



MONITEAU COUNTY EMERGENCY DISPATCH CALIFORNIA, MISSOURI

REQUEST FOR PROPOSAL

2018-01: VHF RADIO INFRASTRUCTURE

SUBMISSIONS SHALL BE ACCEPTED UNTIL

FRIDAY, OCTOBER 5TH at 3:30 p.m. Central

AND RECEIVED AT:

**MONITEAU COUNTY EMERGENCY DISPATCH
PO BOX 87 (MAIL)
104 E NORTH ST (PHYSICAL)
CALIFORNIA, MO 65018**

Company Name

Direct Contact Name (Typed/Printed)

Corporate Address

Title

Local Address

Email

Office Telephone Number

Direct Line or Extension

I hereby certify that I am submitting the following information on behalf of the above-listed company and understand that by virtue of executing and returning with this response this REQUIRED RESPONSE FORM, I further certify full, complete and unconditional acceptance of the terms and conditions of this solicitation, all attachments and the contents of any Addendum released hereto. (Submission must be signed by an officer or employee having authority to legally bind the respondent.)

Authorized Signature

Authorized Name (Typed/Printed)

Title

Date

Project Overview

Moniteau County Emergency Dispatch is seeking proposals from interested suppliers for a conventional, multi-site, 2 channel, simulcast repeated radio system. The selected supplier shall engineer, furnish, configure, install, and commission the radio system for the County of Moniteau. The proposed system shall comply with applicable public safety FCC regulations.

Demographic Overview

Moniteau County Emergency Dispatch, (MCED) is a Political Subdivision with operations centered in California, Missouri USA who provides public safety access and dispatch services for 15000 residents across 419 square miles of variance elevations of mostly rural and suburban terrain.

Existing Radio System

Presently MCED operates on a single site VHF analog repeater for law enforcement and a dual site, non-simulcasted or voted VHF repeater for fire. The fire system utilizes the same channel and is selectable via PL tone. The system has reached end-of-life as our coverage has been diminished with the advent of narrow banding.

New VHF Radio System

The new radio system will replace the law and fire repeaters, expanding coverage while not forcing personnel to select their closest site by changing their radio channel. The new system will improve reliability and operational costs by replacing the aging technology at the end of its life cycle. The system must be interconnected using a communication system that does not generate reoccurring usage fees. System shall use IP for its backhaul and to the greatest extent possible, commercial off the shelf computers, switches, and servers (COTS) for system management and control.

Goals and Scope of the Project

The goals of this RFP are to procure a VHF 3 site simulcast repeated radio system.

The new simulcast radio system is to:

- Provide the overall most cost-effective solution including both capital and ongoing operating and maintenance costs.
- Provide the equal or improved radio coverage of the territory w/ 95% service territory coverage at 95% expected availability for mobile radios mounted within a vehicle.
- Increase reliability, radio system availability while improving maintenance efficiency.
- Support required system and user features/applications/use cases and interfaces as further delineated subsequently herein
- Complete successful installation, deployment, commissioning, system tests, and migration to the new radio system

The scope of the system entails:

- Upgrading as required communication infrastructure at MCED located at 104 e north St California MO 65018.
- Determine most desirable location that will produce best VHF RF coverage.
 - Rental agreements must be presented to MCED Board of Directors for approval if incurred
- Procure and install necessary ancillary equipment including antenna and coaxial cable.

Supplier Responsibilities

Supplier shall engineer, furnish, configure, install, and commission the radio system. This includes providing of all site radio system equipment, antenna system equipment, and new antenna transmission feed lines and additional applicable ancillary equipment.

Project Management

Vendor shall provide a qualified project manager for the project. This person will have project management and telecommunication skill sets and provide comprehensive project management and coordination. MCED will also provide a project manager. Supplier shall anticipate that common project management tools, including the use of on-site meetings, scheduled conference calls, and meeting minutes.

System Description

This is a request for proposal to engineer, furnish, configure, install, and commission a multi-site, wide-area simulcast/voter radio system.

The radio system shall operate within a 12.5 KHz bandwidth in the 150 MHz frequency band and be designed to support voice communications. MCED has licensed several VHF MHz frequencies under FCC Part 90 rules. This spectrum will continue to be utilized through the system upgrade.

System Block Diagram

Supplier will provide a complete high-level block diagram for the entire proposed system showing the repeater sites, wide area controller(s) or local controllers as applicable, dispatch consoles, and any other major system components.

System Configurations

For maximum reliability, the proposed system shall be capable of being configured in a fully decentralized mode without the necessity for a centralized switch. This shall provide for local area communications without the requirement of providing back-haul to a centralized switch. All communications traffic shall be peer-to-peer/site-to-site. Loss of a site(s) or connectivity to a site(s) shall not degrade wide area communications amongst the remaining sites operating in decentralized configuration. Supplier shall specify any limitations to the number of sites/channels/groups/users which can be combined into a fully decentralized configuration.

To accommodate legacy back-haul networks, the system shall also be capable of being configured in a fully centralized mode of operations using a centralized switch. All inter-site traffic is routed through the centralized switch. Loss of a site(s) or connectivity to a site(s) shall not degrade wide area communications amongst the remaining sites operating in centralized configuration.

Repeater Site Locations

Site 1: California, Missouri
Site 2: Tipton, Missouri
Site 3: Jamestown, Missouri

Refer to attached copies of FCC Licenses for antenna heights and location information.

Supplier shall provide a block diagram of the space required and rack layouts for each repeater site configuration, showing all major components at the site and the quantity and type of communication circuits required to connect the site to the wide area controller. A block diagram and rack layout for each site IS NOT required. But, each site representative "configuration" e.g. 2 carrier, 3 carrier, 4 carrier, etc... shall be included in supplier's response.

If to achieve the 95% Mobile Coverage/95% Reliability, supplier shall recommend the deployment of additional sites The Supplier will list the number of antennas and antenna models proposed and the recommended transmit and receive antenna locations on the tower.

Simulcast

MCED prefers a simulcast option where control points are "soft" - defined by software versus hard points defined by hardware. The simulcast/voter system should not have a single point of failure that would result in an inoperable system. Supplier shall describe redundant features for synchronization and equalization of the sand for the voting process. The simulcast/voter system should have a small footprint and fit within a standard EIA 19" rack.

Provide a description of how the proposed simulcast/voter system operates, unique features, etc.

Additional RF System Options and Features

Moniteau County Emergency Dispatch has outlined the requirements for the Radio System herein. There may be additional software and hardware options and/or features the Supplier system incorporates that would provide additional value to help boost system performance, reduce the cost of ownership, and extend the useable life of the proposed system. For example, areas of interest are software defined radios that can support additional RF and system configurations without the requirement of additional hardware to support interoperability, system and coverage enhancements. Supplier shall state whether such options and/or features are included, available as options, and provide a description of how the option would be enabled and associated costs.

Radio Coverage Requirements and Testing

Mobile Radio Coverage

The system shall be designed for reliable communications with the use of mobile radio units as defined herein.

Coverage Guidance:

- Coverage predictions must be conducted in accordance with TIA TSB-88 latest version, to the greatest extent possible and the following TSB-88 definitions shall be used. All coverage testing will be performed in both analog and digital modes.
- The Service Area is the County of Moniteau Missouri service territory included on Attachment 1.
- The target device for two-way communications shall be mobile radios with a quarter wave whip antenna mounted on a vehicle.
- Basic network coverage shall be designed to accommodate vehicles traveling at speeds up to 70 MPH.
- Channel Performance Criteria (CPC), the minimum design performance in a faded channel, shall be a Delivered Audio Quality (DAQ) of DAQ3.0.
- Reliability Design Goal should be a service area probability of 75% Required Service Area Reliability CPC target shall be 75% of the Service Area
- Mobile radio talk-in and talk-out balance shall be designed to be within two dB.

Coverage Maps

Supplier shall include with their response coverage maps for their proposed system. Radio coverage shall be predicted through the use of an industry standard radio propagation model which takes into account terrain irregularity, foliage, urban clutter, noise and long and short-term signal variations.

RF Coverage Testing

RF coverage testing may be required at the MCED's discretion if the installed system is suspected of not meeting coverage requirements. An optional price for this coverage testing must be included as a separate line item in the bid submission. If after testing it is determined that the system does not meet coverage requirements, the successful bidder will be responsible for the cost of the testing plus upgrades to the system to meet requirements.

All costs for testing (except for Moniteau Public Safety personnel and vehicles involved in witnessing and participating in tests) shall be borne by the vendor and as needed included in vendor's proposed costs.

Radio Spectrum and Channel Assignments

Moniteau County Emergency Dispatch has several VHF Frequencies under FCC Part 90 rules. This spectrum will be used to support this new system.

Repeater Channel Assignments

Repeater sites shall use the following frequencies:

California

- Law
 - Repeater Input 158.9100
 - Repeater Output 154.8450
- Fire
 - Repeater Input 156.1650
 - Repeater Output 150.9950

Tipton

- Law
 - Repeater Input 158.9100
 - Repeater Output 154.8450

Jamestown

- Law
 - Repeater Input 158.9100
 - Repeater Output 154.8450
- Fire
 - Repeater Input 156.1650
 - Repeater Output 150.9950

FCC Waivers

It will be the Supplier's responsibility to work with MCED if required, to make necessary filings with the FCC regarding spectrum compatibility and RF power level issues. It will be the Suppliers' responsibility to resolve any system/antenna changes resulting from these findings.

Channelization

The system shall be designed to operate within 12.5 KHz frequency channels in the 150 MHz spectrum.

System Reliability and Fault Tolerance

System reliability and fault tolerance shall be major objectives in the design of the system. Supplier shall describe in detail all measures taken to ensure reliable operation of the system. This includes, as a minimum; the repeaters and system management equipment.

The system shall be designed such that there are no situations where a single failure in equipment will disable wide area operation. No single point of failure within the wide area controller(s) shall prevent any unit from normal operation.

Repeater Site Requirements

Equipment provided at each site shall consist of repeaters and all other associated hardware and software for the proposed system.

Duty Cycle

All transmitting and receiving equipment (all repeater channels) shall be capable of 100% continuous duty cycle operation limiting the use of fans or blowers.

Transmitter ID

All repeaters shall be able to transmit automatic call sign identification that meets the FCC requirements for identifying conventional repeater sites.

Physical Environment

The repeater equipment, shall be housed in standard 19-inch width EIA aluminum relay racks of various heights depending on which sites the equipment will be installed. All hardware and software necessary for the stations to perform the functions and to meet the system requirements shall be provided and housed in this same rack.

Maintainability

MCED closely manages operating expenses and seeks a radio system that minimizes operating expenses. Therefore, high reliability and ease of maintenance are of high priorities for the new system.

Supplier shall state reliability/failure rates for the repeater stations.

MCED prefers a system that is modular and easily maintained. Supplier shall state if and how repeater stations may be accessed remotely and what information and functions may be performed without having to travel to a site. At a site, supplier shall explain what and how repeater stations are accessed by a trained technician.

Antenna Systems

The Supplier shall develop complete antenna systems that achieve the required coverage and are most advantageous to MCED from cost and performance aspects. The antenna system design shall include antennas, antenna mounts, transmission line, lightning suppression, coaxial entrances boot(s), cable hangers, connectors, weatherproofing, ground kits, filters, transmitter combiners, a receiver multi-coupler, tower-top amp, etc... as appropriate.

If current site antennas are able to be utilized this would be preferred, the supplier is responsible for inspection and recommendation to the MCED project manager.

All antennas should be designed for mounting at the highest elevation possible.

If the existing radio system antennas are causing a problem with the installation of the new radio system antennas they can be relocated to a temporary lower location on the tower while they are still in use.

Omni-directional antennas shall provide consistent patterns to ensure that no nulls occur in coverage due to the antenna pattern or mounting. Antenna shall be BF type with at least 5.25 of dB gain.

All antennas will need to be pre-approved by MCED.

MCED reserves the right to use existing antennas if they will operate according to coverage specs.

Transmission Line Couplers

Transmission lines shall be constructed from one continuous length of low-loss dielectric coaxial cables.

The Contractor shall determine the transmission line lengths required for each site during site inspections. Appropriate grounding kits shall be provided at the top and bottom of the run and in the middle for any run over 100 feet in length. Cable hoisting grips shall be used at the top of each tower run to support the vertical coaxial cable weight. Additional cable hoisting grips shall be used in the middle of any vertical run over 100' or any increment thereof.

Cable hangers shall be provided that are appropriate to the type of structure and cable ladder system on which the transmission line is mounted (Valmont/Microflex or equivalent). Cable hanging hardware shall be corrosion protected (galvanized) or made of stainless steel.

Interconnection RF Cable and Connectors

Super-flexible 1/2" coaxial cable shall be utilized for interconnecting transmitters, combiners, receivers, multi-couplers, and antenna system transmission lines inside of the equipment building. Type N connectors or better suitable for the 150 MHz band with Teflon insulation and gold or silver-plated mating surfaces shall be used throughout the RF system. Adapters shall not be used.

Dispatch Equipment

The equipment proposed shall connect to the existing consoles at the Moniteau County Emergency Dispatch Center.

Project System Engineering

Project engineering services shall be provided from the initial system design through the completion of system acceptance and the warranty period. At a minimum the services shall include:

- final system design and review
- coverage prediction and acceptance testing system configuration
- implementation & testing support
- final system documentation resolution of technical problems

VENDOR RFP RESPONSE FORMAT

Brief executive overview. Introduction of the prime vendors company including history, qualifications, experience, main line of business, how business is organized (corporation, LLC, partnership, public, private, etc) Introduction of the subcontractor(s) including history, qualifications, experience, main line of business, how business is organized (corporation, partnership, private, public, etc). Identify all subcontractor(s) by listing name, address, phone and contact person. State whether the prime vendor has worked with the subcontractor(s) in the past. If so, provide brief descriptions on: the project(s) (no more than 3); the system elements; the scope of each subcontractor's responsibility; the approximate start date and duration of the project.

Statement of Work

Describe the work to be performed by the prime vendor by identifying all major project tasks and milestones. Describe the work to be performed by each subcontractor by identifying all major project tasks and milestones. Group all project tasks by their associated subcontractor. Identify the anticipated responsibilities of the County. Provide a proposed project organizational chart.

Point by Point Response

Unless indicated otherwise a point-by point response shall be presented in this section Note that some of the specifications sections may not need or require a response. Any specification section that is not included in this point-by-point response will be deemed to have been accepted and agreed to by the vendor. Every point-by-point response shall be identified by its corresponding specification section name. All responses shall follow the same numeric sequence of the specification. Reiteration of the specification section text in the point-by-point response is not necessary. If there are any exceptions, clarifications and/or substitutions (E/C/S); identify each item clearly as an exception, clarification or substitution. E/C/S items shall only be presented in this section of the response.

For clarifications or substitutions, provide an explanation of the difference between what the specification requested and what will be supplied by the vendor. Vendors shall explain why they believe their method of accomplishing the requested functionality will be equal or better. For exceptions, provide the reason.

Technical System Information

Description of the system(s) being offered. Include a detailed itemized list and quantities, in matrix form, of all equipment supplied and their intended installed location. Intended locations shall appear as columns on the matrix. Include equipment catalog or specification sheets. Include simple block system diagrams illustrating all major system components of each of the systems offered.

Radio Coverage Contours

This section shall contain a statement that the vendor clearly understands the propagation maps provided in this RFP and that the system will be built to provide that coverage.

Project Schedule

Estimated timeline

Vendor's Project Manager Information

Warranty and Maintenance

List of References

Provide a list of three (3) references with radio systems having similar requirements of this solicitation. Include a brief description of the system, approximate date of acceptance, contact name and telephone number.

Costs

Cost sheets shall be in spreadsheet form to the greatest extent possible. The costs shall cover all the items to be supplied by the successful vendor. Costs shall be shown on a per unit and extended basis. Identify all cost sheet items, at a minimum, in the following order; quantity, model number, description, unit cost and extended cost. Sections should be broken out by location or site. Cost for major services such as installation, licensing, systems engineering, program management, etc., shall be clearly identified. Costs for these services shall not be lumped. List all sub-items associated with each major item. Clearly identify each cost sheet with an appropriate header which includes the costs associated with allowances. Any costs for optional items or offering shall be presented on a separate cost sheet.

Acceptance testing will consist of Operational Performance Tests and RF Coverage Performance Tests. Supplier will be required to develop an acceptance test plan for each step in the implementation plan and a final system acceptance plan that meets MCED's approval. The final system acceptance and all related documentation shall be completed no later than 90 days after contract signing.

Remove Old Equipment and Install New Equipment

The bid shall state the cost to remove old mobile radio equipment and install new equipment.

DEADLINE FOR SUBMISSION

All responses to this Request for Proposals must be received by Moniteau County Emergency Dispatch no later than ***October 5th at 3:30PM.***

Proposals should be sent to:
Moniteau County Emergency Dispatch
PO Box 87
California, MO 65018

RIGHT TO REJECT PROPOSALS

Moniteau County Emergency Dispatch reserves the right to reject any or all submissions received, for any reason, and to negotiate proposal terms in order to best serve the interest of Moniteau County.

AGREEMENT

I. PARTIES

This contract (hereinafter referred to as "Agreement") is made and entered into on this _____ day of _____, 20__, by and between the Board of Directors on Moniteau County Emergency Dispatch with a mailing address PO Box 87, California, Missouri 65018 (hereinafter referred to as "MCED"); and _____, with a mailing address of _____ (hereinafter referred to as "Consultant"). In consideration of the mutual promises contained herein, Consultant agrees to perform the following services for MCED.

II. SCOPE OF WORK

In consideration of the compensation set forth herein, the Consultant shall perform the services as outlined in a request for proposal dated _____ and attached hereto as Exhibit A and the response attached hereto as Exhibit B.

III. COMMENCEMENT AND COMPLETION

The Consultant will commence work on or before, 200_ and will complete work on or before _____, 200_.

IV. PAYMENT TERMS

The Consultant shall submit an invoice on or about the first of each month reflecting services performed at the Consultant's normal professional billing rates, attached hereto as Exhibit C. The Consultant understands that the payment for completion of the services outlined in Section II shall not exceed _____ Dollars (\$ _____), and the Consultant agrees to perform the services on that basis. Invoices shall list separately all out of pocket expenses being billed.

V. TERMINATION

Either party may terminate this Agreement for cause after giving the other party written notice and a reasonable opportunity to cure. MCED may terminate without cause by giving the Consultant fourteen (14) days notice, and compensating the Consultant equitably to the termination date.

VI. DISPUTE RESOLUTION

Any controversy or claim arising out of or related to this Agreement, which cannot be resolved between the parties shall be submitted to the Missouri Superior Court . This agreement shall be governed by Missouri law.

VII. QUALIFICATIONS

The Consultant represents it holds, and will continue to hold during the term hereof any and all qualifications, licenses and certifications required to perform its services in Missouri. The consultant shall perform all services in accordance with professional standards.

VIII. SUBCONTRACTORS

The Consultant shall be fully responsible to MCED for the acts and omissions of any subcontractors, and of persons either directly or indirectly employed by it, and shall hold subcontractors to the same terms and conditions as Consultant is held under this Agreement. No subcontractors shall be retained on this Agreement without the specific prior written approval of MCED.

IX. INSURANCE

The Consultant shall purchase and maintain Workers' Compensation Insurance, General Public Liability and Property Damage Insurance including vehicle coverage and professional liability insurance, all with limits and terms satisfactory to MCED. MCED shall be named as an additional insured on the liability policy.

X. INDEMNIFICATION

The Consultant will indemnify and hold harmless Moniteau County Emergency Dispatch, its officers, agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the Agreement by the Consultant, its officials, employees, agents and subcontractors.

XI. ENTIRE AGREEMENT

This Agreement and its attachments represent and contain the entire agreement between the parties. Prior discussions or verbal representations by the parties that are not contained in this Agreement and its attachments are not a part of this Agreement. Where there is any conflict between the provisions of this Agreement and the provisions of any attachment, the provisions of this Agreement shall control.

Date: _____

By: _____

Title: _____

Date: _____

MONITEAU COUNTY EMERGENCY DISPATCH

By: _____

Scott Harkins, Board President