution.

8.8.2 **Detailed Design Review** – Upon acceptance of the system detailed design as provide by the radio system successful bidder which include site recommendation the County shall accept an invoice in the amount of 10% of the project proposed amount thus equating to a total of 25% invoiced to date.

8.8.3 **Factory Acceptance Test** –This test shall constitute a milestone for the project, but it shall not be considered a payment point in the contract.

8.8.4 **Shipment** - radio system successful bidder may invoice the County for an amount not to exceed 25% of the value of the contract for Jefferson County Radio System upon shipment of all equipment. Partial equipment invoice may be accepted only if prior authorization by the County's Project Manager. This equates to 50% of the project invoiced to date.

8.8.5 **Conditional Acceptance** - radio system successful bidder may invoice the County for an amount not to exceed 30% of the value of the contract for Jefferson County Radio System upon attaining Conditional Acceptance. Conditional Acceptance is considered as the time when all systems have been

installed and operational. This the total amount invoiced to date will be 80%.

- 8.8.6 **Final Acceptance** - radio system successful bidder may invoice the County for the remaining contract amount having not been previously invoiced per the value of the contract for Jefferson County Radio System only upon attaining 100% Final Acceptance and cutover to the new radio system.

8.9 ***Payments***

- 8.9.1 Payments under this contract will be made in the manner provided by law for payments of claims and/or invoices. (Payment of invoices is governed by Jefferson County Purchasing Ordinance.)
- 8.9.2 No payment shall constitute an acceptance of any commodities or services not in accordance with the requirements of the contract.

**END OF SECTION**

## 9 Software License and Copies

### 9.1 *Software License*

The County shall have the right to make at least two (2) copies of any system or equipment level software for backup and archival purposes. The County may transfer the software within their respective business operation.

### 9.2 *Enhancements, Upgrades, and New Versions of Software*

The radio system successful bidder agrees to provide to the County, at no cost, prior to and during installation and implementation, any software enhancements, upgrades, replacements, and/or new versions of the software.

Throughout the warranty period and as long as radio system successful bidder is providing extended maintenance, radio system successful bidder shall notify the County of the availability of enhancements, upgrades, replacements, and newer versions of the software and, within thirty (30) days, supply the County with the enhancements, upgrades, replacements, and new version. The enhancements, upgrades, replacements, and new version will be provided to the County without charge during the extended maintenance period. The radio system successful bidder will provide free updated documentation in the form of new revision manuals or changed pages to current manuals consistent with the original documentation supplied and reflecting the changes included in the software. The radio system successful bidder shall provide Bug Status Reports specifying all known, outstanding bugs in the new software versions. The information shall be updated periodically as new information and workarounds become known. The radio system successful bidder shall also provide free installation (as part of the warranty and maintenance program, procedures, and any installation program required by the installation.

Reauthorization Code: If a reauthorization code must be keyed in by radio system successful bidder for the licensed software to remain functional upon movement to another computer system, radio system successful bidder shall provide the reauthorization code to the County within one (1) business day after receipt of County's notice of its machine upgrade or movement.

**END OF SECTION**

## 10 Commodities and Services

### 10.1 *Quality Standards*

- 10.1.1 All commodities and work shall be of good quality, free from faults and defects, and in conformance with the contract documents. All commodities and work not conforming to these requirements may be considered defective. If required by the County, the radio system successful bidder shall furnish satisfactory evidence as to the kind and quality of commodities and work.
- 10.1.2 Commodities shall be subject to inspection by the County within a reasonable time after delivery to the County. Defective commodities may be returned to the radio system successful bidder at the radio system successful bidder's expense.
- 10.1.3 Commodities must be compatible with the equipment and/or system in the environment in which it will be utilized.
- 10.1.4 If a commodity not in current manufacture is specified by the County, radio system successful bidder warrants that such commodity shall be given the warranty that accompanied the commodity when it was in current manufacture. Radio system successful bidder further warrants that with respect to such commodity, that Bidder, for at least five years (or such other period as may be specified by the County from the date of the contract, shall keep and maintain enough supply of parts, supplies, accessories, and all other items reasonably necessary to assure the high reliability and efficient operation of the commodity. Radio system successful bidder further warrants that in the event the necessary parts, etc., are not available to maintain the commodity, it shall, at no cost to the County, promptly replace the commodity with one that is in compliance with the contract documents and is Bidder then current version.

### 10.2 *Submittals*

No portion of the work requiring submission of a shop drawing, manufacturer's literature, test data, or other information or a sample shall commence until the submittal has been approved by the County.

### 10.3 *Material Data Safety Sheets*

If so requested by the Contract Manager, or if so stated elsewhere in the specifications, the radio system successful bidder may be required to submit to the County a completed Material Data Safety Sheet (or other acceptable data) for each item proposed. Failure to submit this form upon request may result in rejection of the Proposal.

### 10.4 *New*

The radio system successful bidder warrants to the County that all commodities will, unless otherwise specified, be new and the manufacturer's latest design of the commodity presently in production and sold to customers and that such commodities and services furnished under this contract are in conformance with contract documents and that commodities are of merchantable quality and fit for the purpose for which they are intended and sold.

### 10.5 *Title*

The radio system successful bidder warrants that title to all commodities, materials, and/or equipment covered by an application for payment will pass to the County upon receipt of payment by the Bidder, free and clear of liens, claims, security interests, or encumbrances,

and that no commodities, materials, and/or equipment covered by an application for payment in which an interest therein or an encumbrance thereon is retained by the seller.

**END OF SECTION**

## 11 Product: Hardware and Software

### 11.1 *New*

The radio system successful bidder warrants to the County that all commodities will, unless otherwise specified, be new and the manufacturer's latest design of the commodity presently in production and sold to customers and that such commodities and services furnished under this contract are in conformance with contract documents and that commodities are of merchantable quality and fit for the purpose for which they are intended and sold.

### 11.2 *Title*

The radio system successful bidder warrants that title to all commodities, materials, and/or equipment covered by an application for payment will pass to the County upon receipt of payment by the Bidder, free and clear of liens, claims, security interests, or encumbrances, and that no commodities, materials, and/or equipment covered by an application for payment in which an interest therein or an encumbrance thereon is retained by the seller.

**END OF SECTION**



## 12 Training and Support

### 12.1 *Staff Training*

- 12.1.1 Training programs shall be provided and detailed that provide the County an understanding of the services provided and be created to provide specifics to the proposed systems.
- 12.1.2 A console dispatcher hands-on user training program shall be developed and delivered on the new systems setup onsite at a provided location to allow dispatchers to use customized positions. Multiple times will be needed to allow personnel flexibility in attendance.
- 12.1.3 A Train-the-trainer program shall be developed and delivered for groups of users focusing on the operation of the mobiles and portables with three sessions assuming different fleet map programming to accommodate the various agencies: Fire (city and rural), Law (Sheriff and Police), EMS and Highway.
- 12.1.4 Technical training shall be offered on the system enough to allow individuals to have a high-level understanding of the workings of the system and for them to offer user the first call for assistance. They are not expected to be technicians.

### 12.2 *Support*

- 12.2.1 The system is expected to be technically supported by a local bidder who will be required to offer the second level of reactive and first level proactive support for the system.
- 12.2.2 System support agencies shall have manufacturer certified technical personnel housed within no more than a two-hour drive of the system who can deliver the support.
- 12.2.3 The expected support must identify how 24x7x365 monitoring and response to system reported failures can be met.
- 12.2.4 An agreement is expected to be reached for this extended level of support for normal operational support and services during the entire life of the project by the County.

**END OF SECTION**

## 13 Systems Testing, Acceptance, and Certification

### 13.1 *Equipment Installation and Component/System Testing*

- 13.1.1 It is understood all equipment will be shipped from the factory to a local to-be-determined location where it will be held until being moved to the various sites.
- 13.1.2 Until the equipment has been installed at its selected site, the ownership and thus responsibility of these systems shall remain with the radio system successful bidder and not transferred to the County.
- 13.1.3 Promptly after delivery to the defined site hardware and software, modules and/or components, radio system successful bidder shall commence to install said equipment and software.

### 13.2 *Component and Systems Testing and Notification of Readiness*

- 13.2.1 Radio system successful bidder shall promptly and successfully conduct all its own testing procedures on all hardware and software.
- 13.2.2 Radio system successful bidder shall then allow consultant and/or County to randomly select up to three sites for the tests to be redone to be validated.
- 13.2.3 Radio system successful bidder shall provide written notice that the system has been installed and all components have been tested and is ready for Acceptance testing.
- 13.2.4 Testing documentation shall be turned over to consultant for review.

### 13.3 *Project Certification / Acceptance Testing/Operational Training*

- 13.3.1 After radio system successful bidder's successful completion of its system testing procedures, radio system successful bidder shall successfully conduct its certification testing procedure on the system delivered hereunder to determine whether all such hardware and software together operates in a manner meeting the certification criteria.
- 13.3.2 All operator training shall be conducted for the user groups and dispatch center personnel.
- 13.3.3 No acceptance testing signoff will occur until a user interface to user interface from terminal to terminal and terminal to dispatcher is shown to work without error.
- 13.3.4 The County's Project Certification testing shall begin within fifteen (15) business days following its receipt of radio system successful bidder's written notice of successful completion of the installation of the system and all its tests and training in connection therewith has been completed. The project certification testing will be conducted at the repeater sites in order to determine whether (1) the system performs in accordance with the functions, specifications, and description established using radio system successful bidder documents; (2) the system can be effectively utilized in the County's environment; (3) the documentation for the system is thorough, understandable, and instructive so as to impart reasonably clear guidance for the system's use; and (4) the system meets all functional requirements as described in this RFP, especially the tests described in Section 30.
- 13.3.5 For this Certification Test, all users and dispatch shall be cutover on the system to conduct actual daily use, thus conducting a proper operational test of the

system though under full load.

- 13.3.6 The Certification Test will be considered successful if the equipment operates successfully in compliance with these specifications for a total of thirty (30) consecutive days with a major failure requiring the 30-day period to start over and minor failure possibly stopping the 30-day clock until repairs have been made.
- 13.3.7 Written notification will be furnished to the radio system successful bidder if any item or function is determined unacceptable to the County. The radio system successful bidder will then have three (3) days to correct or replace the defective item and notify the County that all such errors have been remedied. The County will have three (3) additional working days to recommence the aforesaid certification test. This process will be repeated, if necessary, until the equipment meets the aforesaid 30-consecutive-day test, and the County notifies the radio system successful bidder in writing of Project Certification.
- 13.3.8 However, if the test results are not accepted hereunder within 120 working days after Bidder's initial written certification to the County of the readiness of the certification testing, the County shall have the right and option, following ten (10) days' advance written notice to radio system successful bidder (during which period the radio system successful bidder shall have the right to cure by full performance of the certification test obligations), to declare radio system successful bidder to be in default, and the County may exercise any or all of its full spectrum of remedies, including but not limited to cancellation and rescission of this agreement and place a claim on the Performance Bond.
- 13.3.9 Upon contract cancellation by the County due to the radio system successful bidder's breach or default, the County shall have the right to notify the Surety of a claim on the Performance Bond claim return the system at the radio system successful bidder's sole cost (radio system successful bidder being fully responsible to perform all services necessary for the shipping thereof). Radio system successful bidder shall promptly refund to the County the full amount of any payments made to the radio system successful bidder pursuant to these specifications less the amount of any depreciation, based on a five-year period. The County reserves the right to apply the aforesaid testing and acceptance procedure to subsequent installations and new releases of equipment and software.

#### **13.4 *Post Project Certification and Beneficial Use***

- 13.4.1 Beneficial Use and the minimum one-year warranty will begin after completion of successful operation for 30 days.
- 13.4.2 The County shall operate the complete system of all channels in the normal course of their business operation.
- 13.4.3 The County will verify that the system satisfies the System Acceptance Test, warranty maintenance standards, and adequate training of its staff for the operation of the system under normal business operation.
- 13.4.4 If the system is found to be unacceptable to the County in that it does not meet expectations, written notification will be made to the radio system successful bidder with the radio system successful bidder responding in writing to the County describing its intended solution.
- 13.4.5 The radio system successful bidder and County shall attempt to reach an

agreement as to the solution before any legal action is begun.

**END OF SECTION**

## 14 100% Warranty of Complete Supplied System

Dependent on Bidders and proposals received there is the expectation by the County that a local technical support company (which may be the radio system successful bidder) will be named and given the responsibility of supporting all aspects of the new system warranty, and that this company will have trained and certified technicians on staff who will offer nearly immediate assistance.

### 14.1 *Warranty Offered*

- 14.1.1 The warranty offered does not begin until the system is fully complete and 100% operational and accepted by the County with the understanding the “system” is the complete operating chain from user interface of the radio terminal to the user interface of the radio terminal and dispatch console operator.
- 14.1.2 The warranty offered by the radio system successful bidder shall be in addition to any manufacturer’s standard warranty that may apply, or any warranty provided by law.
- 14.1.3 The radio system successful bidder shall provide a system equipment (all supplied electronics) warranty that shall start at the date of system acceptance and extend to at least one (1) year after the date of project acceptance by the County. Due to testing and cutover timing, it shall be understood this could be longer than one year for some portions of the system and/or terminal equipment.

### 14.2 *100% Warranty Parts and Labor*

- 14.2.1 The 100% warranty shall include all necessary travel and labor to troubleshoot, setup and replace items under the warranty including replacement of any defective parts in a timely manner.
- 14.2.2 All labor and travel associated with troubleshooting and replacement of parts/components, any system re-tuning or alignment as a result of replacing those parts, spare parts and modules, and all recommended preventative maintenance activities shall be provided without cost to the County during the warranty period.
- 14.2.3 A warranty start date for all end user equipment will be agreed upon for ease of administration.
- 14.2.4 Any individual item of equipment covered by this procurement experiencing more than three failures for reasons not external to itself during the warranty period shall be replaced with a new item meeting specification, at no cost to the County. If the item is considered critical, the radio system successful bidder shall replace it within twenty-four (24) hours after receipt of notification from the County. A new warranty period for the item identical in length and terms to the foregoing warranty period shall commence on the date of replacement of any such item.
- 14.2.5 Radio system successful bidder shall correct or replace the equipment or provide the services necessary to remedy any programming error, malfunction, or other problems in connection to the hardware, software, firmware, documentation, etc. Calls reporting problems will always be made to the Bidder. When return calls are made (either to gather more data or to prescribe corrective actions), the first such return call shall arrive from a person trained and qualified to diagnose and resolve the general type of difficulty reported within two (2) hours of the report

of trouble. Bidder's initial response to remedy errors, malfunctions, or problems, whether identified by the County, another user of comparable equipment, or any other person, shall not exceed two (2) hours.

- 14.2.6 Radio system successful bidder, when attempting to resolve a problem of substantial difficulty or magnitude, shall use its best efforts to proceed with diligence and good faith to affect a remedy in a timely and efficient manner.
- 14.2.7 Radio system successful bidder shall dispatch a Field Engineer to the County upon request by the Contract Manager. The Field Engineer must arrive on site within four (4) hours from the time the call was placed by the Contract Manager. The Field Engineer dispatched must be trained and certified on the installed systems.
- 14.2.8 In the case of an emergency service request by the Contract Manager, the Field Engineer must arrive on site within two (2) hours from the time the call was placed to begin diagnosis of the reported problem. Emergency Service is defined as a major system failure where a piece of equipment has failed causing the County to operate on its back up channels or when more than half of its dispatching consoles fail. A loss of a single channel or a single dispatch console does not constitute an emergency service request.
- 14.2.9 Radio system successful bidder shall maintain duplicates of all radio system software and documentation thus being locally available and able to be delivered and on site at the County within four (4) hours of request by the Contract Manager or if required by the dispatched Field Engineer.
- 14.2.10 In the case of an emergency service request, the above system software and documentation shall be delivered and on site within two (2) hours of request by the Contract Manager or if required by the dispatched Field Engineer.
- 14.2.11 Radio system successful bidder shall attach a schedule of the activities necessary for the proper functioning of their equipment (a recommended maintenance schedule), the titles and frequencies of any reports that the County will be expected to produce for the radio system successful bidder, and the types and probable extent of the activities with which the County will be expected to assist the radio system successful bidder in remedial maintenance efforts.
- 14.2.12 Radio system successful bidder shall in good faith support and resolve problems with connectivity to the equipment in accordance with the maintenance and support provisions of this document. If radio system successful bidder determines the problem lies with other manufacturers' equipment, then the radio system successful bidder shall work cooperatively with the County and such other manufacturers to identify and resolve the problem.
- 14.2.13 Radio system successful bidder must provide a complete description of its routine and preventive maintenance schedule.
- 14.2.14 Preventive maintenance shall be scheduled as frequently as is recommended by the manufacturers of the equipment's various components though no less than once at the end of the warranty period. The County will schedule preventive maintenance with the radio system successful bidder and any subcontractors involved. In no case will preventive maintenance be scheduled to put any aspect of the system out of operation without prior approval.
- 14.2.15 Radio system successful bidder must provide support on all hardware and software components 24 hours per day, 7 days a week and as such shall have

multiple layers of backup personnel trained to provide this level of service.

- 14.2.16 Radio system successful bidder must provide one toll-free telephone number to call for all hardware and software maintenance/support problems.
- 14.2.17 For security purposes, the system shall be password access-protected. In addition, any modems attached to the equipment shall be password access-protected and shall dial back to the radio system successful bidder's support personnel having requested access to the County's equipment.
- 14.2.18 All costs associated with delivering to and from the County any software and/or hardware required as the result of malfunctioning equipment shall be provided at no additional expense to the County. Such cost items shall include but not be limited to the following: troubleshooting, transportation, packaging, crating, delivery, installation, de-installation, component handling, and insurance.
- 14.2.19 If any communication circuits, equipment, or software needed specifically for maintaining or monitoring the system, these circuits and components shall be identified in detail, with costs placed in the pricing matrix.

#### **14.3 Telephone Support**

- 14.3.1 Radio system successful bidder shall provide the County a monthly allowance of a minimum of ten (10) hours of remote telephone support at no additional charge during the twelve (12) month warranty following final acceptance.
- 14.3.2 The allowance may be used for assistance and advice on the operation and functions of the equipment, for help with diagnostics and other problem determination procedures, and for advice and assistance in problem situations.

#### **14.4 Required Spare Parts**

- 14.4.1 Bidder shall detail what anticipated cache of spare parts would be recommended to support all aspects of the proposed systems throughout the life of the system. Recommendations should be made to identify the importance each item provides to the overall system operation and performance.
- 14.4.2 As the system is expected to be designed and implemented with full redundancy of the simulcast system controller and voting system with dual networks, this design shall be considered when determining the list of spares recommended.

#### **14.5 Right to License Warranty**

Radio system successful bidder (or original equipment manufacturer) warrants to the County that radio system successful bidder (or original equipment manufacturer) is the lawful owner of the software or, to the extent it is not the lawful owner, that it has all rights necessary for it to license all software to the County under the terms of this agreement. Radio system successful bidder (or original equipment manufacturer) warrants that the software will not violate or in any way infringe on any patent, copyright, trademark, trade secret, or any proprietary or other right of a third party.

#### **14.6 Software Performance Warranty**

- 14.6.1 It shall be understood this is a user interface to user interface software warranty that includes all radio system successful bidder supplied system components.
- 14.6.2 A failure of software/code that renders a piece of equipment unusable even temporarily requiring rebooting or restarting shall be considered a failure just as



if it were a hardware failure employing the same remedies of resolution.

- 14.6.3 Radio system successful bidder warrants to the County that for a period of one (1) year after County's acceptance of the software, and thereafter, provided County is receiving software support services from Bidder, the software shall be substantially free from programming errors and will conform to the specifications, functions, descriptions, standards, and criteria set forth in this agreement (including the acceptance testing criteria), its exhibits and attachments, the Proposal, and any other system software specifications.
- 14.6.4 Radio system successful bidder hereby warrants that the support services (a) will be performed in a good and workmanlike manner, consistent with industry standards, and (b) will be performed by adequately trained and experienced personnel.
- 14.6.5 In terms of any equipment or third-party software purchased by County from the radio system successful bidder, the radio system successful bidder warrants that (a) such items shall be ordered new from radio system successful bidder's supplier(s) and will include the manufacturer's standard end warranty, which shall be assignable to the County; and (b) radio system successful bidder shall pass through to the County all equipment and applicable third-party software manufacturers' assignable end warranties that shall apply to the County. If the equipment and applicable third-party software warranty is not assignable, radio system successful bidder shall deliver notice prior to purchase of said equipment by the County. If the equipment and third-party software warranty is not assignable, the County may elect not to purchase the equipment and third-party software from Bidder.
- 14.6.6 Radio system successful bidder warrants that all software licensed hereunder does not contain any disabling code (defined as a computer code designed to interfere with the normal operation of the software or County's hardware or software) or any program routine, device, or other undisclosed feature, including but not limited to a time bomb, virus, software lock, drop-dead device, malicious logic, worm, Trojan horse, or trap door that is designed to delete, disable, deactivate, interfere with, or otherwise harm the software or the County's hardware or software (except for software limitations on the number of permitted concurrent versions where applicable) in the applications, architectural software, or custom programming as delivered as of the delivery date of such items, which would, without County's intervention, alter, destroy, or inhibit the system or the County's use of the data or the system within the scope of any applicable license(s) under this agreement, nor is it the radio system successful bidder's intention that any subsequently delivered updates and releases contain any such disabling code or key lock or provide transactions through any interfaces with the intent to inhibit use of other systems.
- 14.6.7 Radio system successful bidder warrants to that County it has used its best efforts to scan for viruses within the software.
- 14.6.8 During the warranty period, the radio system successful bidder shall provide and install any firmware or software upgrades offered by the manufacturer of the radio subsystem, microwave subsystem, call logging subsystem and alarm subsystem at no additional cost to the County.



**END OF SECTION**

## 15 Extended Maintenance

There is the expectation by the County that a local technical support company will be identified and various recommended system updating, and maintenance options be presented for consideration.

### 15.1 *County's Support Staff*

- 15.1.1 The extended maintenance plan as offered to the project shall recognize the first tier of support is expected to be offered by the County's staff and thus the offered support services will build on the expected internal support being available.
- 15.1.2 The local staff assigned this responsibility will attend any training offered by the radio system successful bidder to enable them to offer this first level of support to their agencies.

### 15.2 *System Maintenance and System Updates*

- 15.2.1 At the County's option, radio system successful bidder shall provide extended maintenance, additional support, and enhancements relating to all hardware and software thus inclusive of the radio system, the network system, microwave system, alarm system and DC power plant system.
- 15.2.2 Extended Maintenance is defined as providing all required routine and emergency services labor and travel necessary to keep the radio and microwave system not only operating but operating in like new condition.
- 15.2.3 System Updates are defined as providing a minimum of every other manufacturer' offered software and/or firmware update including any required hardware changes to maintain the proposed system with the latest features.
- 15.2.4 Payments during and for said support and maintenance period shall be due and payable on an annual basis at the beginning of the year support is provided.
- 15.2.5 Bidders shall include costs covering the first ten (10) years of system and equipment ownership beginning with the end of 100% warranty period thus effectively Year 2 – Year 10 which may be extended beyond the period under agreement of radio system successful bidder and County.
- 15.2.6 During the extended maintenance term, radio system successful bidder shall supply and install all updates, enhancements, improvements, or modifications to the equipment (hardware, firmware and software) at no additional charge to the County beyond what is proposed in the extended maintenance support offering.

- 15.2.7 During extended maintenance term, the radio system successful bidder shall correct or replace the equipment or provide the services necessary to remedy any programming error, malfunction, or other problems relating to the hardware, software, firmware, documentation, etc. Calls reporting problems will always be made to the Bidder. When return calls are made (either to gather more data or to prescribe corrective actions), the first such return call shall arrive from a person trained and qualified to diagnose and resolve the general type of difficulty reported within two (2) hours of the report of trouble, not counting hours outside the maintenance hours herein set forth. In any event, Bidder's initial response to remedy errors, malfunctions, or problems, whether identified by the County, another user of comparable equipment, or any other person, shall not exceed two (2) hours.
- 15.2.8 Radio system successful bidder, when attempting to resolve a problem of substantial difficulty or magnitude, shall use its best efforts to proceed with diligence and good faith to affect a remedy in a timely and efficient manner.
- 15.2.9 Radio system successful bidder shall dispatch a Field Engineer to the County upon request by the Contract Manager. The Field Engineer must arrive on site within four (4) hours from the time the call was placed by the Contract Manager. The Field Engineer dispatched must be trained and certified on the installed systems.
- 15.2.10 In the case of an emergency service request by the Contract Manager, the Field Engineer must arrive on site within two (2) hours from the time the call was placed to begin diagnosis of the reported problem. Emergency Service is defined as a major system failure where a piece of equipment has failed causing the County to be forced to operate on its back up channels or when more than half of its dispatching consoles fail. A loss of a single channel, talk-group or a single dispatch console does not constitute an emergency service request unless it is the paging channel or subsystem.
- 15.2.11 Radio system successful bidder must have duplicates of all the County's software and documentation locally available. This shall be delivered and on site within four (4) hours of request by the Contract Manager or if required by the dispatched Field Engineer.
- 15.2.12 In the case of an emergency service request, the above system software and documentation shall be delivered and on site within two (2) hours of request by the Contract Manager or if required by the dispatched Field Engineer.
- 15.2.13 Radio system successful bidder shall attach a schedule of the activities necessary for the proper functioning of their equipment (a recommended maintenance schedule), the titles and frequencies of any reports that the County will be expected to produce for the radio system successful bidder, and the types and probable extent of the activities with which the County will be expected to assist the radio system successful bidder in remedial maintenance efforts.
- 15.2.14 Radio system successful bidder shall in good faith support and resolve problems with connectivity to the equipment in accordance with the maintenance and support provisions of this document. If radio system successful bidder determines the problem lies with other manufacturers' equipment, then the radio system successful bidder shall work cooperatively with the County and such other manufacturers to identify and resolve the problem.
- 15.2.15 Radio system successful bidder must provide the County with new versions of

the standard equipment at then-current rates, upon request and when made generally available.

- 15.2.16 Radio system successful bidder must provide a complete description of its routine and preventive maintenance schedule.
- 15.2.17 Preventive maintenance shall be scheduled as frequently as is recommended by the manufacturers of the equipment's various components though no less than once per year.
- 15.2.18 The County will schedule preventive maintenance with the radio system successful bidder and any subcontractors involved.
- 15.2.19 In no case will preventive maintenance be scheduled to put any aspect of the system out of operation without the County's prior approval.
- 15.2.20 Radio system successful bidder must provide support on all hardware and software components 24 hours per day, 7 days a week and as such shall have multiple layers of backup personnel trained to provide this level of service.
- 15.2.21 Radio system successful bidder must provide one toll-free telephone number to call for all hardware and software maintenance/support problems.
- 15.2.22 For security purposes, the system shall be password access-protected. In addition, any modems attached to the equipment shall be password access-protected and shall dial back to the radio system successful bidder's support personnel having requested access to the County's equipment.
- 15.2.23 All costs associated with delivering to and from the County any software and/or hardware required as the result of malfunctioning equipment shall be provided at no additional expense. Such cost items shall include but not be limited to the following: troubleshooting, transportation, packaging, crating, delivery, installation, de-installation, component handling, and insurance.
- 15.2.24 If any communication circuits, equipment, or software needed specifically for maintaining or monitoring the system, these circuits and components shall be identified in detail and included in the cost matrix.
- 15.2.25 The County shall maintain a set of Bidder recommended spare parts and modules for use during the warranty and maintenance period.

### **15.3 *Maintenance/Upgrade Plan Cancellation***

- 15.3.1 The County shall have—without penalty or any cost or charge—the right to cancel maintenance or change maintenance time periods on the equipment by giving the radio system successful bidder thirty (30) days written notice prior to such change. The County shall be refunded any maintenance fees for periods that have not been completed.
- 15.3.2 The radio system successful bidder shall be offered the opportunity to “make right” the situation that has caused the County to move to the cancellation of Extended Maintenance.
- 15.3.3 If the Extended Maintenance Plan is cancelled, the radio system successful bidder shall turn over all spare parts, software or other items as purchased by the County in the provisioning of this service.

**END OF SECTION**

## **16 Supervision/Use of Site**

### **16.1 General**

- 16.1.1 The radio system successful bidder and assigned project manager shall supervise and direct the work of the contract using his/her best skill and attention.
- 16.1.2 The radio system successful bidder shall be responsible to the County for acts and omissions of radio system successful bidder's employees, subcontractors, and their agents and employees.
- 16.1.3 Radio system successful bidder shall ensure that its employees, agents, and subcontractors obey all County security rules at the site.
- 16.1.4 The radio system successful bidder shall always enforce strict discipline and good order among its employees, subcontractors, and their agents and employees at the site and shall not employ any unqualified person or anyone not skilled in the assigned task.

### **16.2 Background Checks**

- 16.2.1 The radio system successful bidder's Project Manager will be responsible to provide information on all radio system successful bidder personnel and all its subcontractors prior to work of any individual at any County facility, or facility housing radio system equipment.
- 16.2.2 The County reserves the right to perform background checks on any radio system successful bidder personnel or any of its subcontractors and deny access if found necessary to do so in writing via email to the radio system successful bidder's Project Manager.

### **16.3 Security Procedures**

- 16.3.1 The radio system successful bidder shall confine operations at the sites to areas permitted by law, ordinances, permits, and the contract documents and shall not encumber the site with any materials.
- 16.3.2 Upon entrance to and departure from secured or sensitive sites Radio system successful bidder's and its subcontractor's employees may be required to furnish photographic identification and be subject to inspections and searches for weapons, contraband, and unauthorized property.
- 16.3.3 The County reserves the right to refuse admittance to its sites for security reasons Radio system successful bidder agrees to accept all costs associated with any Security approvals for its employees and subcontractors.

### **16.4 Removal of Employees**

The County shall have the right to order the immediate removal of any of radio system successful bidder's or its subcontractors' employees from a job site or sites for just cause, including but not limited to disorderly behavior, intoxication, violation of a law or rule, unsafe behavior, or emergency public safety reasons.

### **16.5 Refuse Clean Up**

The radio system successful bidder always shall keep the premises free from accumulation of waste materials or rubbish created by its operations.

## END OF SECTION

### 17 Dispute Resolution and Remedies

#### 17.1 *Rights and Remedies*

- 17.1.1 If a dispute related to this agreement arises, all parties shall attempt to resolve the dispute through direct discussions and negotiations. If the dispute cannot be resolved by the parties, and if all parties agree, it may be submitted to either mediation or arbitration. If the matter is arbitrated, the procedures of appropriate Wisconsin Statutes shall be followed. If the parties cannot agree to either mediation or arbitration, any party may commence an action in any court of competent jurisdiction. If a lawsuit is commenced, the parties agree that the dispute shall be submitted to alternate dispute resolution as covered by State of Wisconsin statutes.
- 17.1.2 Unless otherwise provided in this contract, the parties shall continue to perform according to the terms and conditions of the contract during the pendency of any litigation or other dispute resolution proceeding.
- 17.1.3 The parties further agree that all parties necessary to the resolution of a dispute shall be joined in the same litigation or other dispute resolution proceeding. This language relating to dispute resolution shall be included in all contracts pertaining to this project to provide for expedient dispute resolution.

#### 17.2 *Liquidated Damages*

- 17.2.1 Time being an essential element of this agreement, and based on the schedule established in the agreement, it is hereby agreed that if the County determines that an extension is not justified, the County will be entitled to damages for failure on the part of radio system successful bidder to complete its obligations regarding installation and/or maintenance.
- 17.2.2 In view of the impracticality and extreme difficulty of fixing and ascertaining the actual damages the County would sustain in such event; the County shall be entitled to one thousand (\$1,000.00) dollars per calendar day for each day beyond the dates established in the approved Implementation Plans. The aforesaid specified amount shall not be construed as a penalty, but as liquidated damages for any such failure on the part of the Bidder. The act of the County in canceling the agreement for any such failure and/or any unexpected delay shall not forfeit its right to recover liquidated damages from the Bidder. In any suit involving assessment or recovery of liquidated damages, the reasonableness of the daily charges shall be presumed, and the amount assessed, as well as the aforesaid cancellation right or any other cancellation rights stated in these specifications, will be in addition to every other right or remedy now or hereinafter enforceable at law, in equity, by statute, or under the agreement.
- 17.2.3 Radio system successful bidder will not be charged with liquidated damages when any delay or failure is due to any act or neglect of the County; written and mutually agreed to change in the Agreement; fire, flood or other natural disasters; unusual delay in transportation; adverse weather conditions not reasonably anticipated; unavoidable casualties; or any other causes beyond the reasonable control and without fault or negligence of Bidder. Agreement time or

performance dates or times may be extended for such reasonable time as the County's purchasing agent may determine. A claim for extension will not be allowed unless Bidder, not later than the end of the first County business day following the day on which the claim arises, shall have telephoned and informed the County about the full details of the cause necessitating such a claim within seven (7) calendar days of any such telephone call. Radio system successful bidder shall also send to each of the County's addresses referenced above a communication specifying the cause(s) of the delay. The herein provisions will not preclude the County from canceling or terminating the Agreement regardless of any act or event beyond radio system successful bidder's reasonable control, as aforesaid, provided that the County shall give Contract thirty (30) days prior written notice of the County's intention to so cancel or terminate, and that during said period, radio system successful bidder shall have failed to cure such delay or failure in performance.

- 17.2.4 If liquidated damages are charged, they will be charged daily, first against monies then due to radio system successful bidder, then against monies coming due, and then against funds held for eventual release to radio system successful bidder. If these three sources are not enough to cover the liquidated damages, the County will bill radio system successful bidder for the necessary balance and radio system successful bidder shall promptly pay.
- 17.2.5 The County may waive in writing all or any portion of any liquidated damage assessment after the date services or obligations are completed and accepted by the County.
- 17.2.6 Permitting radio system successful bidder to continue and complete the services or obligations or any part of them after stipulated times will not in any way operate as a waiver on the part of the County, the County or its rights hereunder. No act by the County in pursuing or affecting its rights hereunder will constitute a forfeiture of the County's right to recover liquidated damages.
- 17.2.7 Notwithstanding the existence of a dispute, the parties shall continue without delay to carry out all their responsibilities under this agreement not affected by the dispute. If a party fails to continue without delay to perform its responsibilities under this agreement or to accomplish all undisputed work, any additional cost incurred by the other parties as a result of such failure to proceed shall be borne by the responsible party. Notwithstanding the forgoing, the County reserves the right to suspend all work without penalty. This provision does not affect the County's rights in Suspension of Work as previously stated.

## **END OF SECTION**



## 18 Termination of Contract

### 18.1 *Termination*

The County may, for its convenience, terminate this contract at any time by a notice in writing from the County to radio system successful bidder by certified mail. If the Contract is terminated as provided herein, radio system successful bidder shall be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of radio system successful bidder covered by this Contract, unless payments of compensation have previously been made.

**END OF SECTION**

## 19 Successors, Subcontracting, and Assignment

### 19.1 *Successors*

- 19.1.1 The radio system successful bidder binds itself, its partners, successors, assigns, and legal representatives to the County in respect to all covenants, agreements, and obligations contained in the contract documents. The radio system successful bidder shall not assign the contract or subcontract it in whole or in part nor assign any monies due or to become due to it hereunder without the prior written consent of the County.
- 19.1.2 Consent to assign shall be accomplished by execution of a form prepared by the County and signed by the Bidder, the assignee, and the County. Said form shall contain the terms and conditions of the consent.

### 19.2 *Subcontracting*

- 19.2.1 Consent to subcontract shall under no circumstances relieve the radio system successful bidder of its liabilities and obligations under the contract documents. Further, the radio system successful bidder shall be fully responsible for the acts, omissions, and failure of its subcontractors in the performance of the herein specified contractual services, and of persons directly or indirectly employed by subcontractors. Contracts between the radio system successful bidder and each subcontractor shall require that the subcontractor's services and obligations be performed in accordance with the provisions of the contract documents. The County will assume no contractual relationship with subcontractors or the Bidder.
- 19.2.2 Nothing in the contract documents shall create any contractual relationship between the County and the radio system successful bidder's employees, subcontractors, and their agents and employees, or any other parties furnishing commodities and/or services to the radio system successful bidder and their agents and employees.

**END OF SECTION**

## 20 Indemnification/Claims

Radio system successful bidder hereby agrees to release, indemnify, defend, and hold harmless Jefferson County, their officials, officers, employees and agents from and against all judgments, damages, penalties, losses, costs, claims, expenses, suits, demands, debts, actions and/or causes of action of any type or nature whatsoever, including actual and reasonable attorney's fees, which may be sustained or to which they may be exposed, directly or indirectly, by reason of personal injury, death, property damage, or other liability, alleged or proven, resulting from or arising out of the performance of radio system successful bidder, its officers, officials, employees, agent or assigns. Jefferson County does not waive, and specifically reserves, its right to assert all affirmative defenses and limitations of liability as specifically set forth in Wisconsin Statutes.

### 20.1 *Infringement Indemnification*

The radio system successful bidder shall defend, indemnify, and hold harmless the County, its officers, directors, employees, and agents against all claims, suits, actions, liability, damages, fees (including reasonable attorney's fees), and losses arising out of the use of the software, in connection with any allegations that the software infringes any patent, copyright, trademark, trade secret, or violates any other proprietary right of a third party. The radio system successful bidder shall be given reasonably prompt notice of such claim, and given information, reasonable assistance (except financial), and sole authority to defend or settle the claim. The obligations of radio system successful bidder stated in this section survive termination, expiration, non-renewal, or rescission of this agreement.

### 20.2 *Replacement of Software*

If a third-party claim or threatened claim causes the County's reasonable use of the software to be seriously endangered or disrupted, radio system successful bidder shall promptly, without additional charge, (1) replace the software with a compatible, functionally-equivalent and non-infringing product; or (2) modify the software to provide functionally-equivalent, compatible, and non-infringing software; or (3) obtain a license for the County to continue use of the software for the term of this license and pay for any additional fees required for such license; or (4) if none of the foregoing alternatives are possible even after the Bidder's best efforts, then the County may, at its option, (a) terminate this agreement and radio system successful bidder will promptly refund to the County (i) a pro rata portion of the support payment(s) paid based on the then remaining term for which such fees apply; and (ii) a pro rata portion of all license fee(s) paid based on a five (5) year straight-line depreciation calculated from the date of acceptance of the software pursuant to this agreement; or (b) terminate the license for the infringing software and the license for any other software the functionality or utility of which is materially diminished and radio system successful bidder will promptly refund (i) a pro rata portion of the applicable software support payment(s) paid based on the then remaining term for which such fees apply; and (ii) a pro rata portion of all applicable license fee(s) paid based on a five (5) year straight-line depreciation calculated from the date of the County's acceptance of the software pursuant to this Agreement.

In taking actions described under this section, radio system successful bidder acknowledges that time is of the essence in any interruption of the County's use of software.

**END OF SECTION**

## 21 Protection of Persons and Property

### 21.1 *Protection of Persons and Property*

- 21.1.1 The radio system successful bidder shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to the following: (1) employees at the site and other persons who may be affected thereby, (2) radio system successful bidder's work and materials and equipment to be incorporated therein which are under the care, custody, and control of the radio system successful bidder or any of radio system successful bidder's subcontractors, and (3) other property at the site or adjacent thereto.
- 21.1.2 The radio system successful bidder shall promptly remedy damage or loss to property caused in whole or in part by the Bidder, subcontractor, or anyone directly employed by any of them, or by anyone for whose acts any of them may be liable.
- 21.1.3 The radio system successful bidder shall be liable for damages arising out of injury to the person and/or damage to the property of the County's employees, or any other person(s) designated by the County for any purpose, other than agents or employees of the radio system successful bidder, prior to or subsequent to acceptance, delivery, installation, and use of the equipment or product either at the radio system successful bidder's site or at the County's place of business, provided that the injury or damage was caused by the fault or negligence of the radio system successful bidder or caused by the radio system successful bidder's equipment or product.
- 21.1.4 Bidder's Insurance. Radio system successful bidder shall not commence work under this contract until all insurance required under this paragraph is obtained, and such insurance has been approved by the County, nor shall radio system successful bidder allow any radio system successful bidder's subcontractor to commence work on their subcontract until all similar insurance requirements have been obtained and approved.
- 21.1.5 Workers' Compensation Insurance. Radio system successful bidder shall obtain and maintain throughout the duration of this contract statutory Workers' Compensation insurance for all its employees employed at the site or while working on this project. In case any work is sublet, radio system successful bidder shall require the Bidder's subcontractor similarly to provide statutory Workers' Compensation Insurance for all the latter's employees, unless such employees are covered by the protection afforded by Bidder.
- 21.1.6 General Liability, Professional Liability and Property Damage Insurance. Radio system successful bidder shall secure and maintain in force throughout the duration of this contract such General Liability, Professional Liability and Property Damage Insurance as shall protect him/her and any Bidder's subcontractor performing work covered by this contract from claims for damages for personal injuries including accidental death, as well as from claims for property damage, which may arise from operations under this contract, whether such operations be by Bidder, or by any Bidder's subcontractor or by anyone directly or indirectly employed by either of them; and the amount of such insurance shall be as follows:
- 21.1.7 Worker's Compensation and Employees Liability Insurance with Wisconsin Statutory limits.

- 21.1.8 General Liability Insurance with a minimum combined single limit of \$5,000,000.00 for bodily injury and property damage per occurrence.
- 21.1.9 Comprehensive Auto and Truck Liability Insurance including owned, non-owned and hired vehicles with a minimum combined single limit of \$5,000,000.00 for bodily injury and property damage per occurrence.
- 21.1.10 Umbrella Liability Insurance of not less than \$5,000,000 per occurrence for bodily injury, personal injury and property damage in excess coverage carried for commercial general liability and automobile liability.
- 21.1.11 Professional Liability Coverage, \$2,000,000 per occurrence and in aggregate.

## 21.2 ***Proof of Insurance***

- 21.2.1 Radio system successful bidder shall furnish the County with a Certificate of Insurance countersigned by a Wisconsin Resident Agent or Authorized Representative of the insurer indicating that radio system successful bidder meets the insurance requirements identified above.
- 21.2.2 The Certificates of Insurance shall include a provision prohibiting cancellation of said policies except upon 30 days prior written notice to the County and specify the name of the contract or project covered.
- 21.2.3 The Certificate of Insurance shall be delivered to the County, with a copy of the Certificate of Insurance to be delivered to the County's Project Manager for approval within 10 business days of contract execution. County Project Manager written authorization must be received before any work is started.
- 21.2.4 Upon renewal of the required insurance and annually thereafter, the County shall receive a new Certificate of Insurance for three years after completion of the project.
- 21.2.5 The Certificates shall describe the contract by name and or identification number in the "Description of Operations" section of the form.
- 21.2.6 Jefferson County be listed as an additional insured on all general, and auto liability policies purchased by outside parties.

**END OF SECTION**

## 22 General

### 22.1 *Entire Agreement*

- 22.1.1 This agreement (including the Exhibits) represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral.
- 22.1.2 Any alterations, modifications, or waivers of provisions of this agreement shall be valid only when they have been reduced to writing as an amendment to this agreement signed by the parties hereto.

### 22.2 *Governing Law/Jurisdiction*

- 22.2.1 State of Wisconsin (State) laws govern all questions and interpretations concerning the validity and construction of a contract awarded pursuant to the specifications and the legal relations among the parties and performance under it. The appropriate venue and jurisdiction for any litigation involving an entity included within the term “County” as defined herein will be those courts located within that County in the State of Wisconsin in which such entity is located.
- 22.2.2 If any provision of the contract is held invalid, illegal, or unenforceable, the remaining provisions will not be affected.

### 22.3 *Independent Bidder*

- 22.3.1 It is agreed that nothing herein contained is intended or shall be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the radio system successful bidder as the agent, representative, or employee of the County for any purpose or in any manner whatsoever. Radio system successful bidder is to be and shall remain an independent radio system successful bidder with respect to all services performed under this agreement. Radio system successful bidder represents that it has, or will secure at its own expense, all personnel required to perform services under this agreement.
- 22.3.2 Any and all personnel of radio system successful bidder or other persons while engaged in the performance of any work or services required by radio system successful bidder under this agreement shall have no contractual relationship with the County and shall not be considered employees of the County, and any and all claims that may or might arise under the Workers’ Compensation Act of the State of Wisconsin on behalf of said personnel or other persons while so engaged, and any and all claims whatsoever on behalf of any such person or personnel arising out of employment or alleged employment, including without limitation claims of discrimination against the Bidder, its officers, agents, Bidders, or employees shall in no way be the responsibility of the County; and radio system successful bidder shall defend, indemnify and hold the County, its officers, agents, and employees harmless from any and all such claims regardless of any determination of any pertinent tribunal, agency, board, County, or court.
- 22.3.3 Such personnel or other persons shall not acquire nor be entitled to any compensation, rights, or benefits of any kind whatsoever from the County, including, without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers’ Compensation, Unemployment Compensation, disability, severance pay, and retirement funds.

**22.4 *Permits, Fees, Notices, and Compliance with Laws, etc.***

- 22.4.1 Unless otherwise provided in the specifications, the Bidder, at its own expense, shall secure and pay for all permits, fees, charges, duties, licenses, certifications, inspections, and other requirements and approvals necessary for the execution and completion of the contract. The exception is any costs related to FCC licensing which is the direct responsibility of the County.
- 22.4.2 The radio system successful bidder shall observe and accept all applicable federal, state, and local laws and the rules and regulations of any regulatory body acting thereunder.
- 22.4.3 The radio system successful bidder shall give all notices required under law, ordinance, rule, and regulation.

**22.5 *Royalties and Patents***

- 22.5.1 The radio system successful bidder shall pay all royalties and license fees.
- 22.5.2 Complementary to other “hold harmless” provisions throughout the specifications, the radio system successful bidder shall, without cost to the County, defend, indemnify, and hold the County, its commissions, officers, and employees harmless against any and all claims, suits, liability, losses, judgments, and other expenses arising out of or related to any claim that the County’s use or possession of the software, licenses, materials, reports, documents, data, or documentation obtained through the contract violates or infringes upon any patents, copyrights, trademarks, trade secrets, or other proprietary rights or information, provided that the radio system successful bidder is promptly notified in writing of such claim. The radio system successful bidder will have the right to control the defense of any such claim, lawsuit, or other proceeding. The County will in no instance settle any such claim, lawsuit, or proceeding without the Bidder’s prior written approval.
- 22.5.3 If, as a result of any claim of infringement of rights, the radio system successful bidder is enjoined from using, marketing, or supporting any product or service provided through the contract to be established (or if the radio system successful bidder comes to believe such injunction imminent), the radio system successful bidder shall either arrange for the County to continue using the product or service at no additional cost to the County, or propose another remedy subject to County approval.
- 22.5.4 Provision of equivalent products or services will be acceptable, but the County alone will determine whether proposed substitutes are sufficiently equivalent. If no acceptable alternative is possible even after the radio system successful bidder’s best efforts, the radio system successful bidder shall return a pro rata portion of the County’s costs pertaining to the license fee, if any, and all consequential costs based on a period of twenty (20) years. (If the hardware cannot operate in accordance to the contract documents without the internal code or system software, the radio system successful bidder shall return a pro rata portion of the associated County hardware cost based on a period of twenty (20) years unless a longer or shorter period is specified in the specifications.)

**22.6 *Conflict of Interest***

Radio system successful bidder affirms that to the best of its knowledge, Bidder’s involvement in this agreement does not result in a conflict of interest with any party or entity

that may be affected by the terms of this agreement. The radio system successful bidder agrees that, shall any conflict or potential conflict of interest become known to Bidder, it will immediately notify the County of the conflict or potential conflict, specifying the part of this agreement giving rise to the conflict or potential conflict, and will advise the County whether radio system successful bidder will or will not resign from the other engagement. This conflict of interest includes the County's consultant, True North Consulting Group.

## **22.7 *Delivery of Required Information***

Upon executing this agreement, radio system successful bidder shall deliver to County such bonds, affirmative action plans, certificates of insurance, insurance binders, and other certifications and representations as radio system successful bidder is required to furnish in accordance with the contract documents.

## **22.8 *Notices***

- 22.8.1 Any notice or demand that must be given or made by a party hereto under the terms of this agreement or any statute or ordinance shall be in writing and shall be sent registered or certified mail.
- 22.8.2 Notices to the County shall be sent to Jefferson County with a copy to the originating Department at the address given in the opening paragraph of the agreement.
- 22.8.3 Notice to the radio system successful bidder shall be sent to the address stated in the opening paragraph of the agreement or, if not stated therein, then to the address stated in Bidder's Form W-9 provided to and on file with the County.

**END OF SECTION**



## 23 Applicable Standards

### 23.1 *General*

- 23.1.1 All electrical equipment shall be compliant with FCC part 15 Class A and approved under FCC Part 68.
- 23.1.2 All equipment approved (as applicable) shall meet or exceed the latest standards of the Federal Communications County (FCC), Telecommunications Industry Association (TIA), National Electrical Manufacturers Association (NEMA), Radio-Electronics-Television Manufacturers Association (RETMA), and Institute for Electrical & Electronic Engineers (IEEE), or other agency, when applicable.
- 23.1.3 All installation of electrical and associated grounding shall meet applicable National Fire Protection Association (NFPA), National Electrical Code (NEC), and Electrical Industries Alliance (EIA) requirements.
- 23.1.4 All radio products shall conform to FCC, TIA/EIA and other applicable standards.
- 23.1.5 For AM broadcast tower sites, there are further recommendations made by the National Association of Broadcasters relative to bonding with the use of copper strap to increase surface area and extensive silver soldering for connections.
- 23.1.6 The equipment racks shall be individually grounded with a minimum of 6AWG green wire to the appropriate grounding bus bar within the electronics equipment room.
- 23.1.7 All other devices will be grounded as per manufacturer's instructions.
- 23.1.8 A ground halo shall be installed around the equipment room perimeter.
- 23.1.9 All external connections to the equipment room shall have lightning/transient protection.
- 23.1.10 A communications tower shall have its own dedicated ground array as per EIA/TIA-222; though, as per NEC Article 810, this ground shall be bonded to the building ground electrode system. It shall be noted that tower manufacturers typically provide a grounding kit with all needed materials to meet the latest EIA/TIA-222 standard which today is "G." G requires a minimum of six 10' ground rods all interconnected with each tower leg having a connection to the ground ring.
- 23.1.11 Another ground typically overlooked is the need for a ground bar at the external and internal entrance point of the building where transmission cables come into the building from the tower. To accomplish this, the tower design generally requires the tower company to install this ground bar on the outside of the building and the ground bar on the inside is installed by the electrical contractor.
- 23.1.12 The NFPA 1221 Standard states that all electronic systems in an Emergency Response facility shall be grounded to the building ground system as dictated by NFPA 70, Article 647. To this end, a ground bar is requested in the middle of the dispatch room, generally under the recessed floor and another ground bar in the communications room.
- 23.1.13 Ultimately, the main ground bar for the building and its ability to have the lowest continuous ground resistance is of utmost importance to the building electrical and communications systems. Due to the defined requirements of the NEC,

NFPA, and EIA/TIA, it is highly recommended this master ground bar be located per code in the electrical room though external to and insulated from any other metal cabinets. All other in-building ground bars shall be returned to this ground bar with the code minimum size cable, typically #2 solid wire.

- 23.1.14 Outside of the building, the NEC standard requires all metallic devices to be bonded together at their ground points, especially the tower, power transformer, doors and HVAC units.
- 23.1.15 All transmission lines for radio systems used to interconnect antennas and equipment within a shelter or equipment room shall have a ground kit installed as close as possible to the antenna, at the base of the tower and at a minimum of every 75 feet along the length of the installed line. All ground kits shall bond to a ground bar bonded to the tower utilizing a ground clamp rated for the purpose. (Mechanical mounting clamps shall not be used for this purpose.) See also Section 23.5 for specifics related to AM broadcast tower sites.
- 23.1.16 Each of the various radio manufactures having created their own grounding guidelines that incorporate the requirements and standards of the NFPA, the IEEE and EIA/TIA; thus, the radio system successful bidder is expected to adhere to their specific guidelines if more stringent than the above-described and listed.
- 23.1.17 The radio system successful bidder shall provide additional system components typically and reasonably required to make the system operational even though not specifically indicated in Drawings, Appendices, or Specifications, including but not limited to cable, connectors, connecting accessories, adaptors, power supplies, mounting adapters, cover plates and closure panels, relays and switches, terminal blocks, grounding hardware, and related connector and termination hardware required by but not supplied with the equipment.

## 23.2 *National Electric Code (NEC)*

- 23.2.1 Article 250 focuses on the general building/ facility grounding, while Article 810 describes specific requirements related to radio and television equipment.
- 23.2.2 Article 250 states that all ground electrodes shall be bonded together to form the “grounding electrode system.” This Article goes into detail as to how this system shall be accomplished by referring to multiple areas of the code. Generally, the ground described in this article is used to form the basic ground for the structure though if the copper water line entering the building is within 5’ as described, then this is an alternative solution for a building structure ground.
- 23.2.3 Article 250 further describes the size and type of conductors to be used and describes minimum resistance of electrodes.
- 23.2.4 Article 250-92 has an extensive description of the means of installing the grounding conductors. Minimum size of conductors is described though #6 copper is listed as the smallest conductor for inter electrode connections. The use of #2 is recommended by the EIA and is most commonly found in commercial buildings.
- 23.2.5 Article 250.5 and 250.6 discuss how a low impedance conductive path carrying maximum ground fault current should be in place between the electrical supply and site ground thus stopping objectionable currents.
- 23.2.6 Article 250.5(B) in the last sentence clearly states the earth shall not be

considered as an effective fault-current path to meet this requirement which should be taken to mean a metallic bonding conductor of enough size shall be utilized.

- 23.2.7 Article 250-115 says how ground conductors shall be connected to ground electrodes especially as related to underground connections, while Article 250-117 describes how the connection is to be protected against physical damage.
- 23.2.8 Article 250-155 discusses the need for all noncurrent-carrying metal parts of fixed, portable, and mobile equipment ... shall be grounded with no less than a #6 copper or #4 aluminum cable.
- 23.2.9 Article 800 provides guidance for the grounding of communications circuits with specific guidance for the cable entrance points and further stated in Article 810 that masts and metal structures supporting antennas shall be grounded.
- 23.2.10 Article 810 defines a means of grounding the tower/antenna system.
- 23.2.11 Article 250-8 states all ground electrodes shall be bonded together to form the "grounding electrode system."
- 23.2.12 Article 800-40 states how cables entering a building shall be grounded which equates to the placement of a ground bar at the inside of the entrance panel and per NEC Article 250-81 this point must be bonded to the building ground.

### **23.3 *National Fire Protection Association (NFPA) 1221***

- 23.3.1 Chapter 5.8 is the grounding section for Emergency Response Facilities which references the need to follow NFPA 70, Article 647 for all sensitive electronic equipment. This is the reason the electronic equipment in dispatch and the equipment room must be connected to the bonded grounding bar in these two spaces.
- 23.3.2 Further, Chapter 6 (6.6) requires all communications conductors to be installed in accordance with NFPA 70 Section 5.6 and 4.9. It shall be noted that NFPA 70 is the National Electric Code, 2005 Edition which is referenced above.

### **23.4 *EIA/TIA and IEEE Emerald (grounding) Standard***

- 23.4.1 Electronic Industries Association / Telecommunications Industry Association (EIA/TIA) Standards for communications towers. This group has established a set of mechanical standards for steel communications towers that includes grounding. The EIA/TIA-222F standard was the standard in place at the time the tower was specified, though 222G is now highly recommended.
- 23.4.2 The EIA suggests the minimum ground for a tower is three (one per leg) #2 solid wires to a buried ground ring with multiple 10' ground rods where the top of the rod is below the frost line.
- 23.4.3 The IEEE standard requires all transmission cables leaving the tower to be grounded to the tower (which will be completed by the radio system successful bidder) and for these cables to be ground bonded as they enter the building on the exterior plus again just inside the building where the surge suppressors are placed. To enable this ground, a ground bar is being requested on the outside of the building immediately below the entrance panel and another on the inside adjacent to the surge suppressors. An option on the inside would be a copper trapeze mechanically and electrically capable of holding the surge suppressors.
- 23.4.4 Per the IEEE, all ground bars shall have the two #2 solid ground bond

connections to the external ground ring of the shelter or building.

### **23.5 *National Association of Broadcasters***

- 23.5.1 When ground bonds are established for AM broadcast sites, the use of wide copper strap shall parallel all #2 solid ground cables interconnecting ground bars and all external ground rings.
- 23.5.2 All tower ground bonds to external ground rings shall use wide copper straps to ensure a large surface area to enable the dissipation of RF energy at lower frequencies.
- 23.5.3 All transmission lines on towers shall be bonded to tower at no less than every 1/10th of a wavelength of the lowest AM broadcast frequency.
- 23.5.4 If possible, it is highly recommended the equipment shelter walls be built with metallic screening which can then be bonded to the master ground of the site.

### **23.6 *Labeling and Installation Practices***

- 23.6.1 All network, data and audio cables and RF transmission lines are to be labeled at each end.
- 23.6.2 Separation and segregation of cables carrying various types of signals shall be considered when determining pathways and physical separation.
- 23.6.3 Network, data and audio cables will be secured with Velcro® or equivalent straps and installed in a professional manner using best practices.
- 23.6.4 RF Transmission lines will be secured per manufacturer's recommendations.
- 23.6.5 The use of nylon cables ties will not be accepted on any cabling except indoors for transmission lines and heavy-duty ground and power cables.

**END OF SECTION**

## 24 Existing Conditions

Bidder should have a basic understanding of the existing communication system operations of Jefferson County to help assure a successful project. There is an expectation by the County that the new systems will not only be an improvement in technology but address the specific needs of the users of the system to implement practices that will help deliver more effective services to the County.

### 24.1 *Service Area Description*

- 24.1.1 The area of Jefferson County is about 583 square miles and has a population of approximately 85,000.
- 24.1.2 Cities and Villages include the County seat of Jefferson, Fort Atkinson, Lake Mills, Waterloo, Watertown<sup>1</sup>, Whitewater<sup>2</sup>, Cambridge<sup>3</sup>, Johnson Creek, Ixonia, Palmyra and Sullivan. See Figure 1 below.
- 24.1.3 The major highways consist of Interstate 94, U.S. Highways 12 and 18 and Wisconsin State Highways 16, 19, 26, 59, 89, 106 and 134. See <https://wisconsin.gov/Documents/travel/road/hwy-maps/county-maps/jefferson.pdf>.

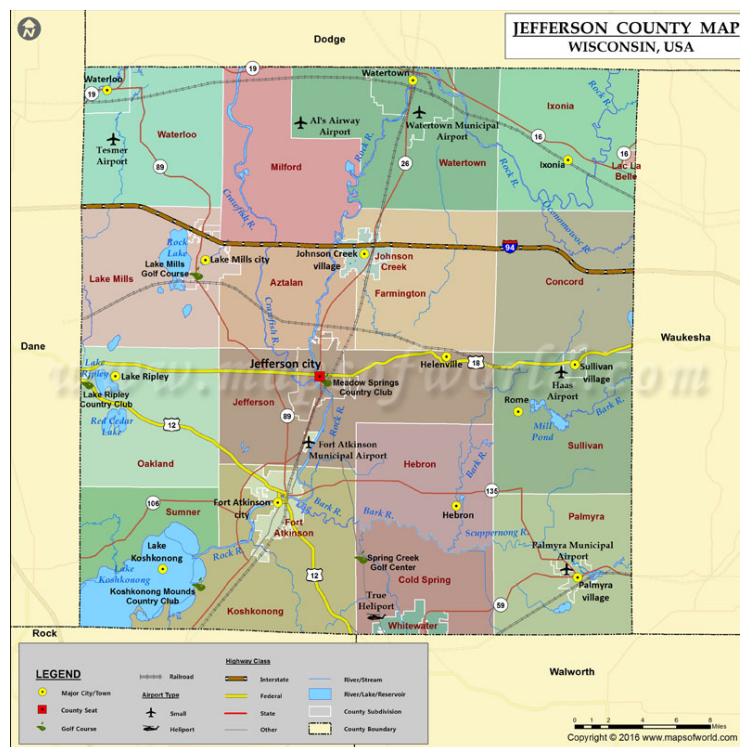


Figure 1 - Jefferson County Boundary

- 24.1.4 Most of Jefferson County is relatively flat with the highest and lowest terrain difference just over 200 feet. The County has a few areas in the southern portion of the county that approach 320 meters (1,046 feet). Lake Koshkonong and the

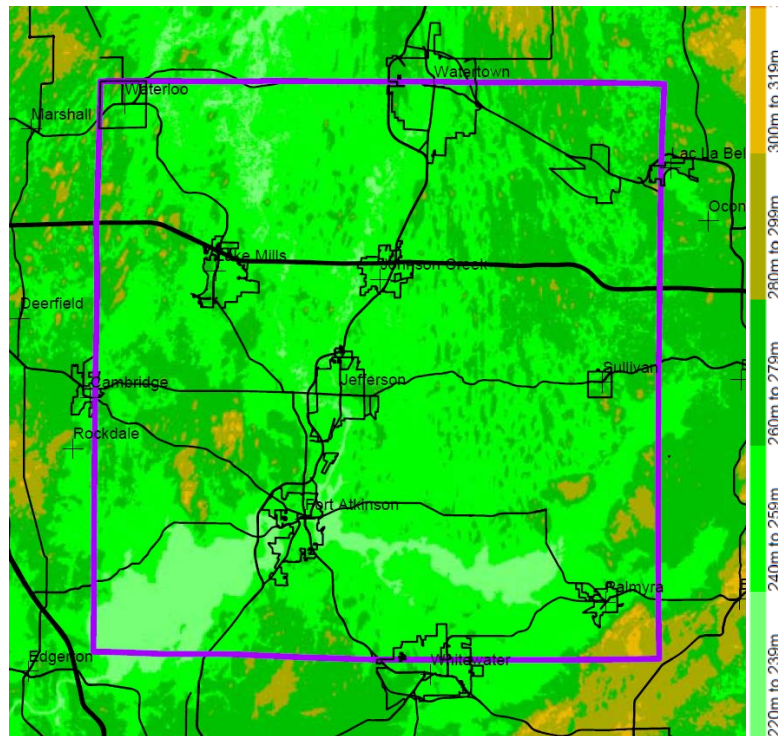
<sup>1</sup> Partly the Dodge County.

<sup>2</sup> Mostly in Walworth County.

<sup>3</sup> Mostly in Dane County.



Bark River Valley have the lowest elevation level of the County at less than 239 meters (784 feet). The majority of the county has an elevation of between 240 and 280 meters (787 and 918 feet).



**Figure 2 - Topographical Map of Jefferson County**

- 24.1.5 Jefferson County is bordered by Wisconsin Counties on four sides with Dane County to the west, Dodge County to the north, Waukesha County to the east and Rock and Walworth Counties to the south.
- 24.1.6 Portable service area challenges today would be described as the following:
  - 24.1.6.1 The southwestern corner of the county south of Cambridge extending to Lake Koshkonong and southwest of Fort Atkinson
  - 24.1.6.2 Along the eastern border
  - 24.1.6.3 Each corner of the County border
- 24.2 **Current Voice and Paging Systems**
  - 24.2.1 Jefferson County uses nine sites. The main site at (1) Jefferson is the sole transmitter site for all channels except Fire and Paging. The remainder of the sites are (2) Sullivan, (3) Ixonia, (4) Watertown, (5) Waterloo, (6) Lake Mills, (7) Johnson Creek, (8) Fort Atkinson and (9) Palmyra. Ixonia and Johnson Creek are water tower sites.
  - 24.2.2 Jefferson County employs several VHF channels to provide voice and paging service to public safety users. Law Enforcement has two single site repeater channels, Fire/EMS has a two-site simulcast repeater channel and Paging is a nine-site simulcast channel.
  - 24.2.3 LAW1, EMCOM1, FIRE1 and Paging channels have a station at the main site in Jefferson along with the MARC1 repeater, IFERN base station, Point to Point

base station, VLAW31 and Highway repeater.

- 24.2.4 All voice channels except Point to Point, VLAW31 and Highway have satellite receivers at the eight other paging sites and a voter at the Jefferson site. The second simulcast site for the Fire channel is at Watertown. All sites but Lake Mills are interconnected via microwave. Lake Mills is interconnected to the Jefferson County Sheriff Office via DOT fiber. A Jefferson County fiber connects Lake Mills to the voting system at the Jefferson site.
- 24.2.5 The paging system is simulcast at nine sites interconnected with microwave links to the Jefferson site and via fiber to the dispatch center. Two-tone sequential paging tones are generated by the Mindshare console system and via fiber activate the simulcast transmission system at the Jefferson site. Except for Jefferson, Watertown and Lake Mills the microwave network sends the paging signals directly to each site. Watertown is relayed via Sullivan and Lake Mills is routed via the DOT fiber.
- 24.2.6 The current microwave system is a hub and spoke topology using a mix of 960 MHz fractional T1 links and 11 GHz IP based links. The 11 GHz links use Exalt ExploreAir radios. The remaining links are MDS units. The current system has a fluctuating level in the MUX system for the analog microwave that does not allow the simulcast paging system to operate properly. It is imperative that the microwave network be redesigned to provide greater reliability and capacity to ensure backhaul service for all simulcast systems and future uses.
- 24.2.7 Jefferson County Dispatch is located at the Jefferson County Sheriff Office. Dispatch has four positions each equipped with a Mindshare radio console along with 911, CAD, RMS, Mapping, etc. One position is also equipped with an EF Johnson Stargate console operating on the WISCOM network. The Mindshare Console System provide control of the following stations:

7/800 INTEROP C/B EMCOM 1 Repeater FIRE 1 Repeater Highway Repeater IFERN Base JAIL1 Repeater	LAW 1 Repeater LAW 3 Base Local Government C/B MARC 1 Repeater P25C INTEROP 4 C/B P25T INTEROP 1 C/B	P25T INTEROP 2 C/B P25T INTEROP 3 C/B PAGING Base Point to Point Base VHF Interop C/B VLAW31 Base
Key:           C/B     – Control Station / Base P25T   – P25 Trunking Operation P25C   – P25 Conventional Operation		

- 24.2.8 The City of Watertown also has a radio dispatch center for the City. It has three positions and uses the Mindshare console system. Watertown can back-up Jefferson County dispatch if County Dispatch would be become disabled via the Watertown to Sullivan to Jefferson microwave link. If that link should fail, there is a backup 960 MHz link that connects Watertown directly to Jefferson for the FIRE1 channel only.
- 24.2.9 Watertown dispatches for the City of the Watertown Police and Fire. The Watertown Police employs a Harris five channel, 800 MHz, P25 trunking system. The three-position Mindshare console system is directly connected to this infrastructure.
- 24.2.10 911 service from land line phones for the cities of Fort Atkinson, Watertown and

Whitewater are provided by the PSAP at each City. All other 911 calls in Jefferson County, including all cell phone calls in the County, are handled by Jefferson County dispatch.

- 24.2.11 A 2012 vintage Eventide NexLog 740 logging recorder located in the dispatch area records all phone and radio traffic. This unit is equipped with two (2) DVD drives, licenses for eight concurrent users, 40 analog channels and 16 VoIP channels. The unit is configured to log eight (8) 911 lines, ten (10) admin lines and 21 radio channels. The storage capacity is one (1) TB. The retention policy for all logging is 120 days.

**END OF SECTION**



## 25 Proposed Services Requested

### 25.1 *System Design Services Overview*

- 25.1.1 Under the scope of this project the radio system successful bidder will engineer, furnish, install, program, test and commission the land mobile radio system infrastructure and associated ancillary components required for operation.
- 25.1.2 This RFP is for infrastructure only. No mobile or portable radios will be purchased under this RFP. Control Station units used by dispatch are considered infrastructure and will be supplied by the radio system successful bidder.
- 25.1.3 A variety of mobile and portable P25 subscriber equipment will use the proposed P25 voice system infrastructure. These P25 radios may consist of any make and model unit as selected by the agency purchasing the unit. Specifications to use in the infrastructure design are included in this RFP. Proposals shall include the following:
  - 25.1.4 A complete and operational three (3) channel VHF P25 conventional voice radio system to offer portable-based voice communications system for LAW1, FIRE1 and EMCOM1 to public safety and other government users that meets the coverage requirements for such use.
  - 25.1.5 A complete and operational paging system infrastructure system to provide dispatch services to first responders that meet the coverage requirements for such use.
  - 25.1.6 A complete and operational one channel VHF P25 conventional voice radio system to offer mobile-based voice communications system for Highway.
  - 25.1.7 A complete and operational telecommunication backhaul network to provide the necessary capacity to interconnect fixed infrastructure components of the radio system, alarm system and other County network connectivity requirements systems.
  - 25.1.8 A complete and operational MPLS network providing wide area connectivity of all sites, controllers, servers and dispatch supported by both microwave and fiber optic links.
  - 25.1.9 A complete and operational management, monitoring and alarm sub-network capable of alerting dispatcher and support personnel to problems associated with all subsystems and site physical out of tolerance issues.
  - 25.1.10 A complete and operational IP based radio dispatch console system with emergency backup system radios.
  - 25.1.11 Digital system interfaces to existing logging system using the highest technical degree of capabilities to record 911, admin lines, P25 radio channels and analog radio channels for 120 days.
  - 25.1.12 All system design, configuration, implementation, and verification of necessary systems to provide a complete turnkey solution option.
  - 25.1.13 Designed support services needed to assure continued performance and future updates to the system.
  - 25.1.14 The frequencies proposed for the new system and the band of operation (VHF) shall be proposed in the response with completed rationale and any issues related to licensing believed to exist.

- 25.1.15 A planned migration strategy that accounts for how agencies will be cutover to the new system and how these agencies might be adversely affected should be described in the proposal.
- 25.1.16 Proposals shall provide a complete and operational interoperability and mutual aid communication system designed to provide maximum capabilities in the proposed radio and console systems.
- 25.1.17 The radio system successful bidder will also provide the required specifications and oversight of any civil work to be completed by the County.
- 25.1.18 Maximum dispatch center integration and control of the proposed radio system providing complete interoperability shall be offered.
- 25.1.19 Any existing radios that are capable of conventional P25 operation must have their programming checked and be tested for basic RF specifications and updated to the latest firmware revision as required by the manufacturer prior to use. RF testing will be the responsibility of the radio system successful bidder. Radio programming, as approved by Jefferson County, will be validated by the Owner Agency's radio service firm in writing prior to any RF testing.
- 25.1.20 Training programs will be provided by the selected radio system bidder for end user operation of new field units, dispatchers and the difference in audio quality that will be experienced once moved to P25 operation.
- 25.1.21 The entire project final design and development is anticipated to begin ASAP after award and extend through completion/cutover.
- 25.1.22 The proposed system shall be fully tested, commissioned and all users trained in its operation prior to cutover.
- 25.1.23 All specifications contained within this document shall be followed by the Bidder thus creating a turn-key approach project that meets all defined and dictated performance expectations.
- 25.1.24 The radio system successful bidder shall provide programming, system updates, and ten-year maintenance for all system elements proposed in response to the RFP.
- 25.1.25 The Bidder shall also offer 9 years (Y2 through Y10) of extended maintenance and upgrade services to begin upon completion of the first year of 100% warranty.
- 25.1.26 Comprehensive systems support provided to maintain the level and quality of service assuring the County can keep technology levels progressing.

## 25.2 *Civil Work*

- 25.2.1 The radio system successful bidder will provide the required specifications and oversight of any civil work to be completed by the County.
- 25.2.2 Any required civil work including antenna structure, shelter, primary commercial power, generator power and associated grounding systems will be provided by the County.
- 25.2.3 Any civil work required at selected and approved tower sites will be provided by the County. A civil engineering firm will be used to provide design, procurement and inspection of the civil work. The selected radio system bidder will provide

oversite for all civil work to ensure such work meets the selected radio system bidder requirements.

- 25.2.4 If necessary the County will update all equipment sites per the requirements of the selected radio system bidder will be upgraded to modern technical levels with designs expected to include hardened shelters, backup generators and site grounding to ensure continued operation in the event of a catastrophic loss of power in the area.
- 25.2.5 All civil work consisting of constructing and/or preparing towers, acquiring/ installing equipment shelters, and generators shall be the responsibility of the County and thus will be bid separately from the contract resulting from this RFP.

### **25.3 *Antenna Structures***

- 25.3.1 Once sites for the new system are identified as viable to provide system coverage all antenna structures will undergo structural analysis. For any structures failing analysis it will be determined by a civil engineering firm if the structure can be strengthened. If so, a strengthening design will be completed, and the material and work quoted by a tower contractor.
- 25.3.2 If any antenna structure cannot be strengthened a new antenna structure must be found. During this portion of the project no sites should be contractually secured, or fees paid other than the structural analysis and strengthening design until all sites pass or can be strengthened. If any of the proposed antenna structures fail the selected radio system bidder must agree to actively assist the county in the identification of a new site and must notify the client of any potential design changes or changes in performance as a result.
- 25.3.3 Once the engineering for site work and antenna structure strengthening is complete and approved by the County and the County's consultant the radio systems project will be built in three phases.
- 25.3.4 The first phase will be the structural enhancements, if needed, for any tower that need them and completion of the civil work at each site.
- 25.3.5 The radio system successful bidder will provide oversight throughout the civil construction process to ensure the construction work meets their requirements.
- 25.3.6 The second phase include the enhancement of the microwave system and the new paging system. Once the microwave and paging systems are installed, tested and operational for use the microwave and paging system will be accepted for beneficial use by the County.
- 25.3.7 The third phase of the project will include installation of the P25 conventional voice equipment, replacement of analog conventional stations, logger enhancements and any other improvements proposed.

### **25.4 *Coverage Testing***

- 25.4.1 Once installed the performance of the voice and paging systems will be demonstrated and documented via a drive test.
- 25.4.2 After completion of the drive test and after it is documented that the system performs as required a subjective voice test will be run at no less than 100 locations throughout the County.

**25.5 Interoperability**

- 25.5.1 All bids must provide replacement of one (1) Harris MASTR IIe and six (6) MASTR III base stations for Public Service and Interoperability channels.
- 25.5.2 Jefferson system users shall have the highest reasonable level of interoperability possible with the State of Wisconsin P25 trunked system (WISCOM), adjacent county P25 conventional and adjacent county trunked systems (Phase 1 or Phase 2) and any neighboring mutual aid agencies.

**25.6 Reliability**

- 25.6.1 Reliability and redundancy shall be incorporated into the design to minimize or eliminate single point of failure from the system.
- 25.6.2 The system shall be designed such that no single failure should disable any system function of the system. Any single failure will be transparent to the user except for degraded coverage of one channel in certain areas if one station at one site should fail.

**25.7 Site Power**

- 25.7.1 The selected radio system bidder will provide the -48 VDC power plant equipment to power the RF infrastructure and microwave network.
- 25.7.2 If any site equipment is not able to be operated on DC power from the -48 VDC battery plant the Selected radio system bidder will provide redundant (N+1) DC to AC equipment to operate the equipment or if a UPS is to be employed it must be a double conversion unit. Equipment operating on AC should have dual power supplies in case of failure.

**25.8 System Platform End of Life**

- 25.8.1 For each voice, paging and microwave system platform:
- 25.8.2 Bidders shall include the anticipated “end of life” date of each platform proposed.
- 25.8.3 Bidders shall not propose a system platform (or any elements thereof) for which an “end of life” has been announced.
- 25.8.4 The proposal shall state that the platform proposed, and the major components of the platform shall be supported for a minimum of seven (7) years following manufacturing cessation.

**25.9 Dispatch Console Operation**

- 25.9.1 The County desires that the new radio system infrastructure be directly controlled per the existing configuration of the Mindshare radio dispatch console system and not via control station.
  - 25.9.1.1 If any upgrade, update or additional hardware and associated software is necessary for P25 conventional operation on the current Mindshare console system this should be considered an alternate solution per Section 4.1 and clearly noted as “Proposed alternate solution is offered” along with a detailed description of the hardware changes and/or software components required for P25 conventional system operation.
  - 25.9.1.2 If completely new console equipment is proposed this should be

considered an alternate solution per Section 4.1 and clearly noted as “Proposed alternate solution is offered” along with a detailed description required for P25 conventional system operation..

- 25.9.2 The County prefers a digital fixed station interface (DFSI) supporting:
- 25.9.2.1 New P25 conventional, simulcast infrastructure
  - 25.9.2.2 New analog conventional base stations and repeaters
  - 25.9.2.3 New analog tone and voice RF paging infrastructure
  - 25.9.2.4 Encrypted audio
  - 25.9.2.5 Caller-ID from field units
  - 25.9.2.6 Console ID to field units
  - 25.9.2.7 Talk-group information
  - 25.9.2.8 NAC code information
  - 25.9.2.9 Emergency Alert messages
  - 25.9.2.10 Emergency indications along with the voice stream
  - 25.9.2.11 Voted receive site identification

#### **25.10 *Radio System Control Hardware and Location***

- 25.10.1 The proposed location for the primary simulcast controller, the redundant backup controller and any interface equipment must be identified in the system proposal. It is recommended that these locations are the most secure and easily accessible locations on the microwave ring.
- 25.10.2 If either the primary and redundant simulcast controllers or both are not located immediately on a secure backhaul ring, the Bidder shall state how these devices provide redundancy in system operation.
- 25.10.3 Any radio system component serving a defined area shall be designed to operate independent of any other system providing basic levels of operation. Thus, in the event the decision is made to disconnect, or a temporary disconnection occurs, operational independence is possible with all other systems.

#### **25.11 *Tower Site Pre-Selection Process by Radio System Successful Bidder***

- 25.11.1 Site selection/location shall be the responsibility of the radio system successful bidder to determine during the design process with the expectation of using the lowest cost sites possible including: 1) County owned, 2) leased from commercial tower owners or 3) new build construction, i.e., “greenfield.”
- 25.11.2 The County expects bidders to have investigated the use of currently constructed towers site locations, such as buildings, water towers and other structures that may be usable as sites, as part of their design efforts.
- 25.11.3 Respondent shall have made a physical site visit to each proposed repeater site to determine if at the time the RFP response is prepared that the antenna structures offered seem to be able to accommodate the proposed antenna systems at the detailed levels designed in the system.
- 25.11.4 New (“greenfield”) sites will be considered and allowed to be proposed as part of a design but must be shown as necessary and justified with an appropriate

explanation provided in the proposal. This includes all proposed RF infrastructure sites.

- 25.11.5 If a new “greenfield” site is proposed or if the tower at a current site does not meet the structural requirements to handle the antennas required for operation, the new tower or existing tower upgrade will be required to be designed to meet EIA/TIA-222-G standards (Structure Classification – II or III, Exposure Category – C and Topographic Category – TBD dependent on location).
- 25.11.6 A list of Jefferson County towers downloaded from the FCC Antenna Structure Registration (ASR) database is included in Jefferson County Tower Sites (ULS Database). More tower sites may be available in adjacent counties or within Jefferson County as some towers may not be registered with the FCC. The County makes no claims or requirements to the use of these structures in any system design.
- 25.11.7 Every effort shall be made by the radio system successful bidder to reduce the ongoing cost to the County for site leases which means to:
  - 25.11.7.1 Attempt to combine antenna locations to reduce the vertical footprint on the tower which is how most tower companies calculate lease cost.
  - 25.11.7.2 Attempt to reduce the number of antennas on a tower by use of combining networks thus also reducing the foot print on the tower.
  - 25.11.7.3 Attempt to use the smallest microwave antennas thus possibly higher power radios making for a lower physical load on the tower.
  - 25.11.7.4 Attempt to provide technical products providing services that minimize systems having ongoing costs.
- 25.11.8 Radio system successful bidder shall supply to the County and their Civil Engineer:
  - 25.11.8.1 Site drawings of desired rack layouts in the shelters and equipment rooms allowing these layouts to be transferred to the Engineer’s drawings.
  - 25.11.8.2 Anticipated power loads and BTU for cooling requirements thus proving the Engineer needed information to develop site shelter requirements.
  - 25.11.8.3 Information as to antenna types, expected heights and associated transmission line thus affording needed information for the Engineer’s drawings/specifications.

## **25.12 Detailed System Design Process**

- 25.12.1 Upon contract award, radio system successful bidder will conduct a complete detailed design effort to review their proposed design as updated during negotiations, finalizing sites to the degree possible and to reach agreement on a final design for construction and factory build.
- 25.12.2 All towers shall have an initial structural analysis completed and paid for by the radio system successful bidder, or if the tower owner does the study it shall be paid for by the radio system successful bidder to determine tower’s viability for



said use.

- 25.12.3 The analysis study shall be completed prior to the DDR and its results shall be presented in the DDR.
- 25.12.4 As a part of the radio system successful bidder's Scope of Work, the loading study shall use EIA/TIA-222-G standards or latest adopted standard (Structure Classification – II or III, Exposure Category – C and Topographic Category completed with anticipated load as developed by ANSI/TIA.
  - 25.12.4.1 Structure Classification of II or III will be determined as based on where the tower is located and how it is presently being used.
- 25.12.5 During this detailed design, the radio system successful bidder shall work with the County and the County's consultants to validate repeater sites, expected coverage, microwave site to site connectivity, proposed network systems, alarm system and dispatch system thus providing a starting point for ordering all necessary components.
- 25.12.6 The detailed design timeframe shall be understood to be required to happen upon the project contact award, generally requiring about two months and there is likely involvement in this phase by County and their consultant.
- 25.12.7 The radio system successful bidder will be responsible for selecting repeater system and microwave sites in the design and to show anticipated coverage being offered.
- 25.12.8 The County and consultants will work with the radio system successful bidder to obtain access to radio system successful bidder recommended sites which will be consistent with the proposed system design. Bidders shall also consider sites in neighboring counties that might be usable as part of offered system design.
- 25.12.9 The DDR meeting will be the culmination of the DDR process and will not be signed off by the County until the needed sites are believed to have been defined with assurance by the radio system successful bidder their availability has been verified.
- 25.12.10 The verification by the radio system successful bidder shall include knowing there is space on each of the proposed towers.
- 25.12.11 The tower owner has been contacted is open to negotiation and the owner has a willingness to accommodate the proposed antennas.
- 25.12.12 The tower owner has verified the tower and site, from its records, is able to accommodate the proposed load.
- 25.12.13 The radio system successful bidder shall develop a presentation document for the DDR meeting whereby all the available information for the proposed sites and final design of the radio and paging system are contained in this document.
- 25.12.14 At the Detailed Design Review meeting/presentation, the radio system successful bidder will make a presentation to the County and their consultants and shall provide to the County a design detail submission which shall include block diagrams of major elements arranged on a site-by-site basis, drawings of each site, interconnect drawings, coverage expectations, and updated schedule based on all information available. The list of subsystems shall include but is not limited to the following:
  - 25.12.14.1 Radio System

- 25.12.14.2 Paging System
- 25.12.14.3 Microwave / Fiber Optic Backhaul
- 25.12.14.4 Wide Area (MPLS) Network Subsystem
- 25.12.14.5 DC Power/Distribution Subsystem for each (repeater location)
- 25.12.14.6 Antenna Subsystems (and info to provide to civil engineer)
- 25.12.14.7 Tower/Space/Commercial Power/HVAC Requirements (to provide to civil engineer)
- 25.12.14.8 Alarm & Management Subsystems
- 25.12.14.9 Radio Dispatch Console system interfaces
- 25.12.14.10 Control Station Backup for all Radio Console Positions
- 25.12.14.11 Voice Logging System Replacement/Upgrade(s)
- 25.12.14.12 OTAR, OTAP, Encryption, Key Management and support
- 25.12.14.13 Plan for Project Management
- 25.12.14.14 Proposed Project Timeline
- 25.12.14.15 Interface with County's consultants
- 25.12.14.16 Site Improvements
- 25.12.14.17 Routine Meetings / Timeline Updates
- 25.12.15 It is understood the proposed design offered at the DDR meeting may require change orders if there are site acquisition problems to meet the expected outcomes.
- 25.12.16 Radio system successful bidder shall understand the County will have the authority at this point in the process of acquiring a new system to take an active role and possibly to request an adjustment to the design with assistance from the radio system successful bidder to meet its requirements both technical and to meet a price point.
- 25.12.17 Radio system successful bidder shall assist the County relative to the design specifications for site requirements and resolution of deficiencies discovered during radio system successful bidder information gathering thus allowing the County to make necessary upgrades.
- 25.12.18 Radio system successful bidder shall consider the time needed for site acquisition and/or improvements in the provided schedule of system build-out.

### **25.13 Site Negotiations**

- 25.13.1 The County will enter into the appropriate site negotiations, license frequencies, etc. as required to obtain the system objectives as agreed to between the radio system successful bidder and the County during final design review.
- 25.13.2 The radio system successful bidder will be required to provide support for this process as part of their responsibilities.

### **25.14 Site Acquisition, Build-out and Authorization to Proceed**

- 25.14.1 With the detailed design effort completed and repeater sites identified, the County will undertake the task of acquiring access to the recommended sites



which will require detailed information from the radio system successful bidder.

- 25.14.2 Once there is a reasonable belief the identified sites can be acquired and the efforts well underway, the go ahead will be given by the County for the radio system successful bidder to acquire the various parts and equipment and then to build the system based on these site locations.
- 25.14.3 The radio system successful bidder's project manager will assume the responsibility of coordinating the system build including oversight of the antenna work, ordering of all system elements, coordination of the microwave and network and interface with the County's consultants.
- 25.14.4 The County will acquire the sites and work with its consultants to develop specifications for the site work and development.
- 25.14.5 The radio system successful bidder shall provide construction oversight to ensure the new facilities meet the radio system successful bidder's requirements as provided in their specifications.

#### ***25.15 System Design After Site Acquisition***

- 25.15.1 Once the detailed design activity is complete and all sites acquired for access, the design will be accepted by the County and the radio system successful bidder will be authorized to build the system.
- 25.15.2 The radio system successful bidder shall provide a detailed cutover plan for the County to explain the transition from the current systems to the new provided system.

#### ***25.16 SHPO, NEPA Required Authorizations***

- 25.16.1 Once site acquisition/leasing is complete, the radio system successful bidder shall provide all design information and assist the County to complete any necessary documentation to permit use of the sites and any frequencies that will be used in the system design.
- 25.16.2 Responsibility for FCC, SHPO and NEPA requirements are the County's with the assistance of the radio system successful bidder.

#### ***25.17 FCC Licensing, FAA and Other Required Authorizations***

- 25.17.1 The radio system successful bidder shall be responsible for the preparation of all applications. This includes but is not limited to any FCC and FAA application preparation, tower studies, coordination or any other requirement to finalize all required authorizations on behalf of the County.
- 25.17.2 FCC Coordination fees associated with the above will be the responsibility of the County.
- 25.17.3 The radio system successful bidder will be responsible for the preparation and submittals for all coordination and FCC licensing which includes submittals to the Regional Planning Committee (Region 54) if required.
- 25.17.4 The radio system successful bidder will be responsible to provide County's Project Manager and the County's consultant with the construction completion dates for all frequency/location combinations per the system design for purposes of FCC notification.

**25.18 Other Required Authorizations and Permits**

- 25.18.1 For any construction approval requiring authorizations including but not limited to NEPA, SHPO, Tribal, etc., the radio system successful bidder will assist the County in their preparation and submittal with any cost of associated fees paid by the County.
- 25.18.2 Radio system successful bidder has the responsibility to determine what authorizations and permits are required for all portions of the project the radio system successful bidder is responsible for.

**25.19 RF Exposure Calculations**

- 25.19.1 Radio system successful bidder shall be responsible to conduct a site evaluation and necessary calculations to determine if the repeater sites have safe levels of RF. A report for each site shall be provided to the County in the final documentation.

**25.20 Field Unit Programming**

- 25.20.1 As soon as practical and after the Detailed Design is complete, radio system successful bidder shall develop and hold a planning session to review unit features, options and channel planning thus validating the information needed to program field units.
- 25.20.2 Outcome of the planning will result in a complete code plug map of all NAC codes and channels available for subscriber use.
- 25.20.3 The assumption is made this planning may require multiple meetings with all users including law enforcement, fire, dispatch supervisory staff and other non-public safety user.
- 25.20.4 The outcome of the meeting and discussions will be a fully developed written document (spreadsheet) as an output.
- 25.20.5 As there is an expected interface with existing county, municipal and adjacent jurisdictional channels, talk group planning shall also include all anticipated out-of-band gateway channels and/or ISSI gateway patching.
- 25.20.6 Each of the radios (terminals) will be expected to have a complete talk group and channel plan developed with standardized talk group naming as a part of the effort.

**25.21 Dispatch Console Programming and Interfacing**

- 25.21.1 Once the code plug mapping is complete, radio system successful bidder shall as soon as practical develop and hold a planning session to review talk-groups and channel planning thus validating the information needed by the radio console system engineers is fully developed with a validated and written document as an output.
- 25.21.2 Console programming effort shall review all preprogramming patches to validate conventional and external conventional radio systems.
- 25.21.3 Console programming effort shall review all preprogramming for door controls, alarms, and how the emergency button on terminals activates changes to the console.
- 25.21.4 Radio system successful bidder shall review all interface requirement details

related to non-conventional systems, 911 system, logging and external monitoring and control.

#### **25.22 System Design and Programming**

- 25.22.1 With detailed design complete and a fleet map developed, the radio system successful bidder's designers will then be enabled to develop the final system elements and programming to create the system as proposed and approved by the County.
- 25.22.2 At this point in the system development, it is expected the radio system successful bidder will provide the County and its consultant with an initial draft of the system design documentation for review possible feedback.
- 25.22.3 Detail offered shall include drawings, specification, programming overview, updated schedule, site requirements, etc.
- 25.22.4 Once site design drawings and specifications have been developed by the County's tower/site engineer, the radio system successful bidder shall review to ensure all requirements are met for each site.

#### **25.23 System Acceptance Test**

- 25.23.1 During the build-out of the complete system, the radio system successful bidder shall be expected to assemble all the components, interconnect the elements, apply all software/ programming and conduct a complete factory/bidder testing before the radio and network components are installed at each site.
- 25.23.2 The factory/bidder testing shall include all network elements though may not include the microwave system.
- 25.23.3 The radio system successful bidder shall supply a document describing the results of the certification testing and validation of proper operation.
- 25.23.4 The County and its consultant will be invited to take an active role in the testing at the factory or Bidder facility.

#### **25.24 DC Plant, Alarm/Monitoring, And Microwave Subsystem Build-out and Tests**

- 25.24.1 Once shelters are in place with power, grounding and HVAC available, the radio system successful bidder is expected to build-out the DC power plant then test and commission.
- 25.24.2 As soon as possible after the sites have been acquired with towers and shelters in place, the microwave system is expected to be constructed, tested and commissioned.
- 25.24.3 As soon as possible after the sites have been acquired with towers and shelters in place microwave systems and alarm/monitoring systems shall be constructed, tested and commissioned.
- 25.24.4 Upon notice this phase of the work is complete, the County's consultant will perform an inspection and review visit to each site.
- 25.24.5 Documentation for the DC power plant, microwave and alarm/monitoring system shall be developed and turned over to the consultant for review and validation.

#### **25.25 System Operational Tests**

- 25.25.1 Bidders shall submit an operational test plan that shows end-to-end

communications of all major elements and features of the system, including the repeater system, dispatch console, backup power and generator systems and simulate failures that will demonstrate how system will react.

- 25.25.2 Radio system successful bidder will provide the same model of mobile and portable terminal units used for testing and Commissioning as are ordered for the day to day operations.
- 25.25.3 All tests must be completed and signed off by consultant and witnessed by the County before the Operational Tests will be designated complete.

#### **25.26 *Site Equipment Specification Tests***

- 25.26.1 Bidders shall submit their suggested plan for sample testing of antenna systems, receiver sensitivity/performance, transmitter power output, reflected power, P25 capability, network and microwave, etc.
- 25.26.2 Submittals to the consultant and County shall include written test results of the requirements as listed for each repeater system and all control/monitoring subsystems.
- 25.26.3 All tests must be completed and signed off by consultant and County before the Site Equipment Specification Tests will be designated complete.

#### **25.27 *Preliminary Acceptance***

The following steps are required to be completed by the radio system successful bidder to obtain preliminary acceptance of the radio system:

- 25.27.1 Inspection and inventory of all equipment and inspection of the installation of all system equipment.
- 25.27.2 All equipment must be installed per the specifications.
- 25.27.3 All site equipment and user equipment will be inventoried against the purchase orders with model and serial numbers of equipment supplied in an electronic searchable list supplied by the radio system successful bidder.
- 25.27.4 Each repeater and associated site equipment will be inspected for proper installation by the consultant with any items found deficient with either the inventory or inspection will be added to a punch list.
- 25.27.5 The punch list of items must be cleared before the inspection is designated complete and equipment is accepted.
- 25.27.6 The tests described below may proceed while punch list items are being cleared assuming those punch list items do not prevent any of the tests from taking place.
- 25.27.7 Exceptions include code/safety violations, grounding issues and improper antenna mounting which shall be completed properly before any further acceptance verifications continue.
- 25.27.8 At the completion of the project the radio system successful bidder will remove and dispose of all system equipment, including repeater stations, antennas, transmission line and associated equipment replaced or no longer used by the radio system.

**END OF SECTION**

## 26 System Infrastructure Specification Requirement Detail

### 26.1 *General*

- 26.1.1 A backhaul system using microwave and installed fiber will provide connectivity to all voice, paging and dispatch locations. A new microwave topology and available fiber will be designed and implemented providing redundancy such that no single point of failure will interrupt network, radio system, paging system or alarm system operation.
- 26.1.2 All radio infrastructure site equipment will be powered by a -48VDC plant provided by the radio system successful bidder. For components that cannot run on DC plant power redundant DC to AC or DC to DC convertor will be supplied as part of this RFP. If commercial power fails all system components at RF infrastructure sites must remain operational. No single point of failure shall leave voice, paging or alarm system unusable.
- 26.1.3 A centralized alarm system will report conditions to dispatch and via page or text service to maintenance personnel 24 X 7 X 365.

### 26.2 *Main Voice Radio Systems*

- 26.2.1 The new voice system infrastructure will be to provide a three (3) channel VHF repeated simulcast P25 conventional radio platform to support LAW1, EMCOM1 and FIRE1 radio system users.
- 26.2.2 The new voice system infrastructure will be to provide a one (1) channel VHF repeated simulcast analog conventional radio platform to support the Jefferson County Highway Department radio system users. The channel should be capable of being migrated to P25 digital operation.
- 26.2.3 Bidder's offering shall provide conventional system components that have the highest level of upgrade ability to trunking operation.
- 26.2.4 Bidder's offering will provide necessary radio repeater systems equipment designed for continuous duty operation.
- 26.2.5 Bidder's offering will provide necessary system control equipment to provide a redundancy capability in the system design.
- 26.2.6 The P25 Conventional system will be compliant with and support all current P25 mandatory standards (P25 CAP).
- 26.2.7 All County public safety radio users plan to adopt the P25 platform and utilize the new P25 infrastructure for communications.
- 26.2.8 The Bidder shall submit a design of the proposed system detailing the anticipated sites needed to provide the anticipated levels of coverage.
- 26.2.9 The Bidder shall submit a block diagram of the proposed system design with the proposal and describe any alternate sites.
- 26.2.10 Simulcast and voting operation are desired to be the proposed for P25 and analog solutions.
- 26.2.11 Direct network connections from the new radio system infrastructure to the dispatch console system via backhaul infrastructure is desired to be the proposed solution.
- 26.2.12 All sites shall employ the latest manufacturer grounding techniques and

protection equipment to improve survivability due to power line and lightning surges.

- 26.2.13 Bidder's offering will provide necessary alarms and associated interconnect to sense and send equipment operational conditions at each site to a system management terminal.
- 26.2.14 The County will provide equipment shelters sized to meet the requirements of the proposed radio system, network systems, supporting backup power plant and microwave electronics plus two rack spaces for future equipment. All shelter sizing shall meet National Electrical Code requirements of minimum space requirements.
- 26.2.15 The County will provide a backup generator to supply 120/240V at each repeater and/or microwave site.
- 26.2.16 The County will provide UPS protected power with backup generator power at all dispatch centers thus allowing all equipment at these sites to operate directly off this AC source and not use batteries if desired.

### **26.3 *Features for P25 Conventional Operation***

- 26.3.1 The conventional P25 system infrastructure will support the features listed in the latest version of the P25 Statement of Requirements including, but not limited to, the following:
  - 26.3.1.1 Single key or multi-key AES 256-bit end to end encryption.
  - 26.3.1.2 Voting
  - 26.3.1.3 Simulcast
  - 26.3.1.4 Remote monitoring and diagnostics
  - 26.3.1.5 MDC1200 interface support
  - 26.3.1.6 OTAR
  - 26.3.1.7 Packet Data
  - 26.3.1.8 Group call
  - 26.3.1.9 Individual call
  - 26.3.1.10 Announcement call
  - 26.3.1.11 Broadcast call
  - 26.3.1.12 Emergency call
  - 26.3.1.13 Talk Group ID
  - 26.3.1.14 Individual ID
  - 26.3.1.15 Emergency ID
  - 26.3.1.16 Emergency alarm
  - 26.3.1.17 Status
  - 26.3.1.18 Radio Check
  - 26.3.1.19 Call Alert
  - 26.3.1.20 Inhibit, non-inhibit



## 26.3.1.21 Short message

**26.4 *Paging Systems***

- 26.4.1 The intent of the new paging system will be to provide a one (1) channel VHF analog system to replace the existing channel and improve alerting operations of the public safety users.
- 26.4.2 The intent of the new paging system is to maintain or improve the service boundaries for the paging and dispatching of Public safety agencies serviced by Jefferson County Dispatch on the current paging system.
- 26.4.3 The paging system will consist of VHF radio simplex stations capable of simulcast transmitter operation able to operate in analog and P25 modes.
- 26.4.4 Bidder's offering will provide necessary radio systems equipment designed for continuous duty operation.
- 26.4.5 Bidder's offering will provide necessary system control equipment to provide a redundancy capability in the system design.
- 26.4.6 Direct network connectivity operation of the new paging system to the dispatch console system via backhaul networking proposed is desired to be the proposed solution.
- 26.4.7 Each dispatch position will provide two-button activation of all paging units.
- 26.4.8 All existing subscriber pagers will be reused and any needed equipment re-programming shall be included in the proposal.

**26.5 *County Frequencies***

- 26.5.1 Law, Fire, Paging and Highway infrastructure frequencies:

	LAW1	EMCOM1	FIRE1	PAGING	HIGHWAY
Transmit	154.860	155.775	154.370	154.055	156.240
Receive	158.910	158.790	153.770	159.150 (BU)	158.985

- 26.5.2 For a list of County frequencies See Appendix 1 - Jefferson County Frequency List on page 125.

**26.6 *Simulcast Operation***

- 26.6.1 Simulcast designed system operation is being requested to provide improved balanced talk out and talk in operation in the new system designs of the voice and paging systems.
- 26.6.2 A GPS timing subsystem will be used to coordinate simulcast launch timing.
- 26.6.3 The proposed microwave/fiber backhaul system will be used to interface the simulcast controllers to the base stations and repeaters of the radio network.
- 26.6.4 All equipment related to the simulcast controller, programming and monitoring of the controller will be located at one of the system sites such that if there is a failure of system connectivity with a controller the redundant system will continue to provide simulcast operation.



- 26.6.5 If a simulcast system failure were to happen, the design shall be such that each simulcast repeater site will fault into a minimum operational mode allowing some level of communications capability.

### **26.7 Radio Console Systems**

- 26.7.1 The intent for radio console systems is the reuse of existing Mindshare console unit to the extent possible. The current system operates four (4) positions at the County dispatch facility.
- 26.7.2 It is the intent of the console systems to be upgraded to communicate to the radio system using a digital connection with P25 or DFSI connectivity.
- 26.7.3 Each console position should be designed with a backup radio control station unit to be used during network connectivity loss.
- 26.7.4 The console system currently provides and supports the following listed control stations operating at the County dispatch site. Provide all necessary systems to replace current system equipment and add any needed mutual aid resources to the system design.
- 26.7.5 The console system at the County should provide adequate standalone operation of system resources in the event of network failure. Provide backup radio station equipment and a planned implementation as needed to prove a reliable dispatch system design.

### **26.8 Call Logging System**

- 26.8.1 The existing logging system will need to be expanded as necessary or replaced to assure accommodation of all radio channels and telephone circuits.
- 26.8.2 The current logger is a 2012 Eventide NexLog 740 logging recorder located in the dispatch area records all phone and radio traffic. This unit is equipped with two (2) DVD drives, licenses for eight concurrent users, 40 analog channels and 16 VoIP channels.
- 26.8.3 Number of 911 lines – 8
- 26.8.4 Number of Admin lines – 10
- 26.8.5 Number of Radio channels – 21
- 26.8.6 Storage capacity – 1TB
- 26.8.7 Number of remote access licenses – 8
- 26.8.8 Logging retention policy – 120 days
- 26.8.9 Radio system successful bidder shall ensure the logging system design and capacity meet the needs of the systems proposed.
- 26.8.10 Radio system successful bidder shall verify the County's expectations for the logging system and its interfaces and that the logging system can record all new traffic.
- 26.8.11 Radio system successful bidder shall offer short report describing the outcomes of these efforts for review by the County and its consultant.

### **26.9 Coverage Requirements**

- 26.9.1 Radio system successful bidder will provide predicted Countywide and per repeater site coverage for portable, mobile, and pager operation of the proposed

design.

- 26.9.2 Mobile and portable predicted results shall illustrate both talk-in and talk-out performance.
- 26.9.3 Pager System predicted results shall illustrate and talk-out performance.
- 26.9.4 The signal level used to provide  $\leq 2\%$  BER and a DAQ of 3.4 for P25 designs will be clearly stated on each prediction.
- 26.9.5 Bidder will provide a map of the simulcast distortion zones due to signal strength differences and delay spread.
- 26.9.6 The level of signal and delay spread being used when calculating coverage shall be provided with simulcast distortion zone (TDI) prediction maps.
- 26.9.7 All coverage predictions should extend at least 15 miles beyond the County border in all directions.
- 26.9.8 The required system wide LMR coverage, with balanced talk-out and talk-in, is  $\geq 95\%$  coverage with  $\geq 95\%$  reliability.
- 26.9.9 The required system wide Paging coverage is  $\geq 95\%$  coverage with  $\geq 95\%$  reliability.
- 26.9.10 Acceptable coverage will have a DAQ of 3.4 or better (and a BER  $\leq 2.0\%$  for P25).
- 26.9.11 The following coverage designs shall be provided with the proposal detailing the system designs meeting the established requirements.
- 26.9.12 Mobile talk out and talk in performance coverage one-mile beyond the Jefferson County border.
- 26.9.13 Portable talk out and talk in performance of outdoor on-the-hip portable coverage one-mile beyond the Jefferson County border.
- 26.9.14 Portable talk out and talk in performance of 8dB (residential) indoor on-the-hip portable performance within the coverage boundaries of the Jefferson County border.
- 26.9.15 Portable talk out and talk in performance of 15dB (commercial small building) indoor on-the-hip portable performance within the county and city borders of the communities of Jefferson, Fort Atkinson, Lake Mills, Waterloo, Watertown, Whitewater, Cambridge, Johnson Creek, Ixonia, Palmyra and Sullivan.
- 26.9.16 The paging system is required to provide indoor pager on the hip coverage for 8dB (residential) buildings within the coverage boundaries of the Jefferson County border.
- 26.9.17 The paging system is required to provide outdoor pager on the hip coverage one mile beyond the coverage boundaries of the Jefferson County border.
- 26.9.18 The map shown in Appendix 7 identifies the Jefferson County RF boundary (purple line) which is intended to match the official county border. The additional boundary (red line) outside of the county border is intended to represent the plus one-mile boundary for designated coverage requirements.

#### **26.10 P25 Conventional System Infrastructure Equipment**

- 26.10.1 The repeater system will provide P25 simulcast conventional radio system

operation at multiple sites to provide the required coverage.

- 26.10.2 RF specifications will be consistent with public safety grade equipment suitable for simulcast operation and provided with the bidder's response.
- 26.10.3 It is envisioned the repeater system will employ a centralized simulcast controller to allow the system to operate like a single radio site, although multiple sites will be needed to provide coverage.
- 26.10.4 Multiple channels/repeaters will be utilized at each site, and the system will provide multiple channels for two-way communications and announcements to field units.
- 26.10.5 The set of repeaters at each site will be interfaced to the antenna system via a transmitter combiner and receive multi-coupler system to minimize the number of antennas required for operation.
- 26.10.6 Repeater RF Power – 100W minimum full power
- 26.10.7 Spurious & Harmonic Emissions Attenuation – 90dB
- 26.10.8 Sensitivity (C4FM) – -117 dBm
- 26.10.9 Spurious and Image Rejection –  $\geq 85$  dB
- 26.10.10 All necessary modules, equipment or interfaces to the microwave system and network components supporting the wired infrastructure side of the repeaters, voters and the interface to the proposed console system as proposed will be included.
- 26.10.11 Only new components shall be used in the new system infrastructure.
- 26.10.12 The Bidder will provide a description of the failure mode operation proposed if the simulcast controller shall fail and what safeguards are in place to minimize the chance of failure.
  - 26.10.12.1 The Bidder will provide a description of the failure mode operation proposed if the centralized simulcast controller shall fail and what safeguards are in place to minimize the chance of failure.
  - 26.10.12.2 The Bidder will describe what manual changes need to be considered in the operating environment because of system failure.
- 26.10.13 The frequency set must allow all frequencies to be combined utilizing one transmit and one receive antenna system.
- 26.10.14 All new antenna and transmission line systems shall be employed at all sites with systems installed per manufacturer recommendations.

#### **26.11 Repeater and Base Station Antenna Subsystems**

- 26.11.1 The radio system successful bidder is responsible for the design of all antenna subsystems.
- 26.11.2 The radio system successful bidder is responsible to supply each repeater and base station site with all new antenna systems including antennas, mounting arms, transmission line, grounding kits, surge protectors, antenna combining equipment and interconnecting cable.

- 26.11.3 The radio system successful bidder is responsible for the installation and testing of all repeater and base station antenna systems.
- 26.11.4 The radio system successful bidder is responsible to supply the information about the required antenna systems to County's civil engineer for any new "greenfield" sites to allow for the design of the tower and shelter.
- 26.11.5 The transmitter combining system will allow for the use one transmit antenna.
- 26.11.6 The receive antenna system may use two receive antenna systems if a diversity receive system is used in the design.

#### **26.12 *Backhaul Microwave Network***

- 26.12.1 All bids must provide a new and updated digital backhaul system to support County communications systems.
- 26.12.2 The repeater sites and dispatch interconnect backhaul system shall be developed with MPLS-based network hardware.
- 26.12.3 It is highly desired the digital microwave offering be established as a ring providing a highly reliable backhaul system.
- 26.12.4 The IP network and supporting microwave network shall be designed to meet FIPS 140 2.
- 26.12.5 The microwave network is the responsibility of radio system successful bidder including all required design, coordination, licensing and installation.
- 26.12.6 Microwave links will interconnect all sites and provide network connectivity between all radio and dispatch center sites.
- 26.12.7 The backhaul system will be digital IP-based and equipped to provide 150 Mbps minimum capacity for the proposed radio system though it will be acceptable to initially operate at 100 Mbps assuming only software changes to the full 150 Mbps capability.
- 26.12.8 All interconnecting network components/systems are anticipated to be IP-based end to end supporting both voice services and systems management and utilizing MPLS in the wide area thus insuring FIPS 140-2.
- 26.12.9 All associated microwave path studies are the responsibility of the Contactor (or microwave subcontractor) to be conducted prior to the DDR presentation to assure the sites selected will work for the design.
- 26.12.10 Only licensed 6 or 10 GHz microwave bands, or fiber optics shall be utilized for the primary interconnect path.
- 26.12.11 The use of IP-based microwave that makes use of adaptive modulation for the highest possible throughput and smallest antennas is highly desired.
- 26.12.12 Microwave equipment may be an outdoor or indoor configuration.
- 26.12.13 Ice shields will be provided for all microwave antennas mounted below other antennas thus only top of tower mounted antennas do not require shields.
- 26.12.14 A ring microwave/fiber optic design is highly recommended if possible though any links not part of a ring shall be established with hot standby or a parallel 4.9 GHz link.
- 26.12.15 The radio system successful bidder will provide the reliability of the microwave

network design with the proposal with no less than five 9's being acceptable.

- 26.12.16 Bidder will describe how the system could service system users if a link on the microwave system would fail.
- 26.12.17 The radio system successful bidder is responsible to supply the information about the required antenna systems to County's civil engineer for any new "greenfield" sites to allow for the design of the tower and shelter.
- 26.12.18 Alarm/monitoring capability shall be provided to the proposed radio system monitoring scheme thus affording the County and supporting Bidder with information remotely relative to the Backhaul system with alarm monitoring shall minimally include:
  - 26.12.18.1 Loss of a link
  - 26.12.18.2 Power failure
  - 26.12.18.3 Waveguide pressure failure

### **26.13 *Networking Scheme***

- 26.13.1 The use of Ethernet shall be considered primary and any non-IP traffic shall be carried using routers over IP as no T1 or DS3 circuits are expected.
- 26.13.2 The network switches and routers proposed for this project shall be capable of separating IP traffic between the radio system, alarm system, secure owner data and the management system likely using MPLS.
- 26.13.3 The backbone architecture shall provide for setting of priorities to support voice and data insuring voice operations have the highest priority and data the highest level of security.
- 26.13.4 The County is expecting the use of MPLS (multiprotocol label switching) routers (or equal method of dividing networks to meet FIPS 140-2) thus allowing for the use by the County for other non-public safety IP traffic.
- 26.13.5 An IP link shall be available and equipped with an intercom phone (order wire) at each network router location thus offering maintenance personnel ease of voice communications between sites.
- 26.13.6 Alarm/monitoring capability shall be provided to the proposed radio system monitoring scheme thus affording the County and supporting Bidder with information remotely relative to the condition of the Network Routers and Switches.

### **26.14 *DC And AC Power Systems***

- 26.14.1 A DC power system shall be provided whereby all electronic devices at a site operate from AC or DC and the DC system is provided continuous charging and conversion from the mains system.
- 26.14.2 The AC to DC converters (rectifiers) shall be provided with N+1 reliability designed with enough power output for both operating and battery charger capability.
- 26.14.3 The DC power system shall be designed to meet the proposed system needs plus 20% for future growth.
- 26.14.4 All electronic systems (radio, network, alarm and microwave system) shall operate from radio system successful bidder supplied battery power with batteries

being continually charged from mains or backup generator and if UPS are used then on-line double conversion is a minimum requirement.

- 26.14.4.1 If any components are only capable of operating on 120VAC then a DC to AC inverter shall be provided capable of supplying AC power.
- 26.14.4.2 This requirement does not apply to HVAC or Lighting systems.
- 26.14.5 If the dispatch center is also determined to be a RF site and center power is supplied by a single UPS backed up with a generator, then the DC plant will only be necessary for the microwave and network backhaul system.
- 26.14.6 A DC circuit breaker system shall be provided to allow for the distribution of power to all electronic devices and with a mains breaker to remove all power at a site to meet NEC requirements.
  - 26.14.6.1 Dual A/B distribution shall be used allowing equipment equipped to accept dual DC input to be fed from different distribution sources.
- 26.14.7 The DC power system shall be designed to provide uninterruptable power for a period up to 30 minutes under full load with full load defined as repeaters operating on a 50% duty cycle at 70% load.
- 26.14.8 One DC battery system is desired to power all equipment including the microwave, radio systems and network components.
- 26.14.9 All AC to DC rectifiers, any DC to AC inverters, and all breakers shall be equipped with monitoring and connectivity to the alarm system for remote diagnostics capability.
- 26.14.10 The charging system shall be designed to fully charge the batteries within:
  - 26.14.10.1 60 minutes after a commercial power failure and assumed one-minute generator activation at full load.
  - 26.14.10.2 240 minutes after 30 minutes of continuous operation at full load.
- 26.14.11 Alarm/monitoring capability shall be provided to the proposed radio system monitoring scheme thus affording the County and supporting Bidder with information remotely relative to the DC or UPS power plant. Monitoring shall minimally include:
  - Battery system functional and operating properly
  - Battery System High Level Fault
  - Any DC Rectifiers in Fault Condition
  - Condition of Battery System

## 26.15 *Reliability*

- 26.15.1 The radio system and microwave system shall be designed with the highest levels of reliability including all links, fiber and microwave.
- 26.15.2 Redundancy of critical components shall be included in the system design including the connectivity between all major site/system components.



- 26.15.3 An explanation of design features that provide system reliability shall be provided.
- 26.15.4 Bidders shall submit a list of suggested failure scenarios and categorize them as major, minor or very minor.
- 26.15.5 Categorization of items on this list will be a subject of negotiation with the successful Bidder during contract negotiation.
- 26.15.6 Bidders shall also provide an explanation of how the system would be designed to operate, and what the impact would be, under commonly anticipated failures to include:
  - 26.15.6.1 The loss of a channel or multiple channels,
  - 26.15.6.2 The loss of a site or the loss of site connectivity,
  - 26.15.6.3 The loss of console connectivity,
- 26.15.7 System performance monitoring systems shall be explained to include standard alarming and system administration capabilities being proposed. Site monitoring capabilities are a desirable component of this system.

#### **26.16 *30-Day System Test***

- 26.16.1 A 30-day system reliability period will begin upon completion of system functional testing and will be a functional test for voice and paging systems.
- 26.16.2 If a system should fail during the 30-day testing period the severity of the failure will be determined per the following:
  - 26.16.2.1 Minor – Any failure that does not impact coverage or capacity no more than 25%. The 30-day clock will continue assuming the failure is fixed, and the operator can resume normal functionality within 24 hours.
  - 26.16.2.2 Major – Any failure that impacts coverage or capacity no more than 50%. The 30-day clock will stop and not restart until the fix is complete and the entire radio system is back to normal operation.
  - 26.16.2.3 Catastrophic – Any failure that requires backup procedures and equipment to be activated for operation. The 30-day clock will start over once the failure has been fixed and the entire radio system is back to normal operation.
- 26.16.3 At the successful conclusion of each 30-day test that system will be considered conditionally accepted and the warranty period will begin.

#### **26.17 *Remote Monitor/Alarm/Configuration Systems***

- 26.17.1 The project will provide a centralized alarm and monitoring system for all system infrastructure elements.
- 26.17.2 The radio system successful bidder will demonstrate and document coverage per standard test procedures for voice and paging radio systems per the performance requirements stated in this request for proposal (RFP).
- 26.17.3 The central monitoring/alarm/configuration system shall be offered as a single integrated system whereby there is:

- 26.17.3.1 Instantaneous alarm notification and logging of events.
- 26.17.3.2 Emails sent to appropriate staff and radio system successful bidder for high level events.
- 26.17.3.3 Owner and radio system successful bidder access to equipment operational information and alerts to potential problems.
- 26.17.3.4 A means of pushing updates to all possible devices thus allowing for configuration changes.
- 26.17.4 The integrated central monitoring/alarm system will provide alarms and event logging for all radio, microwave, associated network systems and DC power plant proposed plus the incorporation of shelter environmental, commercial power, transfer switch and generator physical site alarms.
- 26.17.5 A management system thus shall be a part of the offering whereby the entire radio system infrastructure can be monitored and where updates to the various elements be initiated via the secure network including:
  - 26.17.5.1 Environmental, microwave, network and RF system elements.
  - 26.17.5.2 All sites in the system shall be monitored for temperature (high and low), power, standing water, smoke, fire, backup power generation, transfer switch operation, fuel level and unauthorized access.
  - 26.17.5.3 Interconnection to the generator fuel tank at each site to offer remote sensing of fuel levels.
  - 26.17.5.4 Faults encountered by any system or subsystem including radio system, backhaul system, DC/UPS plant, Automatic Transfer Switch, mains power, site environmental sensors and the network.
  - 26.17.5.5 All IP addressing, and any abnormalities encountered.
  - 26.17.5.6 Pre-established rules for system communication having been broken either accidentally or through purposeful intervention.
  - 26.17.5.7 Provide for email alarm conditions to be sent to defined personnel for action.
  - 26.17.5.8 All information collected shall be automatically archived thus allowing technical personnel the option of seeing historical records.
- 26.17.6 An audit trail of actions taken by the user of the system shall also be maintained and archived.
- 26.17.7 The monitoring tools provided shall make use of centralized view of the system health while allowing technical personnel to drive down to the device sending the alarm.
- 26.17.8 The monitoring tools shall utilize Graphical User Interface (GUI) thus offering technicians and managers quick access to information.
- 26.17.9 The monitoring system shall incorporate secure access and at a minimum AES 128-bit encryption to block access while also allowing access privileges at various levels.



- 26.17.10 The monitoring/management system shall poll all monitored elements and shall re-queue and missed collected information when the device reconnects thus maintaining an up to date log.
- 26.17.11 System shall be capable of and interconnected to the AC and the DC/UPS power system components and switching to allow remote diagnostics.
- 26.17.12 All remote alarm and remote monitoring systems shall be powered by the DC backup system at each site thus insuring the fewest false alarms possible.
- 26.17.13 DC to AC inverter(s) or DC to DC converter(s) may be required to provide continuous power to site alarm panel provided at the site.
- 26.17.14 Capable of interfacing with contact closures of environmental sensors.

## **END OF SECTION**

## 27 Proposal Design Alternates

The County is seeking the following alternate offerings as requested in previous sections.

### 27.1 *New Logging Recorder (Required)*

- 27.1.1 As the current logging recorder has been in service for seven years the county desires to consider a replacement unit.
- 27.1.2 The required specifications should meet or exceed the current equipment and include any requirements for operation with the P25 conventional system channels.

### 27.2 *Microwave Design (Required)*

- 27.2.1 The County has a need to obtain a network connection to the Annex building located at the intersection of County N and Bark River Road (42°55'23.98"N, 88°46'50.82"W).
- 27.2.2 This location can either be part of the ring design or be configured as a hot standby spur.
- 27.2.3 The throughput capacity of this connection should meet the minimum requirement for the backhaul design.

### 27.3 *Replacement Console System (Optional)*

- 27.3.1 Each console position should be provided with the following ancillary equipment.
  - a. Two headset jacks per position capable of parallel operation
  - b. Foot switch per position providing PTT function
  - c. Minimum 4 speakers with adjustable volume controls
  - d. Desk microphone and local user PTT function
  - e. Support of 22" monitor to be supplied by Bidder
- 27.3.2 The console system should be designed with the following minimum capabilities:
  - a. The radio console will support 6-wire headsets.
  - b. Headset shall support communications with field radio, and 911 telephone Audio to telephone will be muted when transmitting over the radio system.
  - c. Capable of 32 aux outputs and 32 aux inputs
  - d. Instant Recall Recorder (IRR) with last in offered first per position
  - e. Minimum of 140 assignable resources per position
  - f. Minimum 6 radio screen tabs with at least 44 resources per tab
  - g. Instant transmit per resource
  - h. Volume control per resource

- i. Support minimum 15 characters for resource name and minimum 15 characters for alias per resource
- j. Two tone paging encoder
- k. DTMF signaling encoder
- l. Preprogrammed single and preprogrammed group paging
- m. Logging interface for use by County and City agencies
- n. Multi-select (3 sets minimum)
- o. Patch (3 sets minimum)
- p. VU meter display
- q. Subscriber Radio ID to be displayed
- r. Acceptance and ID for subscriber Emergency Button
- s. Audio sent/received by each repeater channel
- t. Dispatcher override of subscriber radio traffic
- u. Support for a minimum of 35 NAC groups
- v. P25 end to end digital from the field unit to the dispatch operator on P25 channels
- w. Direct radio system connectivity (not control stations)
- x. Control station backup radio access for all console positions with RF portion of radio located outside of dispatch
- y. AES encryption capable on selected P25 NAC groups
- z. Headset interface/switching to 911 telephone system

**END OF SECTION**

## 28 Site Development

### 28.1 *Repeater Site Infrastructure Specifications/ Requirements*

- 28.1.1 After the DDR is completed and accepted by the County, it shall be the responsibility of the County to acquire the services of a civil engineering company to complete all further site/tower work.
- 28.1.2 The County will be responsible for any structural improvements found to be required because of the structural issues.
  - 28.1.2.1 Any design work for a greenfield site will be completed via the County's structural engineer under a separate contract though with coordination by the radio system successful bidder as per the Public Bidding for Construction requirements of the Jefferson County Purchasing Ordinance (Section 26).
  - 28.1.2.2 Radio system successful bidder shall be aware of and account for the time required to develop greenfield sites.
- 28.1.3 After the detailed radio system design is completed by the radio system successful bidder and thus sites selected all tower site compounds, new or existing, the County's civil engineer shall develop and provide a complete set of appropriate State Licensed PE stamped construction drawings and specifications.
- 28.1.4 The construction plans will show the compound, fencing, tower, foundations, electrical, easement road extensions and proposed equipment shelters. This design work will be completed via County's structural engineer under a separate contract though with coordination by radio system successful bidder.

### 28.2 *Equipment Shelters/buildings/Generators*

- 28.2.1 Proposals shall include requirements for space, power and environment conditions for each site included in their proposal.
- 28.2.2 The remainder of this section is provided for information only as work will be completed under a separate contract with project management by the radio system successful bidder to assure coordination.
- 28.2.3 Equipment shelters will provide adequate space, a stable environment for the County's infrastructure equipment and must be equipped with the appropriate grounding and surge protection equipment to protect the equipment.
- 28.2.4 All equipment shelters shall meet all local codes and be equipped in such a way as to support the communications systems installed within.
- 28.2.5 The County will ensure a generator meeting the requirements as stated by the radio system successful bidder will be in place with all required transfer switching.

### 28.3 *Equipment Rooms*

- 28.3.1 Proposals shall include requirements for space, power and environment conditions for each site included in their proposal.
- 28.3.2 The remainder of this section is provided for information only as work will be completed under a separate contract with project management by the radio system successful bidder to assure coordination.
- 28.3.3 The County will insure equipment rooms provide adequate space, a stable

environment for the County's infrastructure equipment and be equipped with the appropriate grounding and surge protection equipment to protect the County's equipment.

- 28.3.4 If an existing selected County's equipment room is not deemed adequate by the radio system successful bidder, then the County will find and establish the needed space or do any repairs/upgrades required.
- 28.3.5 All site construction work is expected to be bid either by the County or the radio system successful bidder and awarded per local and state regulations.
- 28.3.6 As these spaces are internal to an existing building, every effort must be made to work with building maintenance staff to insure coordination.

#### **28.4 *Site Power Sources***

- 28.4.1 This section is provided for information only as work will be completed under a separate contract with project management by the radio system successful bidder to assure coordination.
- 28.4.2 Any improvements required/recommended by radio system successful bidder as related to commercial power will be accomplished by County via a separate contract.
- 28.4.3 Generator back-up shall be utilized at each site.
- 28.4.4 Upon the loss of commercial power, the generator will automatically start and after the output has stabilized a transfer switch will change the equipment to generator power.
- 28.4.5 For 911 Communications, the County will provide a dedicated UPS to power all radio and paging equipment plus the other site elements dedicated to 911 and PSAP operations thus a DC plant may not be required.
  - 28.4.5.1 The N+1 requirement for AC to DC power and any critical systems that could ultimately be a single source of failure must be protected in this manner.
  - 28.4.5.2 No critical subsystem components with two AC power supplies shall be powered by a single circuit breaker.
  - 28.4.5.3 All AC power distribution in equipment racks shall be surge protected at the load center and the rack.
- 28.4.6 The generator will be able to provide full power at 100% duty for all equipment and recharge the site batteries. Upon the return of stable commercial power, the equipment will be returned to commercial power and normal operation.

**END OF SECTION**

## 29 On-Site System Build and Readiness for Testing

### 29.1 *Radio System Successful Bidder System Construction and Initial Commissioning*

- 29.1.1 Once the radio system and network subsystems have been shipped to the County sites and installed at the various locations, the radio system successful bidder shall begin internal testing and adjustments to validate its proper operation on a site-by-site basis.
- 29.1.2 The microwave system shall have been installed, tested and thus verified operational prior to connecting the network elements.
- 29.1.3 Once the network is installed and made operational, the various portions of the system will be interconnected and then radio system successful bidder tested followed by full system Commissioning when radio system successful bidder advises.
- 29.1.4 The radio system successful bidder shall install the radio system including all network elements, conduct preliminary testing and inform County and consultant of readiness to conduct inspection visits.

### 29.2 *Site Equipment Specification Tests*

- 29.2.1 Bidders shall submit to the County's consultant their suggested plan for sample testing of antenna systems, receiver sensitivity/performance, transmitter power output, reflected power, P25 capability, network and microwave, etc.
- 29.2.2 All tests must be completed and signed off by consultant and County before the Site Equipment Specification Tests will be designated complete.
- 29.2.3 Submittals to the consultant and County shall include written test results of the requirements as listed for each repeater system, network, backhaul, DC plant and all control/monitoring subsystems.

### 29.3 *System Operational Tests*

- 29.3.1 Bidders shall submit an operational test plan that shows end-to-end communications of all major elements and features of the system, including the repeater system, dispatch console, backup power and generator systems and simulated failures that will demonstrate how system will react.
- 29.3.2 Failures of the systems should include, at a minimum:
  - 29.3.2.1 Mains power
  - 29.3.2.2 Loss of primary network link
  - 29.3.2.3 Failure of one network switch at a site
  - 29.3.2.4 Loss of GPS (if simulcast)
  - 29.3.2.5 Loss of one channel of a Conventional radio system
  - 29.3.2.6 Loss of link to one simulcast controller
- 29.3.3 Radio system successful bidder shall anticipate County's consultant will take an active role in the tests whereby random tests will be expected to be performed with consultant on-site and by reviewing test results as submitted.
- 29.3.4 All tests must be completed and signed off by consultant and witnessed by the County before the Operational Tests will be designated complete.

**END OF SECTION**

## 30 Coverage Validation Testing

### 30.1 *Radio System Coverage*

- 30.1.1 Once items described as Acceptance Testing are complete, the radio system successful bidder shall demonstrate coverage to the requirements outlined in the Radio System Coverage section. The DAQ definitions found in Appendix 3 shall be used for determining audio quality.
- 30.1.2 For Outdoor Coverage Testing, the Bidder shall submit an outdoor coverage test plan defining where the County shall expect to have coverage then within that area to establish minimum test call locations as defined which is expected to equate to the test zones.

### 30.2 *Voice Coverage Testing Outdoors*

- 30.2.1 Proposals shall specify or provide the coverage as a percent of the total area of the various coverage boundaries assuming 95% reliability using TSB-88C design procedures for the proposal.
- 30.2.2 Respondents shall design their systems utilizing optimized site locations to support, the coverage requirements thus providing for a balanced talk-out and talk-back performance modeling.
- 30.2.3 Proposals shall specify or provide the coverage as a percent of the total area of the various coverage boundaries assuming 95% reliability using TSB-88C testing procedures.
- 30.2.4 A general test plan providing the testing criteria used will be provided with the bidder's proposal.
- 30.2.5 The radio system successful bidder shall use the latest TSB-88 testing methodology to provide an automated test of the entire coverage area.
- 30.2.6 The details to be included in the test shall include the minimum number of tiles the test will need to be statistically significant for the various coverage boundaries.
- 30.2.7 Outdoor Testing will be completed using a drive testing process using TSB-88 procedures. It is assumed one or more outdoor antenna(s) mounted on the roof of a vehicle will be used.
- 30.2.8 The vehicular antenna systems will be attenuated to recreate a signal representing a portable on the hip (no speaker microphone antenna) will encounter. The items used for this calculation include but are not limited to:
  - 30.2.9 Test vehicle system antenna gain
  - 30.2.10 In-building penetration (>15 dB) to commercial buildings within the metro area
  - 30.2.11 Residential in-building penetration (>8dB) throughout County
  - 30.2.12 Body loss
  - 30.2.13 Portable antenna loss
  - 30.2.14 Fading margin

### 30.3 *Voice Coverage Testing Indoors*

- 30.3.1 Indoor testing will be completed indoors at no more than 100 locations



throughout the County. See Appendix 6,

- 30.3.2 Tests are limited to above ground floors for scoring purposes. The number of tests increase based on the size of the building. If more than 50% of the locations are good, the building passes.
- 30.3.3 Testing will be completed with actual voice testing and using a DAQ measurement scheme. Text to be used will be negotiated though it will be random.
- 30.3.4 TSB-88C makes the following recommendations for in-building tests.
- 30.3.5 Residential building (single/2 story family) Single test in center of ground floor.
- 30.3.6 Small commercial building (single story, open floor plan). Five test locations, one in each corner and one in center.
- 30.3.7 Testing will be completed by a three-person dispatch team and one or more three persons field teams consisting of at least one person from Jefferson County agencies using radios, and one representative of the radio system successful bidder and the County's consultant providing verification.
- 30.3.8 One or more field teams will be organized for these tests. Final details will be worked out between the radio system successful bidder and the County.
- 30.3.9 The team will go to the buildings and areas identified. A random location within 20 feet of the entrance inside the building will be chosen by the team with up to five attempts within each building whereby at least 50% of the locations pass a DAQ 3.4 test routine.
- 30.3.10 Each test location shall be a minimum of 6 paces apart.
- 30.3.11 If multiple floors, then each above the ground floor will be tested
- 30.3.12 Any desired testing below ground level floor will be conducted for information-only
- 30.3.13 Suggested Testing Protocol:
  - 30.3.13.1 One of the County personnel will operate the radio and the other will document the results of the tests. These roles shall be reversed one or more times during the testing activity but not at any single location.
  - 30.3.13.2 When arriving at a location, an RSSI level is taken on the street and documented.
  - 30.3.13.3 Depending on the building or location, the number of tests to be done at each will be determined in advance. A large building may require several test areas.
  - 30.3.13.4 Teams will initiate contact with the dispatcher and receive a response.
  - 30.3.13.5 Starting with the field, the field team and the dispatcher will transmit messages using a random selection of scripts.
  - 30.3.13.6 Representatives of each team will provide subject input on the understandability of the message received.
  - 30.3.13.7 Opinions will be documented by the team for each transmission

at each location.

- 30.3.13.8 Any majority of positive opinions passes.
- 30.3.13.9 If two or more persons are not able to understand, a second transmission will be attempted at any point within 20 feet of the original transmission. If successful, the area passes, and the team moves to the next area.
- 30.3.13.10 If a third transmission is required, another point for transmission is chosen and a new test made. The results of the test are documented, and the team moves to the next area.
- 30.3.14 Copies of the data will be made and distributed to the County, radio system successful bidder and the consultant.
- 30.3.15 All data will be entered by the radio system successful bidder into a spreadsheet.
- 30.3.16 Any area/location for which the difference in outdoor and indoor RSSI reading is found to exceed the indoor attenuation level (8 or 15 dB associated loss) will be identified in a report of the findings. These buildings will be removed from the list and thus not be calculated into the results of the test.
- 30.3.17 The radio system successful bidder will provide a report of the indoor testing indicating an estimate of the recommended solution for improving coverage in these areas and these buildings.

#### **30.4 *Paging System Coverage Testing***

- 30.4.1 The bidder will provide the anticipated signal levels, RSSI for the analog paging system, as criteria for testing based on their system design in their response.
- 30.4.2 A formula and a sample calculation shall be provided for the signal level at the antenna of the test vehicle that will equate to a minimum pager signal level.
- 30.4.3 The bidder will measure and document the outdoor signal measurements using 8dB building penetration employing the losses and the associated RSSI for each test to document portable coverage.
- 30.4.4 The drive test report will include maps which depict the RSSI level for the paging system measured during drive testing. The drive test report will provide the percentage of area that meets the minimum criteria for paging operation.

#### **30.5 *Remedy for Failed Coverage***

- 30.5.1 After final drive testing, if the coverage does not meet or exceed the specified and predicted coverage, the bidder shall provide all remedies to meet the specified coverage at the radio system successful bidder's cost.
- 30.5.2 Indoor building audio testing, if the coverage does not meet or exceed the specified and predicted coverage, the bidder shall provide all remedies to meet the specified coverage at the radio system successful bidder's cost.

**END OF SECTION**

## 31 Preliminary Acceptance

### 31.1 *Preliminary Acceptance of New System*

The following steps are required to be completed by the radio system successful bidder to obtain preliminary acceptance of the new systems:

- 31.1.1 All site equipment and user equipment will be inventoried against the purchase orders with model and serial numbers of equipment supplied in an electronic searchable list supplied by the radio system successful bidder.
- 31.1.2 All equipment must be installed per the plan designs and specifications.
- 31.1.3 Inspection of all system equipment, and inspection of the installation of all system equipment shall have been completed.
- 31.1.4 Coverage Testing successfully completed and results accepted by County.
- 31.1.5 Acceptance testing may proceed while punch list items are being cleared if those punch list items do not prevent any of the tests from taking place.
- 31.1.6 Exceptions include code/safety violations, grounding issues and improper antenna mounting which shall be completed properly before any further acceptance verifications continue.
- 31.1.7 The punch list of items must be cleared before the inspection is designated complete and equipment is accepted.

### 31.2 *30-Day System Test*

- 31.2.1 A 30-day system reliability period will begin upon completion of system functional testing and will be a functional test for voice and paging systems.
- 31.2.2 If a system should fail during the 30-day testing period, the severity of the failure will be determined per the following:
  - 31.2.2.1 Minor – Any failure that does not impact coverage or capacity no more than 25%. The 30-day clock will continue assuming the failure is fixed, and the operator can resume normal functionality within 24 hours.
  - 31.2.2.2 Major – Any failure that impacts coverage or capacity no more than 50%. The 30-day clock will stop and not restart until the fix is complete and the entire radio system is back to normal operation.
  - 31.2.2.3 Catastrophic – Any failure that requires backup procedures and equipment to be activated for operation. The 30-day clock will start over once the failure has been fixed and the entire radio system is back to normal operation.
- 31.2.3 All failures must be logged and follow up by the radio system successful bidder will provide a written report as to how each failure was returned to normal operation.
- 31.2.4 The failure log will be reviewed before moving on the next step, that of full cutover of all system users.
- 31.2.5 At the successful conclusion of each 30-day test that system will be considered conditionally accepted and the warranty period will begin.

**END OF SECTION**

## 32 Migration to Proposed New Systems

### 32.1 *Radio System Plan*

- 32.1.1 The bidder shall develop and present a summary plan for migration to the planned radio system that specifically addresses how the migration will affect users based on the frequency plan offered.
- 32.1.2 The radio system successful bidder shall expand upon the migration plan offered in the proposal and in detail create a step by step approach for the migration specifically describing how interoperability will be established with the operating radio system. The plan goal would be to eliminate or minimize any communication issues and balance the process of moving agencies to the new system.

### 32.2 *Paging System Plan*

- 32.2.1 The bidder shall develop and present a summary plan for migration to the planned paging system upgrade and specifically address how the migration will affect users based on the frequency plan and solution offered.
- 32.2.2 The radio system successful bidder shall expand upon the migration plan offered in the proposal and in detail create a step by step approach for the migration specifically describing how interoperability will be established with the present paging system until plan is complete.

**END OF SECTION**

### 33 RF Specifications for Infrastructure Design

#### 33.1 *General*

- 33.1.1 Jefferson County has 32 various agencies and departments that use subscriber radio equipment. Each agency will use their current P25 radios and /or select and purchase new radios for their end users.
- 33.1.2 Jefferson County agencies have approximately 875 portables, 375 mobiles and 69 control stations in use.
- 33.1.3 All field units will be programmed to operate on County frequencies, neighboring agency channels, State of Wisconsin channels, and National Calling and Federal Interoperability Channels as designated by Jefferson County to meet interoperability requirements.
- 33.1.4 Frequency and feature programming will be performed by each agency's radio system bidder using the programming requirements stated in the above section.
- 33.1.5 Prior to use on the new system each radio will be tested for approved programming and basic RF specifications.

#### 33.2 *User Equipment Specification Tests*

- 33.2.1 The intent of performing field unit tests is to ensure that defective radios and/or programming is not blamed on infrastructure operation. All radios used on the new infrastructure should meet or exceed the manufacturer's published specifications.
- 33.2.2 Bidders should submit their suggested plan for field unit testing of transmitter power output, receiver sensitivity, P25 capability, correct programming, etc. for all mobiles and portables to be used on Jefferson County radio systems.
- 33.2.3 Multiple sessions will be provided by the radio system successful bidder such that all agencies can get their radios approved.
- 33.2.4 The radio system contract will track approved radios by agency, model and serial number at a minimum and provide weekly updates to the County's project Manager. It is anticipated that agency's will request their refund via email to the County project manager once all radios from that agency have been approved.
- 33.2.5 Any radio failing a test will be returned to the owner for repair or reprogramming and no refund for testing will be paid to the agency once it successfully passes the testing.
- 33.2.6 The radio system successful bidder will provide a price for performing the above checks on each radio to ensure proper operation on the new system equipment using the unit counts referenced in section 33.1.2.

### 33.3 *Portable Subscriber Unit Minimum RF Specification*

VHF Band P25 Trunking Portable Radio
<ul style="list-style-type: none"> <li>• VHF – 136 MHz to 174 MHz (per FCC band plan)</li> <li>• 500 channels</li> <li>• <math>\pm 1.5</math> ppm Frequency Stability</li> <li>• RF Power Output <math>\geq 5</math> W</li> <li>• Conventional P25 Operation</li> <li>• Digital Sensitivity (TIA/EIA 102) for 5% BER <math>\leq -119</math> dBm</li> <li>• Intermodulation Rejection 75 dB</li> <li>• P25 Adjacent Channel Rejection 60 dB</li> <li>• Spurious and Image 80 dB</li> <li>• Spurious and Harmonics 75 dB</li> </ul>

### 33.4 *Mobile Subscriber Unit Minimum RF Specification*

VHF Band P25 Trunking Mobile Radio
<ul style="list-style-type: none"> <li>• VHF – 136 MHz to 174 MHz (per FCC band plan)</li> <li>• 500 channels</li> <li>• <math>\pm 1.5</math> ppm Frequency Stability</li> <li>• RF Power Output <math>\geq 15</math> to 50W</li> <li>• Conventional P25 Operation</li> <li>• Digital Sensitivity (TIA/EIA 102) for 5% BER <math>\leq -118</math> dBm</li> <li>• P25 Adjacent Channel Rejection 60 dB</li> <li>• Selectivity 70 dB (12.5 kHz)</li> <li>• Intermodulation 75 dB</li> <li>• Modulation 16K0F3E, 11K0F3E, 8K10F1D, 8K10F1E</li> </ul>

### 33.5 *New Control stations Standard P25 Phase 1&2 Capable*

- 33.5.1 The County has many fixed locations where control stations shall be employed.
- 33.5.2 Most control stations are anticipated to use the same model level mobile station radio used by that agency in the field.
- 33.5.3 Each dispatch position will have a control station that operate to provide backup communications in the event of console failure. These units are intended to be purchased as part of the infrastructure. Four control stations will be purchased.
- 33.5.4 An eight (8)-channel VHF control station combiner will be provided by the radio system successful bidder. The four backup dispatch position radios and three (3)



existing WISCOM radios will interconnect to the combining system. It is preferred that the combining system have one transmit and one receive antenna mounted on the roof of the building above the dispatch equipment room. Cables would run through an existing path to the roof.

- 33.5.5 RF sections of the control stations will not be in dispatch. It is desired that control heads at each position be used to control the radios. The RF equipment will be in the associated equipment room. The path from the dispatch equipment room to dispatch is about three hundred (300) feet. If a control head cannot operate the radio at this distance a dedicated remote-control system that will provide access to all of the County radio channels will be considered.
- 33.5.6 Dispatch control heads will be equipped with desktop microphones and external or internal speakers.
- 33.5.7 When capable dispatch control stations should function integrated into the console system but must also operate independent of the radio console equipment in the event of console failure.
- 33.5.8 RF specifications for dispatch control stations will be identical to the associated tier mobile unit.

### 33.6 ***Vehicular Repeater System***

- 33.6.1 No digital vehicular repeater systems (DVRS) are intended to be used in daily operations on the Jefferson County system. However; the County may consider operating a system in an EMA vehicle and portable unit configurations.
- 33.6.2 These two units are anticipated to be programmed on separate licensed frequency pairs for low power vehicular repeater operation (MO3).
- 33.6.3 Units will be programmed to operate locally in P25 conventional mode on a repeated conventional frequency pair and relay communications into the P25 Conventional system.
  - 33.6.3.1 Bidders should provide optional pricing for two configurations.
    - One standalone suitcase unit.
    - One vehicle unit.
  - 33.6.3.2 All antennas and required cabling for operation shall be included.
- 33.6.4 Specifications
  - 33.6.4.1 Duty Cycle – Continuous
  - 33.6.4.2 RF Connector – N-Type Female
  - 33.6.4.3 TX – Programmable 1-4W
  - 33.6.4.4 Maximum Spurious Output – -20dBm
  - 33.6.4.5 RX – Sensitivity -115 dBm
  - 33.6.4.6 Selectivity – 75dB
  - 33.6.4.7 Intermodulation – 70 dB
  - 33.6.4.8 Frequency Stability –  $\pm 1.5\text{ppm}$

- 33.6.4.9 Power – 13.8 VDC  $\pm$  20%, negative ground
- 33.6.4.10 Operating Temperature – -30°C to +60°C
- 33.6.4.11 Storage Temperature – -40°C to +85°C
- 33.6.4.12 Water and Dust Intrusion – IP54

## **END OF SECTION**

## 34 Documentation Requirements

### 34.1 *Preliminary System Design Documentation*

A preliminary system design document shall be produced for the County prior to acceptance of the design which shall serve as the first system document.

This preliminary document shall include:

- 34.1.1 A global list of major elements of the proposed system with model/manufacturer, quantities
- 34.1.2 Planned location of elements
- 34.1.3 Block diagrams
- 34.1.4 Coverage expectations
- 34.1.5 Preliminary microwave paths
- 34.1.6 How design is expected to meet County requirements
- 34.1.7 Preliminary schedule.

### 34.2 *Detailed Design Documentation*

Upon successful verification of preliminary system designs and agreement of details with the County and the County's consultant, an award of a project contract will be made and followed by the producing of a detail design document by the radio system successful bidder and supplied for the approval by the County. The updated set of documents with drawings are expected to be utilized for construction of the system.

- 34.2.1 The radio system successful bidder shall provide a detailed parts list of all components/  
sub-systems including radio system, microwave system, alarm system, and DC power system.
- 34.2.2 Detailed Design to be presented preliminary to the County with complete information to consultant for review and comment.
- 34.2.3 Detailed Design to be presented in a face to face meeting at the County with a Power Point and handouts such as to inform County of intended plan of action moving forward.
- 34.2.4 This information as supplied will be utilized by County consultants and engineers to develop/modify sites to meet requirements.
- 34.2.5 All supplied documentation will be memorialized in the resulting change order at this step in the process.

### 34.3 *Factory Acceptance Testing Documentation*

Prior to shipment from the factory, all radio system major system components shall be assembled and interconnected to allow for a complete test of the system. A routine shall be completed and offered to the County and their consultant prior to the test that outlines the planned tests to be completed.

- 34.3.1 The radio system successful bidder shall supply a document describing the results of the certification testing and validation of proper operation.
- 34.3.2 At the successful completion of the factory testing, it is understood the County

will be expected to complete a sign-off of this phase and the system will then be shipped to an assigned holding area for installation.

#### **34.4 Coverage Testing Documentation**

A coverage test setup and documentation package shall be created to provide and approve the drive test and building coverage test setups and measured results required to verify the coverage requirements of the new systems.

- 34.4.1 The radio system successful bidder shall supply a document describing the specific detailed setup of the testing equipment proving a simulation of the required radio operation being tested.
- 34.4.2 The radio system successful bidder shall supply documentation detailing the results of coverage drive testing.
- 34.4.3 The radio system successful bidder shall supply documentation detailing the setup and results of the building voice testing processes.
- 34.4.4 The drive test report will include maps which depict the BER % for portable operation for the new system measured during drive testing. The drive test report will provide the percentage of area that meets the minimum criteria for each coverage boundary area.

#### **34.5 Final Documentation**

A final documentation package shall be provided in electronic form and complete sets of bound copies for the system. Any modifications to the standard equipment shall be fully documented with descriptions and drawings.

- The radio system successful bidder shall develop a quick reference guide covering normal system and user equipment operation and basic troubleshooting procedures including the operation of the management terminal if one is offered.
- The radio system successful bidder shall compile a set of as-built drawings showing all equipment interconnections and test results of audio circuits, RF circuits, antenna system reflected and forward power.
- All construction drawings for all sites shall have their red lines incorporated into the final drawings as a part of the documentation.
- All test results of audio circuits, RF circuits, power, alarms and antenna systems.
- A summary of all login and passwords shall be supplied for all system equipment.
- A complete list of all software licenses, dates of renewal and ownership.
- Microwave path studies.
- RF Exposure Calculations
- Rack layouts and equipment locations.
- DC Power system design and implementation drawings.

- A complete list/drawing of all equipment showing network switches and routers with their port's assignments and associated IP addresses (where appropriate).
- An updated coverage projection of final design network and test results of drive test.
- Documentation of spare parts and where they are stored.
- A completed inventory of all provided equipment with model and serial numbers shall be offered both on paper and electronically in an Excel spreadsheet.
- Copy of all sign-off documents.
- Final updated fleet mapping and subscriber radio channel assignments.

The entire final documentation set of materials shall be supplied as two paper sets, a memory stick and an electronic version for consultant review and approval.

**END OF SECTION**

### **35 Final System Acceptance**

Once all criteria above are met and items are completed, the project shall be designated as accepted by the County at which time all equipment warranty periods shall have begun.

**END OF SECTION**

## 36 Submittal and Signature Forms

### 36.1 *Proposal Forms*

**Experience:** List below a brief description of the organization submitting the Proposal's qualifications and experience. The description shall include: Company size, organization, legal status (corporation or partnership, etc.), major type of activity or areas of work, and its recent (past five years) experience in performing similar projects. Identify the individual(s) in your firm who are anticipated to be involved in key roles if your firm is selected and briefly explain that person's role and relevant background and experience.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



References: Provide at least five references of recent clients that have completed a similar project. The reference must include the name, telephone number, address, and email address of a person who may be contacted and who has direct knowledge of your firm's capabilities and past performance. Also include a brief description of the project, including the start and completion dates

1	Client						
	Address						
	Contact						
	Phone Number			Email			
	Project Dates	Start			End		
	Description						
2	Client						
	Address						
	Contact						
	Phone Number			Email			
	Project Dates	Start			End		
	Description						

3	Client						
	Address						
	Contact						
	Phone Number			Email			
	Project Dates	Start			End		
	Description						
4	Client						
	Address						
	Contact						
	Phone Number			Email			
	Project Dates	Start			End		
	Description						
5	Client						
	Address						
	Contact						
	Phone Number			Email			
	Project Dates	Start			End		
	Description						

### 36.2 *Non-Debarment Clause*

Radio system successful bidder hereby certifies that neither it nor any of its principal officers or officials has ever been suspended or debarred, for any reason whatsoever, from doing business or entering contractual relationships with any governmental entity. Radio system successful bidder further agrees and certifies that this clause shall be included in any subcontract of this contract.

### 36.3 *Statement of Compliance*

Radio system successful bidder has carefully reviewed Jefferson County's required contract language, as set forth in the Request for Proposal pertaining to termination of contract, change orders, gratuities and kickbacks, non-appropriation of funds, hold harmless/indemnification, ADA compliance, insurance requirements/proof of insurance, dispute resolutions, and non-debarment, and is in full compliance with all statements and requirements. This contract language is incorporated herein by specific reference as if set forth in full. Any statements set forth in this contract document that conflict with County's contract language are superseded by County's required contract language.

### 36.4 *Signature*

Proposal is to be signed only by persons authorized to enter into a contract with Jefferson County.

BIDDER TYPED NAME	COMPANY NAME
BIDDER'S SIGNATURE	DATE
COMPANY STREET ADDRESS	COMPANY CITY/STATE/ZIP

**36.5 County Purchased Items**

To: Jefferson County  
311 South Center Avenue, Room 111  
Jefferson, WI 53549

**County-Wide Radio System**

DATE: \_\_\_\_\_

County Purchased Items Submitted by:

Firm Name:

\_\_\_\_\_  
\_\_\_\_\_

**Instructions for List of County Purchased Items**

Following is the list of possible County Purchased Items where sales tax would not apply as these items could be purchased directly with County Purchase Orders.

The County Purchased Items and sales tax are to be included in the PROPOSED TOTAL PRICE. The cost of County Purchased Items and sales tax will be deducted from the Contract Sum later by Change Order.

The County will purchase these materials directly; therefore, sales tax will not apply and shall **not** be included in the values listed below.

This form listing the County Purchased Items must be submitted before County will issue notice to proceed.

The values listed below for the County-Purchased Items shall be the total cost to the County for the purchase of the materials, delivered to the project site. All other related costs shall be paid for by the radio system successful bidder and included in the Contract Sum, including costs for additional material required to complete the work.

Values listed below shall be the costs applicable to Base Bid Proposed Work or items offered only. The Awarded Bidder shall cooperate with the County in revising this list if Proposed Alternates are selected. Do not include any items for which the supplier is also the installer of the items.

The intent of the County-Direct Purchase Procedure is to reduce the total cost to the County. Bidders may utilize more or fewer County Purchased Items than those listed below if bidder determines that such arrangement will reduce the total cost to the County.

Description/Item Number	Supplier	Value w/o Tax
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
TOTAL OF ALL County PURCHASED ITEMS		\$
Note: Expand this section as required.		

## END OF SECTION

## **37 APPENDICIES**

## Appendix 1 Jefferson County Frequency List<sup>4</sup>

Call Sigr	Frequency	Station Class	USE	Units
KWH778	000045.20000000	FB	NOT IN USE	1
KWH778	000045.20000000	MO	NOT IN USE	3
KWH778	000045.28000000	FB	SIRENS	1
KWH778	000045.28000000	MO	SIRENS	33
KSB464	000045.28000000	FB	FORT ATKINSON, CITY OF	1
KSB464	000045.28000000	MO	FORT ATKINSON, CITY OF	30
KSB455	000150.80500000	MO	Sheriff	25
KSB455	000150.80500000	MO3	Sheriff	25
KSL792	000150.99500000	FB2	LAKE MILLS, CITY OF	1
KSL792	000150.99500000	MO	LAKE MILLS, CITY OF	30
KSB455	000151.28000000	FB2	MARC1 REPEATER	1
KSL792	000151.28000000	FB	LAKE MILLS, CITY OF	1
WQB793	000153.77000000	FX1	FIRE RPTR - Control Station TX	15
WQB793	000153.77000000	MO	FIRE RPTR - Mob/Port TX	250
WPXP979	000153.77000000	MO	City of Jefferson	60
WQB793	000153.83000000	MO	FIRE GROUND RED	250
WPXP979	000153.83000000	MO	City of Jefferson	60
KSB464	000153.87500000	MO	FORT ATKINSON, CITY OF	30
KSB464	000153.87500000	FX1	FORT ATKINSON, CITY OF	3
WNGN313	000154.05500000	FB	JEPAGE BASE - CEMETARY HILL JEFFERSON	1
WNGN313	000154.05500000	FB	JEPAGE BASE - 100 EDWARD ST FORT	1
WNGN313	000154.05500000	FB	JEPAGE BASE - 128 W MILWAUKEE ST FORT ATKINSON FD	1
WNGN313	000154.05500000	FB	JEPAGE BASE - IXONIA FD	1
WNGN313	000154.05500000	FB	JEPAGE BASE - WATERLOO FD	1
WNGN313	000154.05500000	FB	JEPAGE BASE - PALMYRA FD	1
WNGN313	000154.05500000	MO	JEPAGE TA	60
WQB793	000154.05500000	FB	JEPAGE BASE - WATERTOWN	1
WQPP691	000154.05500000	FB2	JEPAGE RPTR - JEFFERSON	1
WQPP691	000154.05500000	FB	JEPAGE BASE - N303 TOWER ROAD PALMYRA	1
WQPP691	000154.05500000	FB	JEPAGE BASE - 733 HERRON CT WATERLOO	1
WQPP691	000154.05500000	FB	JEPAGE BASE - ON HWY 26 FORT ATKINSON	1
WQPP691	000154.05500000	FB	JEPAGE BASE - IXONIA	1
WQPP691	000154.05500000	FB	JEPAGE BASE - JOHNSON CREEK	1
WQUW623	000154.05500000	FB	JEPAGE BASE - SULLIVAN	1
WQUW623	000154.05500000	FB	JEPAGE BASE - LAKE MILLS	1
WPXP979	000154.05500000	FB	City of Jefferson	1
WQJL889	000154.05500000	FB	LAKE MILLS EMS, INC.	1
WQB793	000154.23500000	MO	WAS OLD "FIRE TACT" CHANNEL & WATERTOWN FD CHANNEL	250
WQB793	000154.26500000	FB	IFERN	1
WPXP979	000154.26500000	FB	City of Jefferson	1
WQB793	000154.29500000	MO	NOW FG-BLUE (PART OF STATE MUTUAL AID PLAN)	250

<sup>4</sup> 154.235 is now used/licensed by Ixonia Fire/EMS



Call Sigr.	Frequency	Station Class	USE	Units
WPXP979	000154.29500000	FB	City of Jefferson	1
WPXP979	000154.29500000	MO	City of Jefferson	60
WQB793	000154.37000000	FB2	FIRE - Fire Repeater TX - Jefferson	1
WQB793	000154.37000000	MO	FIRE - Fire2 Mob/Port TA	250
WQB793	000154.37000000	FB2	FIRE - Fire Repeater TX - Watertown	1
WPXP979	000154.37000000	FB	City of Jefferson	1
WPXP979	000154.37000000	MO	City of Jefferson	60
WQB793	000154.41500000	MO	FIRE3 - Countywide Fireground	250
WPXP979	000154.41500000	FB	City of Jefferson	1
WPXP979	000154.41500000	MO	City of Jefferson	60
KSL792	000154.41500000	FB	LAKE MILLS, CITY OF	1
KSL792	000154.41500000	MO	LAKE MILLS, CITY OF	30
KSB455	000154.86000000	FB2	LAW1 Repeater	1
KSB455	000154.86000000	MO	LAW2 TA	100
KRT680	000154.86000000	MO	WATERLOO, CITY OF	12
KRT680	000154.86000000	FB	WATERLOO, CITY OF	1
KSB464	000154.86000000	FB	FORT ATKINSON, CITY OF	1
KSB464	000154.86000000	MO	FORT ATKINSON, CITY OF	30
KSL792	000154.86000000	FB	LAKE MILLS, CITY OF	1
KSL792	000154.86000000	MO	LAKE MILLS, CITY OF	30
KSB464	000155.01000000	FB2	FORT ATKINSON, CITY OF	1
KSB464	000155.01000000	MO	FORT ATKINSON, CITY OF	60
KSL792	000155.10000000	FB	LAKE MILLS, CITY OF	1
KSL792	000155.10000000	MO	LAKE MILLS, CITY OF	30
KWH778	000155.14500000	FB	LAW3	1
KWH778	000155.14500000	MO	LAW3	30
KSB464	000155.14500000	FB	FORT ATKINSON, CITY OF	1
KSB464	000155.14500000	MO	FORT ATKINSON, CITY OF	30
KSL792	000155.14500000	FB	LAKE MILLS, CITY OF	1
KSL792	000155.14500000	MO	LAKE MILLS, CITY OF	30
KSB455	000155.37000000	FB	Point to Point	1
KSB455	000155.37000000	MO	Point to Point	100
KSB464	000155.37000000	FB	FORT ATKINSON, CITY OF	1
KSL792	000155.37000000	FB	LAKE MILLS, CITY OF	1
KSL792	000155.37000000	MO	LAKE MILLS, CITY OF	30
KSB455	000155.47500000	FB	VLA31	1
KSB455	000155.47500000	MO	VLA31	100
KRT680	000155.47500000	MO	WATERLOO, CITY OF	12
KSB464	000155.47500000	MO	FORT ATKINSON, CITY OF	30
KSL792	000155.47500000	MO	LAKE MILLS, CITY OF	30
KSB455	000155.55000000	FB2	JAIL	1
KSB455	000155.77500000	FB2	Law - EMCOM1 Repeater TX	1
KSB455	000155.77500000	FB2	Law - Backup EMCOM1 Repeater TX	1
KSB455	000155.77500000	MO	Law - EMCOM2 Mob/Port TA	250
KSL792	000155.96250000	FB	LAKE MILLS, CITY OF	1
KSL792	000155.96250000	MO	LAKE MILLS, CITY OF	30
KSL792	000156.18750000	MO	LAKE MILLS, CITY OF	30
KSB390	000156.24000000	MO	JEHWY TA	90
KSB390	000156.24000000	FB2	JEHWY REPEATER	1
KSB455	000158.79000000	FX1	Law - EMCOM1 RPTR Control Station TX	5
KSB455	000158.79000000	MO	Law - EMCOM1 RPTR Mob/Port TX	250
KSB455	000158.91000000	FX1	LAW1	1
KSB455	000158.91000000	MO	LAW1	100
KRT680	000158.91000000	MO	WATERLOO, CITY OF	12

Call Sigr.	Frequency	Station Class	USE	Units
KSB464	<a href="#">000158.91000000</a>	MO	FORT ATKINSON, CITY OF	30
KSL792	<a href="#">000158.91000000</a>	MO	LAKE MILLS, CITY OF	30
KSL792	<a href="#">000158.91000000</a>	FX1	LAKE MILLS, CITY OF	1
KSB390	<a href="#">000158.98500000</a>	MO	JEHWY	90
WQPP691	<a href="#">000159.15000000</a>	MO	JEPAGE	10
KSB464	<a href="#">000159.15000000</a>	MO	FORT ATKINSON, CITY OF	15
KSB464	<a href="#">000159.15000000</a>	FXO	FORT ATKINSON, CITY OF	1
KSB464	<a href="#">000159.15000000</a>	FB	FORT ATKINSON, CITY OF	1
KSB464	<a href="#">000159.15000000</a>	FB	FORT ATKINSON, CITY OF	1
KSB455	<a href="#">000159.21000000</a>	MO	INPUT TO JAIL REPEATER	100
KWH778	<a href="#">000453.82500000</a>	FB2	COURTHOUSE MAINTENANCE REPEATER -OUT	1
KWH778	<a href="#">000453.82500000</a>	MO	COURTHOUSE MAINTENANCE REPEATER -OUT	10
KWH778	<a href="#">000458.82500000</a>	MO	COURTHOUSE MAINTENANCE REPEATER -INPUT	10
WQYF550	<a href="#">000769.05625000</a>	MOI	National/Itinerant	50
WQYF550	<a href="#">000769.06875000</a>	MOI	National/Itinerant	50
WQYF550	<a href="#">000774.99375000</a>	MOI	National/Itinerant	50
WQYF550	<a href="#">000799.05625000</a>	MOI	National/Itinerant	50
WQYF550	<a href="#">000804.99375000</a>	MOI	National/Itinerant	50

**Appendix 2     Pricing Matrix**

A price matrix is included with this RFP as a separate file in MS Excel format. *Bidders must include this completed pricing matrix in MS Excel format as part of their final proposals.* Alternative methods of the pricing format may also be included; however, they would supplement and not replace the required pricing matrix. Failure to provide the completed pricing matrix will result in a deduction of points.

**Appendix 3    Delivered Audio Quality (DAQ)**

DAQ Delivered Audio Quality	Subjective Performance Description
1	Unusable; speech present but unreadable.
2	Understandable with considerable effort. Frequent repetition due to noise/distortion.
3	Speech understandable with slight effort. Occasional repetition due to noise/distortion.
3.4	Speech understandable with repetition only rarely required. Some noise/distortion.
4	Speech easily understood. Occasional noise/distortion.
4.5	Speech easily understood. Infrequent noise/distortion.
5	Speech easily understood.

## Appendix 4 Adjacent County and Regional Channels Interoperability with Other Public Safety Communications Systems

Interoperability solutions that anticipate the need for in-county departments to interoperate with surrounding counties operating on 700/800 & VHF shall be anticipated and proposed.

The table below represents regional communications channels that may be used or monitored by Jefferson County units.

State Interoperability Plan								
VHF Plan								
Frequency	Input	License	Type	Tone	Alpha Tag	Description	Mode	Tag
155.37000		KA6570	M	146.2 PL	POINT	Point to Point	FMN	Interop
151.28000	153.84500	WNP812	M	136.5 PL	MARC1	MARC1	FMN	Interop
151.28000		WNP812	M	136.5 PL	MARC2	MARC2	FMN	Interop
154.01000		KO2099	M	71.9 PL	MARC3	MARC3	FMN	Interop
154.13000		KO2099	M	82.5 PL	MARC4	MARC4	FMN	Interop
156.00000		KGT483	M	136.5 PL	WEM CAR	WEM Car to Car	FMN	Interop
155.40000		KH4762	M		EMS A	EMS A	FMN	Interop
155.34000		KH4762	M		EMS B	EMS B	FMN	Interop
155.28000		KH4762	M	156 DPL	EMS C	EMS C	FMN	Interop
154.26500		KO2099	M	210.7 PL	IFERN	IFERN - MABAS Paging/Dispatch	FMN	Interop
153.83000		KO2099	M	69.3 PL	FG RED	Fireground Red	FMN	Interop
154.28000		KO2099	M	74.4 PL	FG WHITE	Fireground White	FMN	Interop
154.29500		KO2099	M	85.4 PL	FG BLUE	Fireground Blue	FMN	Interop
153.83750		KO2099	M	91.5 PL	FG GOLD	Fireground Gold	FMN	Interop
154.27250		KO2099	M	94.8 PL	FG BLACK	Fireground Black	FMN	Interop
154.28750		KO2099	M	136.5 PL	FG GRAY	Fireground Gray	FMN	Interop
154.30250		KO2099	M	67.0 PL	IFERN2	IFERN2 - Alternate MABAS Paging/Dispatch	FMN	Interop
151.13750		KO2099	M	293 NAC	VTAC11DG	WI VHF Tactical 11 (P25)	P25	Interop
154.45250		KO2099	M	293 NAC	VTAC12DG	WI VHF Tactical 12 (P25)	P25	Interop
158.73750		KO2099	M	293 NAC	VTAC13DG	WI VHF Tactical 13 (P25)	P25	Interop
159.47250		KO2099	M	293 NAC	VTAC14DG	WI VHF Tactical 14 (P25)	P25	Interop
151.13750	159.47250	KO2099	M	293 NAC	VTAC36DG	WI VHF Tac Repeater 36 (P25)	P25	Interop
800 MHz Plan								
Frequency	Input	License	Type	Tone	Alpha Tag	Description	Mode	Tag
851.45000		WQJX638	M	156.7 PL	8TACRED	8TACRED - WI 800 Red	FM	Interop
851.95000		WQJX638	M	156.7 PL	8TACWHITE	8TACWHITE - WI 800 White	FM	Interop
852.45000		WQJX638	M	156.7 PL	8TACBLUE	8TACBLUE - WI 800 Blue	FM	Interop
852.95000		WQJX638	M	156.7 PL	8TACGOLD	8TACGOLD - WI 800 Gold	FM	Interop
853.45000		WQJX638	M	156.7 PL	8TACBLACK	8TACBLACK - WI 800 Black	FM	Interop
853.95000		WQJX638	M	156.7 PL	8TACGRAY	8TACGRAY - WI 800 Gray	FM	Interop

The tables below represent National Mutual Aid channels that may be used or monitored by Jefferson County units. VHF Incident Response (IR) Federal Interoperability Channels pg 33-37 of NIFOG v1.6.1 <https://www.hsd1.org/?view&did=796668>

Non-Federal VHF National Interoperability Channels				
VHF High Band				
Description	Channel Name	Mobile Receive Freq.	Mobile Transmit Freq.	CTCSS Tone
Calling	VCALL10	155.7525	155.7525	CSQ / 156.7 (5A) ±
Tactical	VTAC11 *	151.1375	151.1375	CSQ / 156.7 (5A) ±
Tactical	VTAC12 *	154.4525	154.4525	CSQ / 156.7 (5A) ±
Tactical	VTAC13	158.7375	158.7375	CSQ / 156.7 (5A) ±
Tactical	VTAC14	159.4725	159.4725	CSQ / 156.7 (5A) ±
Tac Rpt	VTAC33 * *	159.4725	151.1375	CSQ / 136.5 (4Z)
Tac Rpt	VTAC34 * *	158.7375	154.4525	CSQ / 136.5 (4Z)
Tac Rpt	VTAC35 *	159.4725	158.7375	CSQ / 136.5 (4Z)
Tac Rpt	VTAC36 * *	151.1375	159.4725	CSQ / 136.5 (4Z)
Tac Rpt	VTAC37 * *	154.4525	158.7375	CSQ / 136.5 (4Z)
Tac Rpt	VTAC38 *	158.7375	159.4725	CSQ / 136.5 (4Z)

\*VTAC11-12, VTAC33-34, and VTAC36-37 may not be used in Puerto Rico or the USVI.  
±Default operation should be carrier squelch receive, CTCSS transmit. If the user can enable/disable without re-programming the radio, the indicated CTCSS tone also could be programmed for receive, and the user instructed how and when to enable/disable.  
• VTAC33-38 recommended for deployable tactical repeater use only (FCC Station Class FB2T).  
• VTAC36-38 are preferred; VTAC33-35 should be used only when necessary due to interference.  
Only narrowband emissions are authorized.

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VHF Public Safety Mutual Aid and Common Channels				
Frequency (MHz)	Usage	Wideband ID	Narrowband ID	Note
155.1600	Search and Rescue Common	SAR WFM	SAR NFM	Not designated by FCC; availability varies.
154.2650 mobile	Fire Mutual Aid	VFIRE22W	VFIRE22	Not available in Puerto Rico and the U.S. Virgin Islands.
154.2725 *	Fire Mutual Aid		VFIRE24	
154.2800 base/mobile	Fire Mutual Aid	VFIRE21W	VFIRE21	
154.2875			VFIRE25	
154.2950 mobile	Fire Mutual Aid	VFIRE23W	VFIRE23	
154.3025			VFIRE26	
155.3400 base/mobile	EMS Mutual Aid	VMED28W	VMED28	May be designated for EMS Mutual Aid.
155.3475			VMED29	May be designated for EMS Mutual Aid.
155.4750 base/mobile	Law Enforcement Mutual Aid	VLAW31W	VLAW31	
155.4825	Law Enforcement Mutual Aid		VLAW32	

Rules for use of these channels are contained in 47 CFR 90.20 and NTIA Manual Section 4.3.11 & 7.3.6.  
See also "Non-Federal VHF National Interoperability Channels" and "Non-Federal VHF Inland Interoperability Channels" on page 26 - 28 of this document.

All 700 MHz National Mutual Aid Channels, page 43-50 of NIFOG v1.6.1

Non-Federal 800 MHz National Mutual Aid Repeater Channels			
Description	Ch. Name	Mobile RX (MHz)*	Mobile TX (MHz)*
Calling	8CALL90	851.0125 (866.0125)	806.0125 (821.0125)
Calling – Direct	8CALL90D	851.0125 (866.0125)	851.0125 (866.0125)
Tactical	8TAC91	851.5125 (866.5125)	806.5125 (821.5125)
Tactical – Direct	8TAC91D	851.5125 (866.5125)	851.5125 (866.5125)
Tactical	8TAC92	852.0125 (867.0125)	807.0125 (822.0125)
Tactical – Direct	8TAC92D	852.0125 (867.0125)	852.0125 (867.0125)
Tactical	8TAC93	852.5125 (867.5125)	807.5125 (822.5125)
Tactical – Direct	8TAC93D	852.5125 (867.5125)	852.5125 (867.5125)
Tactical	8TAC94	853.0125 (868.0125)	808.0125 (823.0125)
Tactical – Direct	8TAC94D	853.0125 (868.0125)	853.0125 (868.0125)
<p>Default operation should be carrier squelch receive, CTCSS 156.7(5A) transmit. If the user can enable/disable CTCSS without reprogramming the radio, the indicated CTCSS tone could also be programmed for receive, and the user instructed how and when to enable/disable.</p> <p>*The frequency in parenthesis, which is 15 MHz higher, is the frequency used before rebanding - channel names were ICALL, ITAC1 - ITAC4. Wideband FM 20K0F3E before and after rebanding.</p>			



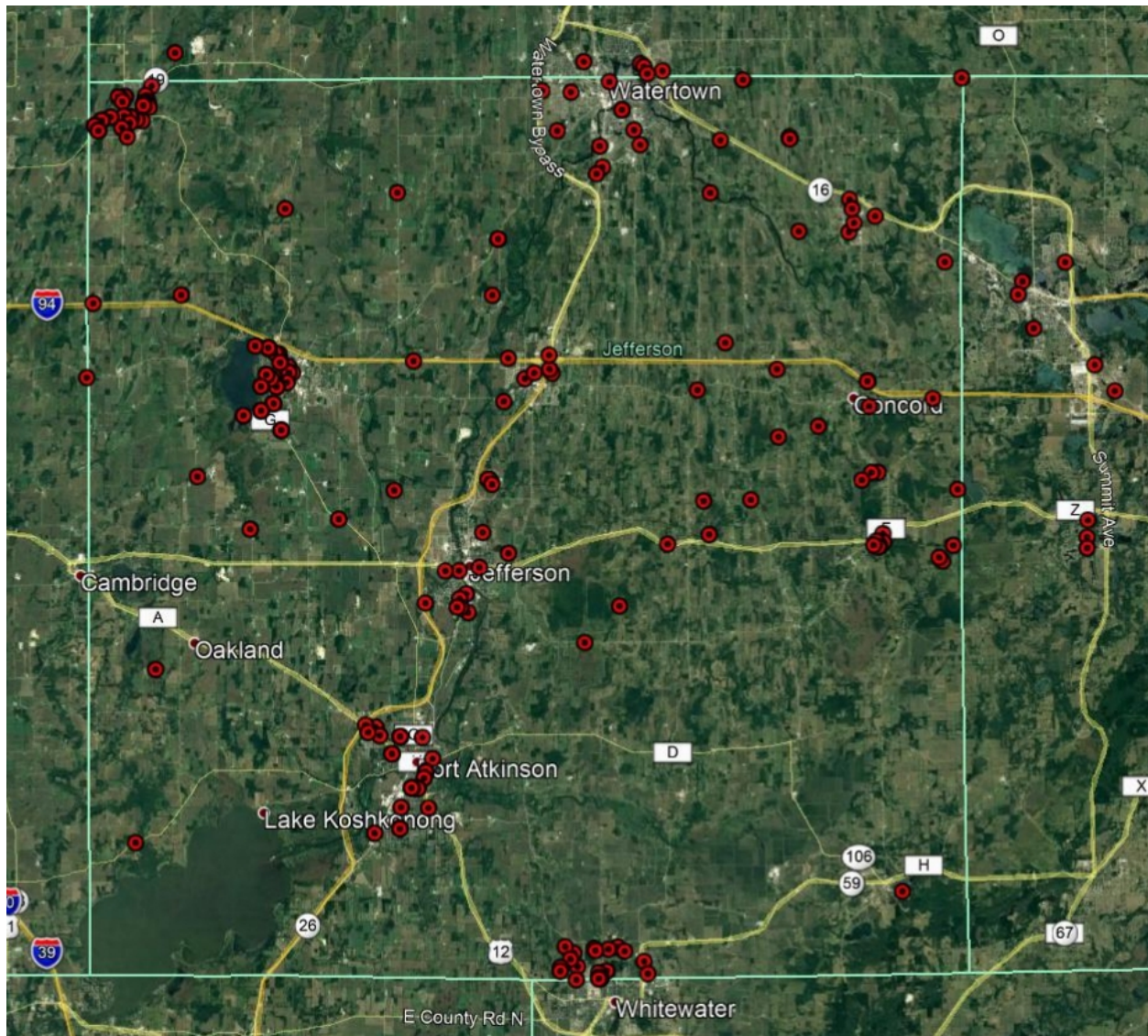
<b>700 MHz Interoperability Channels</b>				
FCC Channel (Subscriber Load)		Transmit and Receive Frequencies	Primary Use	Channel Name
Receive Ch.	Transmit Ch.			
23-24	983-984	799.14375	General	7TAC51
	23-24	769.14375	Public Safety	7TAC51D
39-40	999-1000	799.24375	Calling Channel	7CALL50
	39-40	769.24375		7CALL50D
63-64	1023-1024	799.39375	EMS	7MED65
	63-64	769.39375		7MED65D
79-80	1039-1040	799.49375	EMS	7MED66
	79-80	769.49375		7MED66D
103-104	1063-1064	799.64375	General	7TAC52
	103-104	769.64375	Public Safety	7TAC52D
119-120	1079-1080	799.74375	General	7TAC55
	119-120	769.74375	Public Safety	7TAC55D
143-144	1103-1104	799.89375	Fire	7FIRE63
	143-144	769.89375		7FIRE63D
159-160	1119-1120	799.99375	Fire	7FIRE64
	159-160	769.99375		7FIRE64D
183-184	1143-1144	800.14375	General	7TAC53
	183-184	770.14375	Public Safety	7TAC53D
199-200	1159-1160	800.24375	General	7TAC56
	199-200	770.24375	Public Safety	7TAC56D
223-224	1183-1184	800.39375	Law	7LAW61
	223-224	770.39375	Enforcement	7LAW61D

## Appendix 5 Estimated Inventory and Field Unit Distribution Summary

UNIT TYPE	Mobiles	Portables	Pagers	Control Bases
<b>TOTAL COUNT</b>	<b>363</b>	<b>658</b>	<b>580</b>	<b>54</b>
Fort Atkinson Fire Department	21	46	51	2
Fort Atkinson Police Department	10	35	0	2
Helenville Fire & Rescue	9	29	29	2
Ixonia DPW	3	0	0	0
Ixonia Fire & Rescue	31	52	68	2
City of Jefferson Police Department,	9	25	0	1
City of Jefferson EMS	12	35	65	1
City of Jefferson Fire Department	5	14	33	1
Jefferson County Health Department	2	0	0	0
Jefferson County Highway	80	10	0	1
Jefferson County Sheriff	66	124	0	20
Johnson Creek Fire-EMS	12	40	57	2
Johnson Creek Police Department	2	6	0	1
Lake Mills EMS	4	24	48	1
Lake Mills Fire Department	13	35	36	1
Lake Mills Police Department	5	16	0	1
Palmyra Public Safety	8	0	20	2
Rome Fire Department	6	29	36	1
Ryan Brothers Ambulance	22	10	23	1
Sullivan Fire	5	23	32	1
Waterloo Fire & Rescue	16	40	46	2
Waterloo DPW	7	6	0	1
Waterloo Police Department	3	9	0	6
Waterloo Utility	0	7	0	1
Watertown Fire Department	12	43	36	1

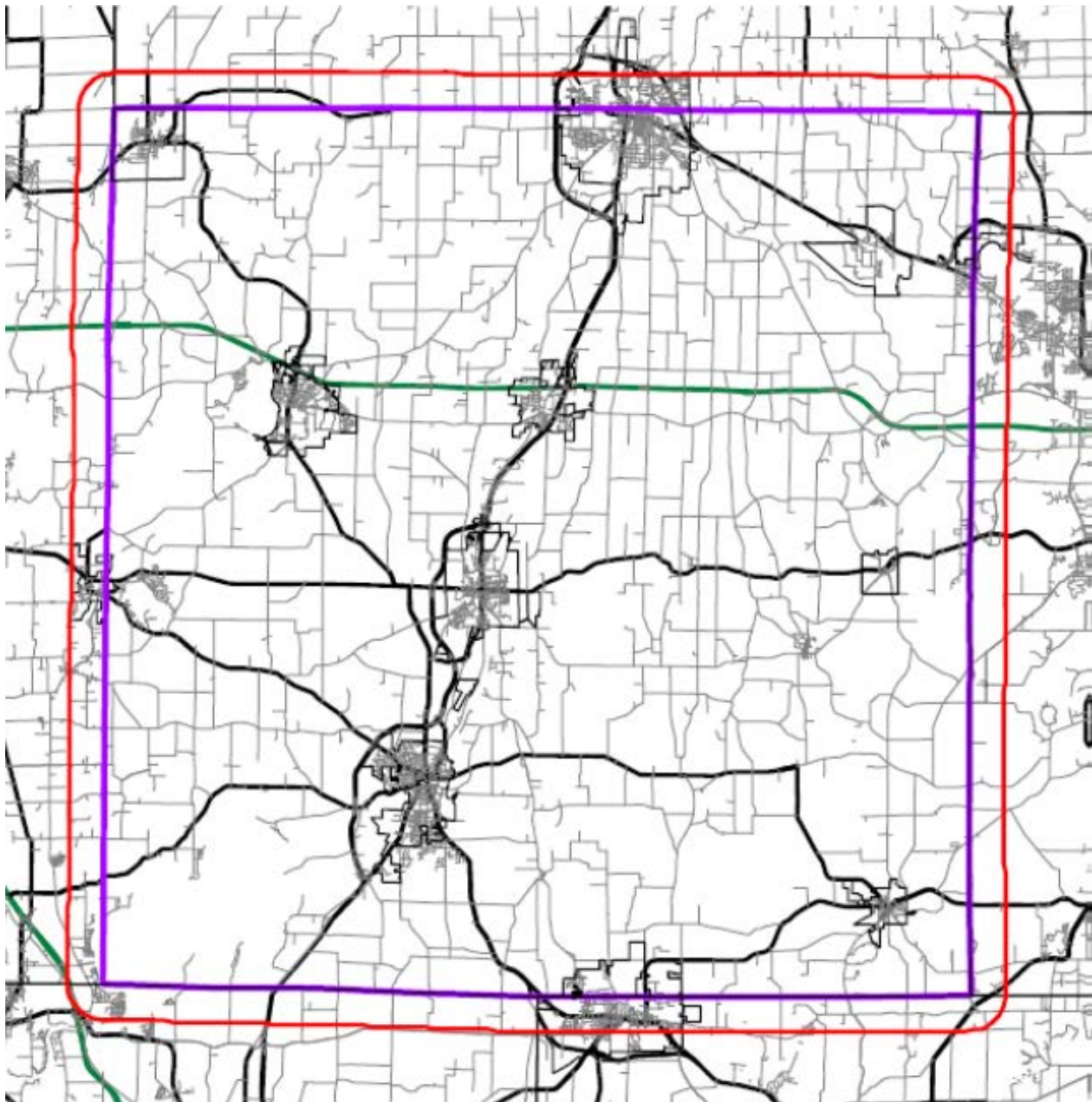
## Appendix 6 Building List for Voice Testing

The list of building locations for subjective testing is provided and accompanies the RFP document in an MS Excel Spreadsheet and a Google Earth kmz file. Below are the locations on Google Earth.





## Appendix 7 Jefferson County RF Border

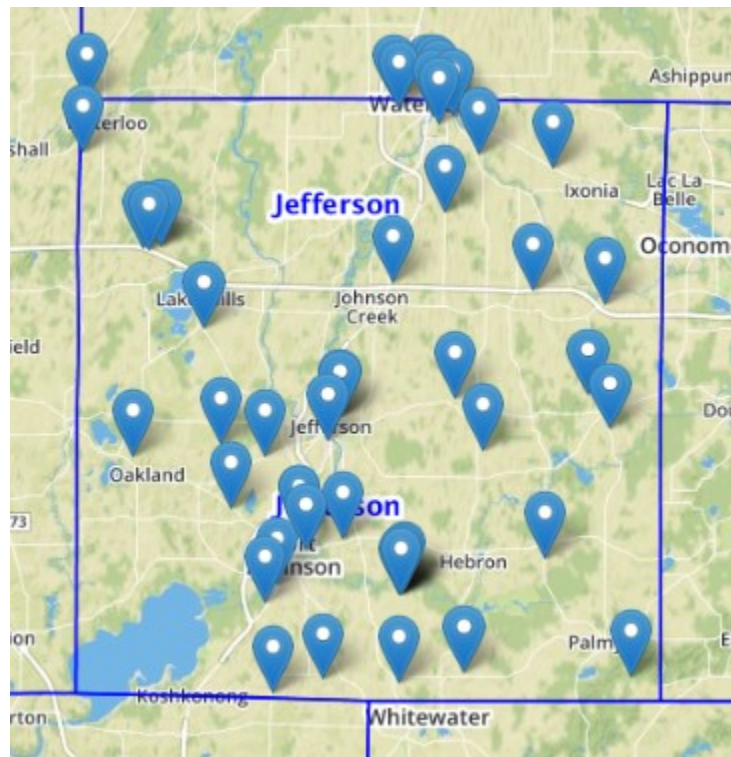


## Appendix 8 Jefferson County Tower Sites (ULS Database)

	Registration Number	Status	File Number	Owner Name	Latitude/Longitude	Structure City/State	AGL
1	<a href="#">1259341</a>	Constructed	A1125708	Cellco Partnership	42-59-48.8N 088-48-39.9W	Jefferson, WI	45.7
2	<a href="#">1035462</a>	Constructed	A0614452	NRG Media, LLC	42-54-26.0N 088-45-03.0W	COLD SPRING TOWNSHIP, WI	81.7
3	<a href="#">1035464</a>	Constructed	A0614454	NRG Media, LLC	42-54-19.0N 088-45-13.0W	COLD SPRING TOWNSHIP, WI	81.7
4	<a href="#">1035463</a>	Constructed	A0614453	NRG Media, LLC	42-54-22.0N 088-45-08.0W	COLD SPRING TOWNSHIP, WI	81.7
5	<a href="#">1035461</a>	Constructed	A0614451	NRG Media, LLC	42-54-29.0N 088-44-58.0W	COLD SPRING TOWNSHIP, WI	81.7
6	<a href="#">1035465</a>	Constructed	A0614455	NRG Media, LLC	42-54-20.0N 088-45-05.0W	COLD SPRING TOWNSHIP, WI	80.8
7	<a href="#">1232488</a>	Constructed	A0248569	Fort Atkinson Memorial Health Services	42-55-51.7N 088-49-40.6W	Fort Atkinson, WI	28.9
8	<a href="#">1050098</a>	Constructed	A1081429	WISCONSIN ELECTRIC POWER COMPANY	42-54-38.6N 088-51-04.8W	FORT ATKINSON, WI	60.7
9	<a href="#">1050096</a>	Constructed	A1081427	WISCONSIN ELECTRIC POWER COMPANY	43-11-14.0N 088-43-31.0W	WATERTOWN, WI	33.5
10	<a href="#">1219156</a>	Constructed	A0939965	SpectraSite Communications, LLC. through American Towers, LLC.	42-54-00.5N 088-51-40.1W	Fort Atkinson, WI	89.0
11	<a href="#">1229114</a>	Constructed	A1058355	UNITED STATES CELLULAR CORPORATION	42-56-28.5N 088-50-02.0W	Fort Atkinson, WI	45.7
12	<a href="#">1050107</a>	Constructed	A1081437	WISCONSIN ELECTRIC POWER COMPANY	43-10-54.0N 088-43-15.0W	WATERTOWN, WI	19.8
13	<a href="#">1257599</a>	Constructed	A0812809	SBA 2012 TC Assets, LLC	42-56-29.2N 088-50-02.0W	Fort Atkinson, WI	35.6
14	<a href="#">1220585</a>	Constructed	A0233846	City of Watertown	43-11-45.9N 088-43-25.7W	Watertown, WI	49.1
15	<a href="#">1035027</a>	Constructed	A1115772	Wisconsin Bell, Inc.	43-11-35.9N 088-43-15.1W	WATERTOWN, WI	39.0
16	<a href="#">1301486</a>	Constructed	A1090552	Diamond Towers IV LLC	42-51-11.8N 088-45-10.6W	Whitewater, WI	27.4
17	<a href="#">1050114</a>	Constructed	A1081444	WISCONSIN ELECTRIC POWER COMPANY	43-09-55.0N 088-41-21.0W	WATERTOWN, WI	30.5
18	<a href="#">1062004</a>	Constructed	A1092963	SBA Structures, LLC	43-04-37.8N 088-35-12.2W	Concord, WI	56.4
19	<a href="#">1041345</a>	Constructed	A0048726	WATERTOWN WATER COMMISSION	43-11-45.0N 088-43-50.0W	WATERTOWN, WI	46.9
20	<a href="#">1201277</a>	Constructed	A0835078	SBA Structures, LLC	43-09-25.3N 088-37-48.3W	Ixonia, WI	58.2
21	<a href="#">1222019</a>	Constructed	A1001141	InSite Towers Development, LLC	43-11-44.7N 088-45-25.6W	Watertown, WI	143.2
22	<a href="#">1208265</a>	Constructed	A0552143	SBA Towers II LLC	43-05-04.0N 088-38-42.7W	Johnson Creek, WI	63.7
23	<a href="#">1024638</a>	Constructed	A0029385	TSR WIRELESS LLC	42-56-18.0N 088-47-53.0W	FORT ATKINSON, WI	61.0

	Registration Number	Status	File Number	Owner Name	Latitude/Longitude	Structure City/State	AGL
24	<a href="#">1233524</a>	Constructed	A0835854	SBA Structures, LLC	42-51-32.6N 088-42-03.2W	WHITEWATER, WI	59.4
25	<a href="#">1217603</a>	Constructed	A1109753	MADISON SMSA TOWER HOLDINGS LLC	42-59-12.8N 088-51-44.0W	JEFFERSON, WI	57.6
26	<a href="#">1258735</a>	Constructed	A1125710	Cellco Partnership	42-57-23.0N 088-53-21.1W	Fort Atkinson, WI	55.2
27	<a href="#">1277544</a>	Constructed	A0756123	United States Cellular Corporation	43-03-41.9N 088-54-39.5W	Lake Mills, WI	47.2
28	<a href="#">1212670</a>	Constructed	A0194640	Jefferson County Sheriff's Department	43-00-36.0N 088-48-05.0W	Jefferson, WI	52.0
29	<a href="#">1249561</a>	Constructed	A0975426	UNITED STATES CELLULAR CORPORATION	43-00-11.1N 088-34-59.1W	Sullivan, WI	48.8
30	<a href="#">1234475</a>	Constructed	A1023082	T-Mobile USA Tower LLC	43-05-21.4N 088-45-28.9W	Watertown, WI	61.0
31	<a href="#">1226498</a>	Constructed	A0750045	T-Mobile Central LLC	43-11-14.6N 088-42-33.7W	Watertown, WI	39.3
32	<a href="#">1239957</a>	Constructed	A0342494	United States Cellular Corporation	42-59-24.9N 088-41-07.2W	Helenville, WI	58.5
33	<a href="#">1249980</a>	Constructed	A0837722	SBA Towers, LLC	43-00-38.7N 088-48-06.0W	Jefferson, WI	48.4
34	<a href="#">1047466</a>	Constructed	A0975427	UNITED STATES CELLULAR CORPORATION	42-55-34.0N 088-38-05.0W	PALMYRA, WI	59.4
35	<a href="#">1229718</a>	Constructed	A0297227	United States Cellular Corporation	43-09-59.3N 089-00-28.2W	Waterloo, WI	64.0
36	<a href="#">1034438</a>	Constructed	A1122481	American Towers LLC	43-07-51.2N 088-42-58.6W	WATERTOWN, WI	77.4
37	<a href="#">1200052</a>	Constructed	A1109754	MADISON SMSA TOWER HOLDINGS LLC	43-06-28.5N 088-57-17.0W	Lake Mills, WI	77.1
38	<a href="#">1248812</a>	Constructed	A0985186	Bertram Communications	43-11-30.0N 088-45-10.0W	Watertown, WI	21.3
39	<a href="#">1226578</a>	Constructed	A0688627	SBA Steel, LLC.	43-01-13.1N 088-42-30.2W	Helenville, WI	60.6
40	<a href="#">1034429</a>	Constructed	A1109776	MILWAUKEE SMSA TOWER HOLDINGS LLC	43-01-21.7N 088-36-01.6W	CONCORD, WI	61.6
41	<a href="#">1234301</a>	Constructed	A1091492	Global Tower, LLC. through American Towers, LLC	42-50-48.6N 088-51-16.7W	WHITEWATER, WI	128.0
42	<a href="#">1249220</a>	Constructed	A0454969	United States Cellular Corporation	42-59-11.0N 088-58-07.4W	Fort Atkinson, WI	60.7
43	<a href="#">1057070</a>	Constructed	A0820322	SpectraSite Communications, LLC. through American Towers, LLC.	43-06-33.4N 088-57-38.3W	LAKE MILLS, WI	82.3
44	<a href="#">1047468</a>	Constructed	A0843087	UNITED STATES CELLULAR CORPORATION	43-06-41.0N 088-56-44.0W	WATERLOO, WI	59.4
45	<a href="#">1225015</a>	Constructed	A0821001	SpectraSite Communications, LLC. through American Towers, LLC.	43-11-48.8N 089-00-20.6W	Waterloo, WI	81.7

	Registration Number	Status	File Number	Owner Name	Latitude/Longitude	Structure City/State	AGL
46	<a href="#">1034447</a>	Constructed	A1109756	MADISON SMSA TOWER HOLDINGS LLC	42-51-18.8N 088-48-53.4W	FORT ATKINSON, WI	86.3
47	<a href="#">1036144</a>	Constructed	A0922856	American Towers LLC	42-51-24.7N 088-33-57.3W	Eagle, WI	75.0
48	<a href="#">1042741</a>	Constructed	A1108311	Wisconsin Power and Light Company	42-59-36.7N 088-53-50.1W	Fort Atkinson, WI	96.0





## Appendix 9 Jefferson County GIS Tower Site Information Map

