	Request for Proposals Cover Page Humboldt County Administrative Office Information Technology Division County of Humboldt, Eureka, California	
COUNTY AGENCY	Humboldt County Administrative Office – Information Technology Division	
RFP NUMBER	**18-100-COMM**	
RFP TITLE	Request for Proposals No. **18-100-COMM** Humboldt County Radio System Replacement Project	
PURPOSE	The purpose of this document is to provide the specifications, terms and conditions pertaining to the provision of the desired radio system package and related services so that interested parties may present their capabilities to provide the products and services necessary to complete the Humboldt County Radio System Replacement Project.	
DEADLINE FOR RFP SUBMISSION	Deadline for Proposals to be Received August 10, 2018 1:30 P.M. Pacific Standard Time Late, faxed or unsigned proposals will be rejected	
SUBMIT RFP TO THIS ADDRESS	Humboldt County Administrative Office – Information Technology Division Attention: Jim Storm, Information Technology Director 839 Fourth Street Eureka, California 95501	
SPECIAL INSTRUCTIONS	❑ Label the lower left corner of your sealed submittal package with the **RFP No. 18-100-COMM**. ❑ Submit one (1) original with six (6) additional copies of proposal with required forms.	
DIRECT ALL INQUIRES TO	NAME TITLE PHONE EMAIL	Jim Storm Information Technology Director (707) 445-7556 RFP@co.humboldt.ca.us
COUNTY WEBSITE	WEBSITE	humboldtgov.org
DATE RFP ISSUED: May 28, 2018		

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

TABLE OF CONTENTS

/ / / /

1.0 DEFINITIONS:

1.1 Terms:

A. Addenda. As used herein, the term "Addenda" refers to an amendment or modification to this Request for Proposals.

B. Analog Mobile Coverage Area. As used herein, the term "Analog Mobile Coverage Area" refers to the portion of the overall Service Area in which analog coverage is provided to mobile radios by the Radio System Package.

C. County. As used herein, the term "County" refers to the County of Humboldt, a political subdivision of the State of California, acting through its County Administrative Office – Information Technology Division.

D. Digital Portable Coverage Area. As used herein, the term "Digital Portable Coverage Area" refers to the portion of the overall Service Area in which digital coverage is provided for portable radios by the Radio System Package.

E. Digital Mobile Coverage Area. As used herein, the term "Digital Mobile Coverage Area" refers to the portion of the overall Service Area in which digital coverage is provided for mobile radios by the Radio System Package.

F. Professional Services Agreement. As used herein, the term "Professional Services Agreement" refers to the contract between the County and the Successful Proposer regarding the provision of the Radio System Package and related services set forth in this Request for Proposals.

G. Project. As used herein, the term "Project" refers to the Humboldt County Radio System Replacement Project.

H. Project Team. As used herein, the term "Project Team" refers to the members of a Proposer's staff, and all subcontractors, that will be responsible for providing the Radio System Package and related services equivalent to those set forth in this Request for Proposals.

I. Proposal. As used herein, the term "Proposal" refers to an offer submitted by a Proposer in accordance with this Request for Proposals to provide the Radio System Package and related services for a specified sum of money.

J. Proposer. As used herein, the term "Proposer" refers to any individual, agency, firm, company or other entity that submits a Proposal in response to this Request for Proposals.

K. Radio System Package. As used herein, the term "Radio System Package" refers to the equipment necessary to implement a Project 25 Very High Frequency Phase I Digital Conventional Simulcast Radio Subsystem, a Simulcast Control Subsystem, an Analog Very High Frequency Conventional Simulcast Radio Subsystem, a countywide Microwave Backhaul Subsystem and a Subscriber Radio Network.

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L. Service Area. As used herein, the term "Service Area" refers to the geographical boundaries of

Humboldt County.

M. **Simulcast.** As used herein, the term "Simulcast" refers to the simultaneous broadcast of a single radio signal from multiple radio sites.

N. **Successful Proposer.** As used herein, the term "Successful Proposer" refers to the individual, agency, firm, company or other entity that the County enters into a final Professional Services Agreement with after the review, evaluation, selection, contract negotiation and contract approval processes set forth in this request for Proposals have been successfully completed.

1.2 Abbreviations:

A. **ANSI.** As used herein, the abbreviation "ANSI" refers to the American National Standards Institute.

B. **C.F.R.** As used herein, the abbreviation "C.F.R." refers to the United States Code of Federal Regulations.

C. **DAQ.** As used herein, the abbreviation "DAQ" refers to delivered audio quality.

D. **dB.** As used herein, the abbreviation "dB" refers to decibels.

E. **dBm.** As used herein, the abbreviation "dBm" refers to decibel-milliwatts.

F. **DS1.** As used herein, the abbreviation "DS1" refers to the Digital Signal 1 signal carrying scheme.

G. **EIA.** As used herein, the abbreviation "EIA" refers to the Electronic Industries Association.

H. **ERP.** As used herein, the abbreviation "ERP" refers to effective radiated power.

I. **FCC.** As used herein, the abbreviation "FCC" refers to the Federal Communications Commission.

J. **GPS.** As used herein, the abbreviation "GPS" refers to the Global Positioning System operated by the United States Air Force.

K. **Hz.** As used herein, the abbreviation "Hz" refers to hertz.

L. **IEEE.** As used herein, the abbreviation "IEEE" refers to the Institute of Electrical and Electronics Engineers.

M. **ITU-T.** As used herein, the abbreviation "ITU-T" refers to the International Telecommunication Union's Telecommunication Standardization Sector.

N. **kHz.** As used herein, the abbreviation "kHz" refers to kilohertz.

O. **MHz.** As used herein, the abbreviation "MHz" refers to megahertz.

P. **MIL-STD.** As used herein, the abbreviation "MIL-STD" refers to the United States Military Standards.

Q. **P25.** As used herein, the abbreviation "P25" refers to the Project 25 telecommunications

standards promulgated by the Association of Public Safety Communications Officials International.

R. **PST.** As used herein, the abbreviation "PST" refers to Pacific Standard Time.

S. **QAM.** As used herein, the abbreviation "QAM" refers to quadrature amplitude modulation.

T. **QPSK.** As used herein, the abbreviation "QPSK" refers to quadrature phase shift keying.

U. **RF.** As used herein, the abbreviation "RF" refers to radio frequency.

V. **RFP.** As used herein, the abbreviation "RFP" refers to this Request for Proposals for the provision of a Radio System Package and related services.

W. **TDM.** As used herein, the abbreviation "TDM" refers to time-division multiplexing.

X. **TIA.** As used herein, the abbreviation "TIA" refers to the Telecommunications Industry Association.

Y. **TSB.** As used herein, the abbreviation "TSB" refers the Telecommunications Systems Bulletin published by the Telecommunications Industry Association.

Z. **VHF.** As used herein, the abbreviation "VHF" refers to Very High Frequency.

2.0 INTRODUCTION:

2.1 Statement of Purpose:

The County of Humboldt ("County"), by and through its County Administrative Office – Information Technology Division, is issuing this Request for Proposals ("RFP") to solicit Proposals regarding the provision of the equipment and services necessary to implement a Project 25 ("P25") Very High Frequency ("VHF") Phase I Digital Conventional Simulcast Radio Subsystem, a Simulcast Control Subsystem, an Analog VHF Conventional Simulcast Radio Subsystem, a countywide Microwave Backhaul Subsystem and a Subscriber Radio Network ("Radio System Package") from qualified Proposers. Services related to the provision of the Radio System Package set forth in this RFP include, without limitation, designing, developing, installing and maintaining the County's radio system pursuant to the terms and conditions of a final Professional Services Agreement. The Successful Proposer shall have experience in providing Radio System Packages and related services equivalent to those set forth in this RFP to local government agencies of similar size to the County.

It is the intent of this RFP to provide the specifications, terms and conditions pertaining to the provision of the desired Radio System Package and related services so that Proposers may present their capabilities to provide the products and services set forth herein. Information submitted in response to this RFP shall be objectively evaluated to determine those companies best qualified to provide the Radio System Package and related services set forth in this RFP.

At the conclusion of the review, evaluation, selection, contract negotiation and approval processes set forth in this RFP, a Professional Services Agreement will be awarded to the Successful Proposer. This RFP is a non-binding solicitation for products and services.

2.2 Project Overview:

The County owns and maintains separate Analog Conventional VHF Repeater Systems for the Sheriff's Office and the Department of Public Works. Such systems are vital to the radio system users and those they serve.

The radio system currently utilized by the Sheriff's Office is comprised of multiple standalone repeaters located on various mountain tops in Humboldt County. These repeaters are programmed with the same transmit and receive frequency, but each repeater is programmed with a common transmit continuous tone-coded squelch system tone and a different receive continuous tone-coded squelch system tone. In this way, a field user can select the appropriate tone for the area he or she is located and communicate with local users or dispatch.

The Sheriff's Office's Dispatch operations are conducted on an AVTEC, Inc. Scout Dispatch Console system. The current dispatch system has the ability to connect to stations and systems that use Electronic Industries Association ("EIA") tone remote control signaling as well as the capability to upgrade to the P25 digital fixed station interface for controlling transmit, receive and auxiliary functions.

The radio system currently utilized by the Department of Public Works is similar in operation to that utilized by the Sheriff's Office, but operates from fewer sites. The sites, frequencies and call signs currently in use in the County's radio system are set forth in Attachment A – Current Repeater Site, Frequency and Call Sign Table which is attached hereto and incorporated herein by reference.

The County's current radio system has experienced coverage reductions due to narrow-banding and does not provide adequate coverage for field users, particularly for handheld units used by the Sheriff's Office. Additionally, the repeater sites in use by the County have various installation issues, including, without limitation, the lack of, or incorrect, lightning arrestors on equipment, overcrowded transmission line entrance panels and inconsistent site grounding.

3.0 PRELIMINARY SCOPE OF PRODUCTS AND SERVICES:

This section only presents a preliminary scope of products and services to generally communicate the County's expectations for the provision of a Radio System Package and related services. All Proposers will be strictly held to the requirements and specifications set forth in this RFP and Attachment B – Product Features and Requirements, which is attached hereto and incorporated herein by reference. Such requirements and specifications will be incorporated into the final Professional Services Agreement.

3.1 Outline of Anticipated Product Features and Services:

The anticipated features and services presented herein is for the primary purpose of allowing the County to compare Proposals that are submitted in response to this RFP. The precise product features and scope of related services that will be incorporated into the final Professional Services Agreement shall be the subject of negotiations between the County and the Successful Proposer.

A. **Required Product Features.** The Successful Proposer shall provide the County with a Radio System Package that contains all of the features, and complies with all of the technical and functional requirements, specifications and standards, set forth in Attachment B – Product Features and Requirements.

B. **Required Equipment.** The Successful Proposer shall provide, as part of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, any and all necessary and incidental equipment needed to meet the requirements for a complete and operational system, even if not specifically mentioned in this RFP or Attachment

B – Product Features and Requirements. Proposers shall be responsible for verifying the completeness and correctness of any parts lists as well as the overall suitability of the equipment included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. Any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be new and unused.

C. **Project Management Services.** The Successful Proposer will be required to provide various project management services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Assignment of a project manager that will be responsible for coordinating the activities of the Project Team and managing and controlling the progress, budget, schedule and quality of the Project.

2. Preparation and submission of regular Project status reports which inform the County of the status of the Project and address any and all Project-related issues.

3. Presentation of a design review in which the final design of the Radio System Package will be presented, discussed and confirmed.

D. **Licensing Support Services.** The Successful Proposer will be required to provide various licensing support services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Provision of technical assistance regarding the design and development of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, as necessary for the completion of licensing forms and processes.

2. Provision of new microwave channels used by any and all new microwave links that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. Provision of technical assistance regarding any and all new microwave links and Radio Frequency ("RF") channels that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, as necessary for the completion of any and all required licensing forms and processes.

4. Provision of coverage propagation maps related to the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, as necessary for the completion of any and all required licensing forms and processes.

E. **Tower Analysis and Testing Services.** The Successful Proposer will be required to analyze and test any and all towers and/or monopoles that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. If a tower or monopole is determined to be failing with the addition of new equipment, the Successful Proposer shall be responsible for gathering quotes for reinforcing and replacing any such tower or monopole so that the County can determine how to best correct the situation. The tower analysis and testing services provided pursuant to the terms and conditions of a final Professional Services Agreement shall include, without limitation, all of the following:

1. Provision of analysis and testing of the functional capabilities of each tower that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a

final Professional Services Agreement as currently constructed, and with any and all proposed appurtenances and associated feedlines, in accordance with the Structural Standards for Antenna Supporting Structures and Antennas adopted by the Telecommunications Industry Association ("TIA") in accordance with the American National Standard Institute's ("ANSI") patent policy (ANSI/TIA-222-G).

2. Provision of wind speed analysis and tests on each tower that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. All such analysis and tests should include a minimum basic wind speed of ninety (90) miles per hour when ice with a thickness of 0.75 inches or greater is not present, and a minimum basic wind speed of forty (40) miles per hour when ice with a thickness of 0.75 inches or greater is present.

F. **System Cutover Services.** The Successful Proposer will be required to develop, in conjunction with County staff, system cutover procedures that provide a mechanism to deploy the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement with minimal impact to the County's operations. Such cutover procedures shall take into account the limitation of site space and include a detailed description of any and all actions to be performed by the Successful Proposer and the County, any and all reductions in functionality in the current or new radio systems during cutover due to space limitation and other considerations and any and all impacts to the County's operations that may occur during the performance of the following tasks:

1. Installation and optimization of the system infrastructure that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, backhauling and connection to existing systems.

2. Installation, programming and distribution of the mobile and portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. Provision of any and all interfaces set forth in this RFP, including, without limitation, interfaces to the dispatch consoles that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

4. Provision of any and all testing services set forth in this RFP, including, without limitation, the testing of any equipment, towers, monopoles and other system infrastructure that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

5. Provision of any and all training services set forth in this RFP, including, without limitation, training regarding, the use, implementation and optimization of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

G. **Staging Services.** The Successful Proposer will be required to provide various staging services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Installation, including, without limitation, any and all necessary set up and racking, of any and all equipment that will be utilized by the Radio System Package provided pursuant to

the terms and conditions of a final Professional Services Agreement on a site-by-site basis.

2. Installation of any and all cables, including, without limitation, plenum rated cables, punch blocks and wiring, necessary for the interconnection of any and all radio equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement on a site-by-site basis.

3. Preparation and labeling of any and all cables that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in accordance with the standards, specifications and requirements set forth in this RFP and Attachment B – Product Features and Requirements. Cables shall be cut with enough slack to allow for the connection and disconnection thereof without having to remove other cabling or equipment during subsequent servicing. Cables shall also be labeled in twelve (12) point font with to and from information which specifies any and all necessary interconnections for field installation and future servicing needs.

4. Assembly and connection of any and all subsystems that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in order to assure system functionality.

5. Configuration, including, without limitation, any and all necessary programming and testing, of all equipment, including, but not limited to, fixed network equipment, that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

6. Installation of application parameters on any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in accordance with input received from the County.

7. Development and configuration, including, without limitation, any and all necessary programming and testing, of sample subscriber units that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

8. Preparation of a radio-programming template tool based on templates approved by the County that can be used in conjunction with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

9. Preparation and delivery of a complete system infrastructure equipment inventory which includes the make, model, quantity, serial number and location, by site and rack number, of, and installation references for, any and all infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

10. Preparation and delivery of a complete staging equipment inventory which includes the make, model, quantity, serial number and location, if applicable, of any and all staging equipment, including, without limitation, power supplies and RF dummy loads, that is not included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

11. Preparation and delivery of a complete testing equipment inventory which includes the make, model, quantity, serial number and location, by site and rack number, of any and all test equipment required for the repair, maintenance and alignment of infrastructure and

subscriber equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, service monitors, extender cards, test fixtures, service cables, adapters and any other test equipment deemed necessary.

12. Preparation and delivery of a complete spare equipment inventory which includes the type, make, model, quantity, serial number and location (Simulcast Control Subsystem site, remote/radio site, etc.), of any and all spare infrastructure and testing equipment that can be used to repair, maintain or align the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

13. Preparation and delivery of any and all documentation related to the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

14. Preparation and execution of an approved factory acceptance test plan that is based on the functions, specifications, standards and requirements set forth in this RFP and Attachment B – Product Features and Requirements. The factory acceptance test plan shall include failure mode analysis tests to demonstrate and confirm the performance of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement as various key components are removed from service.

15. Confirmation of the final system configuration of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement and software compatibility to the County's existing radio system.

H. **Field Implementation and Optimization Services.** The Successful Proposer will be required to provide various field implementation and optimization services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Installation, including, without limitation, connecting and grounding, of any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Services Agreement in accordance with the approved system infrastructure equipment inventory, system description and system drawings.

2. Configuration and implementation, including, without limitation, any and all necessary programming, testing and interfacing with the County's existing dispatch consoles and logging recorders, of any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Services Agreement.

3. Performance of any and all field testing necessary to verify that any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement is operating properly and that all electrical, signal, audio and data levels are set for proper system performance.

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4. Performance of any and all field testing necessary to verify, after connection to the appropriate antenna systems, that the forward and reflected power levels of any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement

are set within the proper tolerances for optimal system performance.

5. Performance of any and all field testing, including, without limitation, antenna system sweeps which include return loss measurements, necessary to verify that any and all antenna systems that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement are within the proper loss and frequency tolerances for optimal system performance.

6. Performance of any and all field testing necessary to verify that the communication interfaces between any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement are operating properly.

7. Performance of any and all field testing necessary to verify that the features and functionality of any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement are in accordance with manufacturers' specifications and the final system configuration established during the staging phase of the Project.

8. Performance of any and all field testing necessary to verify adequate site link performance of any and all system infrastructure equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement prior to the interconnection of the system infrastructure equipment to the link equipment.

9. Verification that any and all system infrastructure equipment installed in the field matches the equipment part numbers included in the County approved system infrastructure equipment inventory prepared pursuant to the terms and conditions of a final Professional Services Agreement.

10. Removal of, and delivery to a County designated collection point, any and all existing equipment that will not be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in accordance with direction from the County.

I. **System Testing and Acceptance Services.** The Successful Proposer will be required to provide various system testing and acceptance services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Preparation and submission of detailed field performance and functionality acceptance and coverage performance acceptance testing plans that are designed to demonstrate the performance, features, coverage and reliability of each individual subsystem of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The field performance and functionality acceptance and coverage performance acceptance testing plans shall identify the individual procedures, including, without limitation, the goals, methods, acceptance criteria and the corrective actions that will be taken should failure occur, for each test set forth therein. Any and all field performance and functionality acceptance tests included in the field performance and functionality acceptance testing plan shall be based on the functions, specifications, standards and requirements set forth in this RFP and Attachment B – Product features and Requirements, and include failure mode analysis tests to demonstrate and confirm the performance of the Radio System Package provided pursuant to the terms and conditions

of a final Professional Services Agreement as various key components are removed from service. The coverage performance acceptance testing plan for the RF Subsystem shall adhere to the TIA Telecommunications Systems Bulletin ("TSB") 88.3-C guidelines.

2. Execution of each test set forth in the approved field performance and functionality acceptance and coverage performance acceptance testing plans prepared pursuant to the terms and conditions of a final Professional Services Agreement. Each field performance and functionality acceptance and coverage performance acceptance test executed pursuant to the terms and conditions of a final Professional Services Agreement shall be witnessed by County personnel. Any and all equipment utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be updated with the then-current versions of any and all software used thereby prior to the execution of any field performance and functionality acceptance tests.

3. Remediation of each system and/or equipment failure identified by the field performance and functionality acceptance and coverage performance acceptance tests performed pursuant to the terms and conditions of a final Professional Services Agreement. Any and all subsystems and/or equipment that fails any of the field performance and functionality acceptance and/or coverage performance acceptance tests performed pursuant to the terms and conditions of a final Professional Services Agreement per the acceptance criteria set forth in the approved field performance and functionality acceptance and coverage performance acceptance testing plans shall be retested in the presence of County personnel.

4. Acceptance of the Simulcast Control and RF Subsystems following the successful completion of the approved field performance and functionality acceptance and coverage performance acceptance testing plans and the remediation of any and all system and/or equipment failures identified by the field performance and functionality and/or coverage performance acceptance tests performed pursuant to the terms and conditions of a final Professional Services Agreement.

J. **Portable Subscriber Radio Implementation Services.** The Successful Proposer will be required to provide various portable subscriber radio implementation services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Configuration and implementation, including, without limitation, any and all necessary programming in accordance with any and all County approved programming templates and/or fleet maps, of the portable subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

2. Performance of the initial alignment and adjustment of the portable subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. Performance of the initial charging of the batteries that will be utilized by the portable subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

4. Delivery and distribution of the portable subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement to authorized County personnel.

5. Preparation and delivery of a complete portable subscriber radio inventory which includes

the make, model, quantity, serial number and location of any and all portable subscriber radios that will be delivered to authorized County personnel as part of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

K. **Mobile Subscriber Radio Implementation Services.** The Successful Proposer will be required to provide various mobile subscriber radio implementation services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Configuration and implementation, including, without limitation, any and all necessary programming in accordance with all County approved programming templates and/or fleet maps, of the mobile subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

2. Performance of the initial alignment and adjustment of the mobile subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. Installation of the mobile subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in police or other public service vehicles in accordance with an approved mobile subscriber radio installation plan which includes, without limitation:

a. The types of mounting hardware and installation procedures that will be used to install the mobile subscriber radios provided pursuant to the terms and conditions of a final Professional Services Agreement in the vehicles selected by the County.

b. Identification of the voltage source that will be used to supply power to the mobile subscriber radios provided pursuant to the terms and conditions of a final Professional Services Agreement.

c. The types of mounting hardware and installation procedures that will be used to permanently mount the antennas utilized by the mobile subscriber radios provided pursuant to the terms and conditions of a final Professional Services Agreement onto the roof of the vehicles selected by the County. Any and all antennas that will be utilized by the mobile subscriber radios shall be installed as close to any existing antennas as is practical.

d. The procedures for removing existing mobile radios from the vehicles selected by the County prior to the installation of the mobile subscriber radios provided pursuant to the terms and conditions of a final Professional Services Agreement therein, if applicable. Any and all holes created by the removal of antennas utilized by existing mobile radios shall be filled with appropriate rubber plugs.

e. The procedures for delivering existing mobile radios removed from the vehicles selected by the County to the appropriate County personnel for disposal, if applicable.

L. **Training Services.** The Successful Proposer will be required to provide various training services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Development and provision of multiple in-person training courses, led by professional trainers approved by the County, that are specifically related to the Radio System Package

provided pursuant to the terms and conditions of a final Professional Services Agreement. Such training courses shall include, without limitation, all of the following:

a. Mobile and portable subscriber radio usage courses which utilize a train-the-trainer format for up to ten (10) County employees per course.

b. Mobile and portable subscriber radio template-building and programming courses for up to three (3) County employees per course.

c. System management courses which cover any and all equipment and subsystem equipment that will be utilized by each component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement for up to three (3) County employees per course.

d. Microwave infrastructure administration courses which cover any and all microwave network equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement for up to three (3) County employees per course.

2. Preparation and distribution of all training materials and curricula that will be used as part of the training courses provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. Preparation and distribution of a "customer training package" that includes editable electronic copies of any and all training materials that will be used as part of the mobile and portable subscriber radio usage courses provided pursuant to the terms and conditions of a final Professional Services Agreement.

M. **Documentation Services.** The Successful Proposer will be required to provide various documentation services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Development of a service manual which includes maintenance procedures and schedules, product schematics, trouble shooting and repair guides for each component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

2. Development of an operator manual which includes step-by-step instructions regarding the proper operation of any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. Development of technical data which demonstrates that any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement fully complies with any and all applicable technical requirements.

4. Development of as-built documentation which lists all customizable parameters, passwords, Internet Protocol network assignments with domain names, programming scripts, files and any other electronic media that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

5. Provision of four (4) bound paper copies and one (1) editable electronic copy of all documentation developed pursuant to the terms and conditions of a final Professional Services Agreement.

N. **System Support and Maintenance Services.** The Successful Proposer will be required to provide various system support and maintenance services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

1. Provision of technical support, including, without limitation, telephonic, email and online diagnostic services and other technical assistance and guidance, related to each component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in accordance with the specifications, standards and requirements set forth in this RFP and Attachment B – Product Features and Requirements.

2. Provision of any and all necessary maintenance on a twenty-four (24) hour, seven (7) day per week basis, including, without limitation, implementing software and hardware updates and repairing or replacing defective equipment, radio power cables, fuses, antennas and cabling, of each component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in accordance with the specifications, standards and requirements set forth in this RFP and Attachment B – Product Features and Requirements.

3. Preparation and provision of written documentation which indicates the cause of each service outage, the resolution of such outage, the model and serial numbers of both the defective and replacement equipment, if applicable, and all post repair testing procedures that will be utilized to ensure proper operation of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

4. Development and implementation of a comprehensive tracking system that is capable of tracking any and all equipment utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement that requires factory or depot repairs.

5. Development and implementation of a comprehensive reporting system which is capable of providing the County with real-time and periodic reports regarding the provision of any and all maintenance and/or repair services provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, the location, status, expected return time, actual return time and average repair turnaround time for any and all equipment that is sent for repair or routine maintenance.

O. **System Verification and Acceptance Services.** The Successful Proposer will be required to provide various system verification and acceptance services pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation:

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1. Development and provision of as-built diagrams, including, without limitation, photographs, block diagrams and drawings, which document the cabling, interconnections and placement of all hardware in relation to landmark equipment utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement on a per-site and system-wide basis.

2. Performance of antenna and waveguide line analysis, including, without limitation, return

loss measurements, line sweep plots, distance to fault plots and other relevant data regarding the configuration and performance of the antenna system utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, to ensure the absence of any transmission and/or reception issues that would cause an unacceptable voltage standing wave ratio. The results of any and all antenna and waveguide line analysis shall be documented and delivered to the County as part of the as-built document package.

3. Removal of any and all packing material, excess wire and other materials required for installation of any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement from any and all indoor and outdoor work areas prior to the initiation of any required acceptance testing. The floor areas of any and all indoor facilities in which equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement has been installed shall be vacuumed or swept and left in a clean and orderly condition.

3.2 Project Development:

It is expected that the Successful Proposer will accept input and guidance from County staff in order to develop, install and implement a Radio System Package that best meets the County's needs and objectives. The County anticipates that the Successful Proposer will maintain timely and regular communication with the County throughout the term of the final Professional Services Agreement in order to plan and organize information, including, but not limited to, participating in planning sessions and regular status meetings.

4.0 REQUIREMENTS STATEMENT:

4.1 Eligibility Requirements:

A. Required Qualifications. In order to be considered for award of a Professional Services Agreement pursuant to this RFP process, Proposers must possess, at a minimum, all of the following qualifications:

1. Familiarity with any and all local, state and federal laws, regulations, standards, policies, procedures and guidelines applicable to the development, installation and implementation of the Radio System Package set forth in this RFP, including, without limitation:

a. TIA-607B – Generic Telecommunications Bonding and Grounding for Customer Premises;

b. Motorola R56 Standards & Guidelines for Communications Sites; and

c. Harris Corporation Site Grounding and Lightning Protection Guidelines.

2. Knowledge of the standard methods, techniques and best practices used in the development, installation and implementation of the Radio System Package set forth in this RFP.

3. Ability to provide a Radio System Package that includes all of the features and equipment set forth in this RFP and Attachment B – Product Features and Requirements.

4. Ability to provide a Radio System Package that complies with all of the technical, installation and implementation requirements set forth in this RFP and Attachment B – Product Features and Requirements.

5. Ability to provide services related to the provision of a Radio System Package that comply with all of the requirements set forth in this RFP and Attachment B – Product Features and Requirements.

6. Ability to provide services related to the provision of a Radio System Package on a varied and flexible schedule as necessitated by site conditions.

B. **Required Personnel.** In order to be considered for award of a Professional Services Agreement pursuant to this RFP process, the Proposer must have personnel, including, without limitation, an account manager, project manager, project engineer, project technician, training staff and subcontractor lead, that are capable, competent and experienced in performing services equivalent to those set forth in this RFP, including, without limitation, designing, developing, installing and maintaining Radio System Packages with minimal instruction.

4.2 Licensure, Certification and Accreditation Requirements:

In order to be considered for an award of a Professional Services Agreement pursuant to this RFP process, Proposers must be in compliance with any and all applicable local, state and federal licensure, certification and accreditation requirements and standards, including, without limitation, registration with the California Department of Industrial Relations pursuant to Section 1725.5 of the California Labor Code.

4.3 Warranty Requirements:

In order to be considered for an award of a Professional Services Agreement pursuant to this RFP process, the Proposer must be able to warrant the overall performance of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including any and all subsystem hardware and software, for twelve (12) months following the successful completion of any and all acceptance test plans and the resolution of any and all performance issues to the County's satisfaction.

5.0 SCHEDULE OF EVENTS:

The following RFP schedule of events represents the County's best estimate of the schedule that will be followed with regard to this RFP process. Unless otherwise specified, the time of day for the following events shall be between 8:00 a.m. and 5:00 p.m. Pacific Standard Time ("PST"). The County hereby reserves the right, at its sole discretion, to modify this tentative schedule as it deems necessary, including, without limitation, extending the deadline for submission of Proposals.

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EVENT	DATE
RFP Issued by County	May 28, 2018
Deadline for Submission of Questions	June 18, 2018, 1:30 p.m. PST
Deadline for Responses to Questions	June 25, 2018
Deadline for Proposals to be Received	August 10, 2018, 1:30 p.m. PST
Proposer Interviews and Presentations, if Necessary	TBD

Completion of Review and Evaluation Process	TBD
Recommendation of Award to County Board of Supervisors	TBD
Finalization of Professional Services Agreement	TBD
Start Date of Professional Services Agreement	TBD

6.0 GENERAL INFORMATION REGARDING PROPOSALS:

6.1 Submission of Proposals:

Proposers shall prepare and submit seven (7) original Proposals and one (1) electronic copy thereof, in portable document format, on a universal serial bus thumb-drive, compact disc or digital versatile disc, by 1:30 p.m. PST on **August 10, 2018**. Proposals shall be signed by an authorized agent of the Proposer, and must be placed in a sealed envelope clearly marked "**RFP No. 18-100-COMM**" along with the name and address of the Proposer and the closing date and time for submission of Proposals. Proposals that are unsigned, or signed by an individual not authorized to bind the Proposer, will be considered nonresponsive and rejected by the County. Proposals shall be personally delivered or mailed to:

COUNTY: Humboldt County Administrative Office – Information Technology Division
Attention: Jim Storm, Information Technology Director
839 Fourth Street
Eureka, California 95501
Email: RFP@co.humboldt.ca.us

Proposals submitted to any other County office will be rejected and returned to the Proposer unopened. Additionally, time is of the essence and any Proposals received after the above-referenced date and time for submittal, whether by mail or otherwise, will be rejected and returned to the Proposer unopened. It is the sole responsibility of the Proposer to ensure that its Proposal is received before the submittal deadline and postmarks will not be accepted in lieu of this requirement.

6.2 Withdrawal of Submitted Proposals:

A Proposer may withdraw its Proposal at any time prior to the above-referenced deadline for submission of Proposals by submitting a written notification of withdrawal singed by the Proposer or an authorized representative thereof. Proposers must retrieve the entire sealed Proposal package in person. Proposals will become the County's property after the submission deadline has passed.

6.3 Modification of Submitted Proposals:

Any Proposer who wishes to make modifications to a submitted Proposal must withdraw its initial Proposal as required by this RFP. It is the responsibility of the Proposer to ensure that a modified Proposal is resubmitted in accordance with the terms of this RFP before the designated deadline for submission of Proposals. Proposals may not be modified after the submission deadline has passed.

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6.4 Proposer Investigations:

Before submitting a Proposal in response to this RFP, each Proposer shall make all investigations and examinations necessary to ascertain its ability to provide the Radio System Package and related services in accordance with the requirements set forth herein and Attachment B – Product Features and Requirements. In addition, each Proposer shall verify any representations made by the County

that the Proposer will rely upon. Failure to make such investigations and examinations will not relieve the Proposer from its obligation to comply with all provisions and requirements of this RFP and Attachment B – Product Features and Requirements. A Proposer's lack of due diligence will not be accepted as a basis for any claim for monetary consideration on the part of the Proposer.

6.5 Expenses Incurred in Preparing Proposals:

The County accepts no responsibility for, and shall not pay any costs resulting from, or associated with, a Proposer's participation in this RFP process, including, without limitation, the preparation and presentation of a Proposal. Such costs and expenses shall be borne exclusively by the Proposer.

6.6 Right to Reject Proposals:

The County reserves the unqualified right to reject any and all Proposals submitted in response to this RFP or to waive, at its sole discretion, any irregularity which the County deems reasonably correctable or otherwise not warranting rejection of a Proposal.

6.7 Public Records and Trade Secrets:

All Proposals and materials submitted in response to this RFP shall become the County's property, and are subject to disclosure under the Public Records Act, Government Code Sections 6250, *et seq*. This RFP, and all Proposals submitted in response hereto, are considered public information, except for specifically identified trade secrets, which will be handled according to any and all applicable local, state and federal laws and regulations. Any portion of the Proposal that is deemed to be a trade secret by the Proposer shall be clearly marked "PROPRIETARY INFORMATION" at the top of the page in at least one-half (.5) inch size letters. Specifically identified proprietary information will not be released, if the Proposer agrees to indemnify, defend and hold harmless the County in any action brought to compel disclosure of such information. By submitting a Proposal in response to this RFP, the Proposer agrees that the County's failure to contact the Proposer prior to the release of any proprietary information contained therein will not be a basis for liability by the County.

6.8 Conflict of Interest:

By submitting a Proposal in response to this RFP, the Proposer warrants and covenants that no official or employee of the County, nor any business entity in which an official or employee of the County has an interest, has been employed or retained to solicit or assist in procuring the final Professional Services Agreement resulting from this RFP process, nor that any such person or entity will be employed in the performance of the final Professional Services Agreement without immediate divulgence of such fact to the County.

7.0 REQUIRED FORMAT OF PROPOSALS:

7.1 General Instructions and Information:

A. Content Requirements. In order for Proposals to be considered for award of a Professional Services Agreement, all of the following conditions must be satisfied:

1. Proposals must be submitted in accordance with the standards and specifications set forth in this RFP and contain all required attachments, including, without limitation, a signed and completed Signature Affidavit.

2. Proposals must be complete and specific unto themselves. For example, "*See Enclosed Manual or Brochure*" will not be considered an acceptable response.

3. Proposals must provide information which enables the County to properly evaluate the Proposer's ability to provide the Radio System Package and related services set forth in this RFP in a manner that is concise and to the point.

4. All information, statements, letters and other documentation and attachments required by this RFP and any and all attachments hereto must be included with the original Proposals and the electronic copy thereof.

5. Receipt of all Addenda to this RFP, if any, must be acknowledged on the bottom of the Signature Affidavit sheet attached to the Proposal.

B. **Presentation Requirements.** In order for Proposals to be considered for award of a Professional Services Agreement, all of the following conditions must be satisfied:

1. Proposals must be bound or contained in loose leaf binders. However, costly bindings, color plates, glossy brochures, etc. are not necessary or recommended.

2. Proposals must be uniformly typed in twelve (12) point font on eight and one-half (8.5) by eleven (11) inch white paper, single sided or double sided, with:

a. Each section clearly titled;

b. Each page clearly and consecutively numbered;

c. Each page having one (1) inch margins; and

d. Each page being clean and suitable for copying.

C. **Formatting Requirements.** In order to be considered for award of a Professional Services Agreement pursuant to this RFP process, Proposals shall follow the format outlined herein. Failure to follow this format may result in the rejection of the Proposal. Each Proposal shall consist of the following Sections:

1.0 Introductory Letter
2.0 Signature Affidavit
3.0 Table of Contents
4.0 Business Profile
5.0 Quality Assurance Capabilities
6.0 Cost Proposal
7.0 Additional Documentation
8.0 References
9.0 Evidence of Insurability and Business Licenses
10.0 Exceptions, Objections and Requested Changes
11.0 Required Attachments

7.2 Introductory Letter:

The introductory letter shall, in one (1) page or less, summarize the Proposer's qualifications and experience regarding the provision of Radio System Packages and related services equivalent to those set forth in this RFP. The introductory letter must also provide the Proposer's federal tax identification number, the Proposer's current contact information, including, without limitation, the address and

telephone number of the Proposer's headquarters, the address and telephone number of the offices at which the services related to the provision of the Radio System Package set forth in this RFP will be performed and the name, address and telephone number of a representative who will be authorized to communicate and negotiate with the County on behalf of the Proposer, and list any subcontractors that may be used to provide the Radio System Package and related services set forth in this RFP. The introductory letter shall be signed in blue ink by an authorized representative of the Proposer.

7.3 Signature Affidavit:

Each Proposal must contain a signed and completed Signature Affidavit, which is attached to this RFP as Attachment D – Signature Affidavit and incorporated herein by reference. The Signature Affidavit must be signed by an authorized representative of the Proposer. Signature authorization on the Signature Affidavit shall constitute a warranty, the falsity of which shall entitle the County to pursue any and all remedies authorized by law. Receipt of all Addenda, if any, must be acknowledged on the bottom of the Signature Affidavit.

7.4 Table of Contents:

Proposals shall include a comprehensive table of contents that identifies submitted material by sections 1.0 through 11.0, and any subsections thereof, with sequential page numbers.

7.5 Business Profile:

Proposals shall include a clear and concise narrative that identifies the Proposer's ability to provide the Radio System Package and related services set forth in this RFP.

A. Company Overview. The business profile must include an overview of the business structure and operation of the Proposer's company. The company overview should include, at a minimum, all of the following items:

1. The Proposer's business name, physical location, mission statement, legal business status, such as partnership, corporation, limited liability company or sole proprietorship, and the Proposer's current staffing levels.

2. A detailed description of the Proposer's current and previous business activities, including, without limitation:

a. The history of the Proposer's company, including the date when the company was founded and how innovation and high-quality performance is fostered thereby.

b. The number of years the Proposer has been operating under the present business name, and any prior business names under which the Proposer has provided Radio System Packages and related services equivalent to those set forth in this RFP.

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c. The number of years the Proposer has been providing Radio System Packages and related services equivalent to those set forth in this RFP.

d. The total number of government agencies for which the Proposer has provided Radio System Packages and related services equivalent to those set forth in this RFP.

3. A detailed description of any litigation regarding the provision of Radio System Packages

and/or related services equivalent to those set forth in this RFP that has been brought by or against the Proposer, including the nature and result of such litigation, if applicable.

4. A detailed description of any fraud convictions related to the provision of Radio System Packages and/or related services equivalent to those set forth in this RFP, if applicable.

5. A detailed description of any current or prior debarments, suspensions or other ineligibility to participate in public contracts, if applicable.

6. A detailed description of any violations of local, state and/or federal industry or regulatory requirements, if applicable.

7. A detailed description of any controlling or financial interest the Proposer has in any other firms or organizations, or whether the Proposer's company is owned or controlled by any other firms or organizations. If the Proposer does not hold a controlling or financial interest in any other firms or organizations, that must be stated.

8. A detailed description of any and all contracts in effect within twelve (12) months prior to the date of Proposal submission between the Proposer and any local, state and/or federal agencies, which allow for the purchase of equipment from outside agencies. Such information shall include, without limitation, the name and contract information of the contracting agencies.

B. **Overview of Qualifications and Experience.** The Business Profile must include an overview of the Project Team's qualifications and experience regarding the provision of Radio System Packages and related services equivalent to those set forth in this RFP. The overview of qualifications and experience shall include, at a minimum, all of the following:

1. Identification of the Project Team, including, without limitation, an organizational chart which identifies all key personnel and subcontractors that will be responsible for providing the Radio System Package and related services set forth in this RFP.

2. The number of staff members employed by each subcontractor included in the Project Team that are currently providing Radio System Packages and related services equivalent to those set forth in this RFP.

3. A detailed description of the Project Team's overall experience regarding the provision of Radio System Packages and related services equivalent to those set forth in this RFP.

4. A detailed description of the Project Team's knowledge of the legal and procedural requirements pertaining to the provision of Radio System Packages and related services equivalent to those set forth in this RFP for public entities.

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5. A detailed description of the qualifications and experience of each Project Team member regarding the provision of Radio System Packages and related services equivalent to those set forth in this RFP, including, without limitation, the responsibilities, special training, licenses, certifications, current contact information and résumés of the account manager, project manager, project engineer, project technician, training staff and subcontractor lead, that will be responsible for providing the Radio System Package and related services set forth in this RFP.

6. A detailed description of how each Project Team member's qualifications and experience will help meet the objectives of the Project.

7.6 Quality Assurance Capabilities:

A. Description of Products and Services. Proposals shall include an overview of how the Radio System Package and related services provided by the Project Team pursuant to the terms and conditions of a final Professional Services Agreement will comply with the requirements and specifications set forth in this RFP and Attachment B – Product Features and Requirements. The description of products and services portion of the Proposal should include, at a minimum, all of the following items:

1. A detailed description of, and block diagrams, product availability plans and equipment lists, layouts and specification sheets pertaining to, any and all technical features and components, including, without limitation, the radio communications system and additional subsystems, microwave backhaul connectivity, existing radio dispatch console connectivity, subscriber equipment, site infrastructure and RF coverage, of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

2. A detailed description of any and all technical features, components and/or requirements set forth in this RFP and/or Attachment B – Product Features and Requirements that will not be included in, or met by, the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3. A detailed description of any and all technical features and/or components not set forth in this RFP or Attachment B – Product Features and Requirements that will be included in the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement along with the reasons for inclusion of such additional or alternative technical features and/or components.

4. A detailed description of the development, installation, training, system support, maintenance and any other services related to the implementation of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

5. A detailed description of any development, installation, training, system support, maintenance or other services related to the implementation of the Radio System Package set forth in this RFP that will not be included in the services provided pursuant to the terms and conditions of a final Professional Services Agreement.

6. A detailed description of any development, installation, training, system support, maintenance or other services related to the implementation of the Radio System Package not set forth in this RFP that will be included in the services provided pursuant to the terms and conditions of a final Professional Services Agreement along with the reasons for inclusion of such additional or alternative services.

7. A detailed description of any service requirements set forth in this RFP or Attachment B – Product Features and Requirements that will not be met by the development, installation, training, system support, maintenance or other services related to the implementation of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, any and all cases where

three (3) feet of equipment rack access space cannot be accomplished in existing radio sites and facilities that will be utilized by the Radio System Package.

8. A detailed description of the warranty that will apply to the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

9. A detailed description of any warranty requirements set forth in this RFP that will not be met by the warranty that will apply to the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

10. A detailed description of any warranty features not set forth in this RFP that will be included in the warranty that will apply to the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

11. A detailed description of the maximum number of radio subsystems, channels, sites, radios and talk groups that the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will be capable of accommodating with and without the need for additional hardware and/or software, including, without limitation, software licenses or other software upgrades.

12. A detailed description of any and all procedural techniques that the Project Team will utilize in order to add value to the Radio System Package and related services provided pursuant to the terms and conditions of a final Professional Services Agreement.

B. **Project Understanding and Quality Control.** Proposals shall include an overview of the Proposer's understanding of the Radio System Package and related services that will be required pursuant to the terms and conditions of a final Professional Services Agreement. The Project understanding portion of the Proposal should include, without limitation, all of the following:

1. A detailed project management plan which describes the management strategies that will be utilized by the Proposer to achieve the goals and objectives of the Project in a timely and efficient manner. The Proposer's project management plan shall include, without limitation, all of the following:

a. A detailed description of the Proposer's plan for implementing the Radio System Package, and providing the related services, set forth in this RFP, including, without limitation, the goals, activities, outcomes, deliverables and assumptions regarding system design, frequency acquisition and licensing, system manufacturing, site preparation for each site, system staging, system installation, system configuration, system optimization, system testing, cutover preparation, training, cutover implementation, conditional acceptance, final acceptance, system maintenance, technical support and any other relevant activities. The Proposer's implementation plan shall describe the roles and responsibilities of each member of the Project Team, the Proposer, the County and any other relevant third parties for each activity and sub-activity set forth therein. The Proposer's implementation plan shall not include any products or equipment that will not be ready for shipment at the time of Proposal submission or unavailable within twelve (12) months of the date of Proposal submission.

b. A detailed description of the schedule that the Proposer will follow to ensure timely completion of the Project, including, without limitation, a Gantt chart that graphically depicts the start date, end date, duration and precedence-relationship of the activities

and sub-activities set forth in the Proposer's implementation plan.

c. A detailed description of the factory acceptance, field performance and functionality acceptance and coverage performance acceptance tests that will be used to demonstrate the performance, coverage, and reliability of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's preliminary testing plan shall identify the individual procedures, including, without limitation, the goals, methods, acceptance criteria and the corrective actions that will be taken should failure occur, for each test set forth therein. Any and all coverage tests set forth in the Proposer's preliminary testing plan shall adhere to the guidelines set forth in TSB88.3-C.

d. A detailed description of the radio frequencies, on a per-site basis, that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's frequency plan shall identify any and all channels that will be used throughout the County's radio system for each microwave hop and radio subsystem. The Proposer's frequency plan shall also contain specification sheets for each component of the antenna system that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, but not limited to, antennas, antenna feedlines, receiver multicouplers and transmitter combiners.

e. A detailed description of the optional Global Positioning System ("GPS") location capabilities that may be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's GPS reporting plan shall include any and all impacts that GPS reporting may have on overall system capacity and any additional channel resources that will be necessary to support a GPS reporting feature with an update cadence of one (1) update every five (5) minutes for all subscribers. If the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will not utilize the P25 data bearer services method to provide GPS reporting, the GPS reporting plan shall describe the alternate method that will be utilized and its advantages over the P25 data bearer services method.

f. A detailed description of the reliability of each component of the Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, the use of co-located and non-co-located redundant components or subcomponents. The Proposer's reliability plan shall also describe the overall performance of the Radio System Package in the event of a failure of each component of the Simulcast Control Subsystem utilized thereby, including, without limitation:

i. Whether a redundant configuration operates in 'hot' or 'warm' standby mode.

ii. The immediate impact to the overall performance of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement from the perspective of a user of a subscriber radio.

iii. The types of notification that will be presented via the Simulcast Control Subsystem's management equipment

iv. The types of actions that will be automatically taken by other components of

the Simulcast Control Subsystem in order to ensure continued operations with either normal or limited performance.

v. The types of actions that must be taken by the County or other third-parties to fully restore normal operations.

vi. The types of visual or audio impacts that a field user or dispatcher may experience.

vii. Any potential loss of data or configuration in any other component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

g. A detailed description of the training courses that will be offered to County employees regarding the usage, operation and administration of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's preliminary training services plan shall include all of the training courses set forth in this RFP and any additional training courses, including, without limitation, online and CD or DVD courses, that the Proposer feels may be beneficial to the County. The preliminary training services plan shall also include sample training materials and curricula that may be used as part of the training courses provided pursuant to the terms and conditions of a final Professional Services Agreement.

h. A detailed description of the system support and maintenance services that will be provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's preliminary system support and maintenance plan shall include, the procedures and schedules applicable to each support and maintenance service set forth in this RFP, including, without limitation, the implementation of any and all software and/or hardware upgrades that will be made for each component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, and additional support and/or maintenance services that the Proposer feels may be beneficial to the County. The Proposer's preliminary system support and maintenance plan shall also include a detailed description of how the support and maintenance services provided pursuant to the terms and conditions of a final Professional Services Agreement comply with the specifications, standards and requirements set forth in this RFP and Attachment B – Product Features and Requirements, including, without limitation, identification of any and all local subcontractors or radio shops that will be responsible for providing such services. The ability to provide high quality system support and maintenance services is a critical need for the County and will be highly weighted in the evaluation and selection process.

i. A detailed description of the Proposer's understanding of the requirements, challenges, logistical issues and risks associated with the Project. The Proposer's reporting plan shall describe the expected communication channels between the Project Team and the County, including, without limitation, the name, physical address, email address and telephone number of the Project Team member that will be the Proposer's primary point of contact with the County, the name, physical address, email address and telephone number of the Proposer's secondary point of contact with the County, in the event the Project Team is unable to adequately address a particular issue or dispute, and the contents and frequencies of regular report and status meetings that will be held throughout the Project. The Proposer's reporting

plan shall also describe the Proposer's processes for identifying, reporting, discussing, and resolving any disputes that may arise during the Project.

j. A detailed description of the types of situations which the Proposer believes would require the issuance of a change order as well as the process that will be used to request and implement changes to the scope of products and services, schedule or budget set forth in the final Professional Services Agreement.

2. A detailed radio coverage plan which describes how the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will meet or exceed the radio coverage requirements and specifications set forth in this RFP and Attachment B – Product Features and Requirements. The Proposer's radio coverage plan shall include, without limitation, all of the following:

a. A detailed description of the overall effectiveness of the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, link budgets for each radio site. Link Budgets shall show the losses and gains between the transmitter's effective radiated power and the receiver's effective received sensitivity, including, without limitation, antenna gain, multicoupler gain and loss, combiner loss and other miscellaneous losses and gains. Link Budgets shall also include information on antenna models, azimuth and mechanical downtilt, if applicable. All link budgets shall ensure that the maximum path loss for the inbound path will be greater than the outbound path by exhibiting an inbound (talk-in) advantage of at least 1 decibel ("dB"). The link budgets provided as part of the Proposer's radio coverage plan shall be prepared using the sample link budget that is attached hereto as Attachment C – Sample Link Budget and incorporated herein by reference.

b. A detailed description of the reliability of each component of the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, but not limited to, the use of co-located and non-co-located redundant components or subcomponents. The Proposer's radio coverage plan shall also describe the overall performance of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement in the event of a failure of the RF Simulcast control equipment, radio site repeaters, radio site networking equipment and radio site backhaul links utilized thereby, including, without limitation:

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i. Whether a redundant configuration operates in 'hot' or 'warm' standby mode.

ii. The immediate impact to the overall performance of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement from the perspective of a user of a subscriber radio.

iii. The types of notification that will be presented via the RF Subsystem's management equipment.

iv. The types of actions that will be automatically taken by other components of the RF Subsystem in order to ensure continued operations with either normal

or limited performance.

v. The types of actions that must be taken by the County or other third-parties to fully restore normal operations.

vi. Any potential loss of data or configuration in any other component of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

c. A detailed description of the methods, tools and/or software that will be used to implement the Proposer's radio coverage plan, including, without limitation, the propagation model, the lognormal fading standard deviation factor, the delivered audio quality ("DAQ") channel performance criterion values, the antenna and body loss factors and the maximum allowable delay spread values that will be used for the Simulcast subsystems.

d. A detailed description of any and all different and/or additional radio sites not currently used by the County's radio system that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's radio site plan shall also include the reasons why utilization of such different or additional sites will allow for more efficient radio coverage.

e. A detailed description of the predicted coverage areas that will be made available by the Radio System Package provided pursuant to the terms and conditions of a Professional Services Agreement, including, without limitation, signal strength maps that graphically depict the boundaries of the overall Service Area and individual coverage areas within the County's political boundaries, major roads, bodies of water and any other relevant landmarks. Signal strength maps shall not include losses for land use and land cover and shall be de-rated by 9 dB as recommended by Section 6.4.2 of TSB-88.2-D. All signal strength maps shall be provided in eleven (11) by seventeen 17) inch, full color hardcopy format and Environmental Systems Research Institute's ArcView Shapefile, including, shapefile attribute (DBF), shapefile spatial index (SBN), shapefile shape index (SHX) and projection (PRJ) files or Google Earth formats on compact disc, digital versatile disc or universal serial bus thumb-drive. The signal strength maps provided as part of the Proposer's radio coverage plan shall include, without limitation, all of the following:

i. Adjacent channel signal strength maps which depict the digital and analog talk-out coverage predictions for each area over which the radio sites utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will produce a signal strength of 44 dBµ.

ii. Service Area signal strength maps which depict the digital and analog talk-out coverage predictions for each area over which the radio sites utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will produce a signal strength of 37 dBµ.

iii. Co-channel signal strength maps which depict the digital and analog talk-out coverage predictions for each area over which the radio sites utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will produce a signal strength of 19 dBµ.

f. A detailed description of the predicted reliability of the radio coverage that will be made available by the Radio System Package provided pursuant to the terms and conditions of a Professional Services Agreement, including, without limitation, coverage reliability maps that graphically depict all coverage areas that meet or exceed the coverage reliability requirements set forth in this RFP and Attachment B – Product Features and Requirements. Coverage reliability maps shall integrate signal strength, bit error rate, if applicable, and time domain interference into a single ninety-five percent (95%) reliability display that depicts "Covered Area Reliability" as defined by TSB-88.1D for P25 Phase 1 operation. Coverage reliability maps that depict these elements separately will not be accepted by the County. Coverage reliability shall be depicted by shading or cross-hatching coverage areas that meet or exceed the applicable coverage requirements. Any and all depictions of coverage reliability shall be distinct so as not to cause confusion with other map elements, and shall have a level of transparency to see underlying map elements. All coverage reliability maps shall be provided in eleven (11) by seventeen (17) inch, full color hardcopy format and ESRI ArcView Shapefile, including, shapefile attribute (DBF), shapefile spatial index (SBN), shapefile shape index (SHX) and projection (PRJ) files or Google Earth formats on compact disc, digital versatile disc or universal serial bus thumb-drive. The coverage reliability maps provided as part of the Proposer's radio coverage plan shall include, without limitation, all of the following:

i. Digital portable on-street coverage reliability maps which depict the composite talk-in and talk-out coverage predictions for the Digital Portable Coverage Area that exhibits an individual tile reliability of ninety-five percent (95%) or greater at a DAQ level of 3.4.

ii. Digital mobile on-street coverage reliability maps which depict the composite talk-in and talk-out coverage predictions for the Digital Mobile Coverage Area that exhibits an individual tile reliability of ninety-five percent (95%) or greater at a DAQ level of 3.4.

iii. Analog mobile on-street coverage reliability maps which depict the composite talk-in and talk-out coverage predictions for the Analog Mobile Coverage Area that exhibits an individual tile reliability of ninety-five percent (95%) or greater at a DAQ level of 3.4.

g. A detailed description of the Proposer's ability to meet the radio coverage requirements set forth in this RFP and Attachment B – Product Features and Requirements, including, without limitation, the level of Service Area coverage (i.e. percentage of Service Area covered) that can be guaranteed.

3. A detailed microwave network plan which describes how the Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will meet or exceed the requirements and specifications set forth in this RFP and Attachment B – Product Features and Requirements. The Proposer's microwave network plan shall include, without limitation, all of the following:

a. A detailed description of any and all digital microwave links that will be used to interconnect the radio sites included in the RF Subsystem to each other and to the Simulcast Control Subsystem utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

b. A detailed description of any and all protection features that will be included with the Microwave Backhaul Subsystem utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, the silent transmit protection feature that will be used to guard against non-detected transmit failures on hot-standby and space diversity systems. The Proposer's microwave network plan shall also specify the actions that will be taken by each feature of the Microwave Backhaul Subsystem and state the recovery times associated therewith.

c. A detailed description of the functional capabilities of the outdoor and indoor radio units that will be utilized by the Microwave Backhaul Subsystem included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's microwave network plan shall also describe any and all ways in which operation of such outdoor and indoor radio units will be impacted when temperatures rise above or fall below those specified in Attachment B – Product Features and Requirements.

4. A detailed subscriber radio network plan which describes how the portable and mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement will meet or exceed the requirements and specifications set forth in this RFP and Attachment B – Product Features and Requirements. The Proposer's subscriber radio network plan shall include, without limitation, all of the following:

a. A detailed description of any and all versions or models of portable and mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

b. A detailed description of the commonality between the programming software, cabling and interfaces that will be used to program the different versions of portable and mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The Proposer's subscriber radio network plan shall also describe whether the programming cables that will be utilized by the portable and mobile subscriber radios will require different adapters for different tiers of radios.

c. A detailed description of the capability of the programming software that will be used to program the portable and mobile subscriber radios included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement to generate channel layouts, user manuals and other customizable documentation for use in user training and field references.

5. A point-by-point compliance matrix, which is attached hereto as Attachment G – Radio System Package Compliance Workbook and incorporated herein by reference. The Proposer's compliance matrix shall be completed in its entirety and have a response code of one (1) or higher for all mandatory items. Any compliance matrix with mandatory items marked with a zero (0) shall be deemed non-responsive and rejected by the County.

7.7 **Cost Proposal:**

Proposals shall include a completed cost proposal, which is attached hereto as Attachment H – Radio System Package Pricing Workbook and incorporated herein by reference, that itemizes any and all

costs associated with the provision of the Radio System Package and related services set forth in this RFP. In addition, Proposals shall also include a detailed description of the financing options offered by the Proposer.

7.8 Additional Documentation:

Proposals shall include a detailed description of any and all reports, drawings, studies, invoices and any other pertinent documents that will be prepared and/or used to meet the requirements of this RFP. Samples of each document described in the additional documentation section of the Proposal shall be attached to the Proposal.

7.9 References:

A. **Reference Data Sheet.** Proposals shall include a completed reference list, which is attached hereto as Attachment E – Reference Data Sheet and incorporated herein by reference, containing present and past performance information from a minimum of three (3) clients, preferably government agencies, to whom the Proposer has provided Radio System Packages and related services equivalent to those set forth in this RFP within the past five (5) years.

B. **Required Information.** The performance information provided with each reference must be clearly correlated to the Radio System Package and related services set forth in this RFP. Each reference must include, at a minimum, all of the following information:

1. The name, title, physical address, email address and telephone number for the current contact person of each referenced client.

2. The dates of project commencement, completion and acceptance for each referenced client.

3. A detailed description of the Radio System Package and related services provided to each referenced client, including, without limitation, the amount of time it took to complete delivery of any and all products and services.

4. A detailed description of how the services rendered by the Proposer led to accomplishment of each referenced client's project objectives.

5. A detailed description of the contract amount and outcome of each referenced client's project.

6. A verification that all information provided in the Reference Data Sheet is true and correct to the best of the Proposer's knowledge.

7.10 Evidence of Insurability and Business Licenses:

All Proposers shall submit evidence of eligibility for all insurances set forth in Attachment H – Sample Professional Services Agreement, which is attached hereto and incorporated herein by reference. Upon award of a final Professional Services Agreement, the Successful Proposer will have ten (10) calendar days to produce certificates of the required insurance, including a certified endorsement naming the County as an additional insured. Additional insurance should not be purchased until a final Professional Services Agreement has been awarded; however, proof that the Proposer can obtain the required insurance must be provided with the Proposal. In addition, all Proposers shall certify the possession of any and all licenses and/or certifications applicable to the provision of the Radio System Package and related services set forth in this RFP.

7.11 Exceptions, Objections and Requested Changes:

Each Proposer should carefully review the terms and conditions of this RFP and any all attachments hereto. Any exceptions, objections or requested changes to any part of this RFP or any attachments hereto, including, without limitation, Attachment F – Sample Professional Services Agreement, shall be clearly identified and explained in the Proposal. Descriptions of any exceptions, objections or requested changes shall include the page and paragraph number of the referenced portion of this RFP or attachment hereto. Protests based on any exception, objection or requested change shall be considered waived and invalid by the County, if such exception, objection or requested change is not clearly identified and explained in the Proposal.

7.12 Required Attachments:

Proposals that do not contain each of the following attachments may be rejected by the County:

- **Attachment 1 – Signature Affidavit** (see Section 7.3)
- **Attachment 2 – Staff Resumés for Key Personnel** [See Section 7.5(B)(5)]
- **Attachment 3 – Project Management Plan** [see Sections 7.6(B)(1)(a)-(j)]
- **Attachment 4 – Radio Coverage Plan** [see Sections 7.6(B)(2)(a)-(h)]
- **Attachment 5 – Microwave Network Plan** [see Sections 7.6(B)(3)(a)-(c)]
- **Attachment 6 – Subscriber Radio Network Plan** [see Sections 7.6(B)(4)(a)-(c)]
- **Attachment 7 – Point-by-Point Compliance Matrix** [see Section 7.6(B)(5)]
- **Attachment 8 – Cost Proposal** [see Section 7.7]
- **Attachment 9 – Additional Documentation** [See Section 7.8]
- **Attachment 10 – Reference Data Sheet** [see Section 7.9]

8.0 EVALUATION CRITERIA AND SELECTION PROCESS:

After the Proposals are received and opened by the County, the County will review and evaluate all Proposals for responsiveness to this RFP, in order to determine whether the Proposer possesses the qualifications necessary for the satisfactory provision of the Radio System Package and related services set forth herein. In evaluating the Proposals, the County will employ a one hundred (100) point competitive evaluation system with consideration given to each of the following categories:

- **Relevant and Comparable Experience – 25 Points:** The Proposer's experience in providing Radio System Packages and related services equivalent to those set forth in this RFP for government agencies of comparable size.

- **Staffing Capabilities – 20 Points:** The Proposer's ability to provide qualified and experienced staff familiar with providing Radio System Packages and related services equivalent to those set forth in this RFP.

- **Ability to Provide High-Quality Products and Services - 45 Points:** The overall impression of the Proposer's ability to provide a Radio System Package and related services in accordance with the requirements and specifications set forth in this RFP and Attachment B – Product Features and Requirements.

- **Overall Cost of Products and Services – 10 Points:** The total cost to provide a Radio System Package and related services equivalent to those set forth in this RFP.

All Proposals will be evaluated by an impartial RFP Evaluation Committee comprised of County staff

members and other parties that have expertise or experience with the types of Radio System Packages and related services set forth in this RFP. The RFP Evaluation Committee may directly request clarification of Proposals from, and/or conduct interviews with, one (1) or more Proposers. The purpose of any such request for clarifications or interviews shall be to ensure the RFP Evaluation Committee's full understanding of the Proposal. If clarifications are made as a result of such discussions, the Proposer shall put such clarifications in writing. Any delay caused by a Proposer's failure to respond to such a request for clarification or interview may result in the rejection of the Proposal.

The evaluation and selection process is designed to award the procurement not necessarily to the Proposer of least cost, but rather to the Proposer with the best combination of attributes based upon the above-referenced evaluation criteria. Accordingly, Proposals will be evaluated against the evaluation criteria set forth in this RFP and not against other Proposals. The award of a final Professional Services Agreement, if made by the County, will be based upon a total review and evaluation of each Proposal and the projected costs associated therewith.

All contacts made with the County during the evaluation process shall be through the County's Information Technology Director, Jim Storm (see Section 10.1 for contact information). Attempts by a Proposer to contact any other representative of the County during the evaluation process may result in disqualification of the Proposal. Conflict resolution shall be handled by County staff upon receiving a written statement from the Proposer about this RFP process.

9.0 CONTRACT DEVELOPMENT:

9.1 Contract Negotiation Process:

Once the Proposal evaluation process has been completed, the County will notify each Proposer of the final rankings and negotiate the terms and conditions of a final Professional Services Agreement with the highest-ranking Proposer.

9.2 Scoping Meetings:

The highest-ranking Proposer may be asked to attend a scoping meeting to ensure that the Proposer has a full understanding of the terms and conditions of the Professional Services Agreement and the Radio System Package and related services that will provided in accordance therewith. The Scoping meeting will also provide the highest-ranking Proposer with an opportunity to ask technical questions regarding the Radio System Package and related services that it will be expected to provide pursuant to the terms and conditions of a final Professional Services Agreement.

9.3 Award of Professional Services Agreement:

If the County determines, after the completion of the contract negotiation process, to award a contract for the provision of the Radio System Package and related services set forth in this RFP, a Professional Services Agreement shall be sent to the Successful Proposer for signature. Once signed copies have been returned to the County, the Professional Services Agreement will be submitted to the Humboldt County Board of Supervisors for review and approval. The County hereby reserves the right to award a Professional Services Agreement to the Proposer which, in the sole judgment of the County, serves the best interests thereof. No Proposal shall be binding upon the County until a final Professional Services Agreement is signed by duly authorized representatives of both the Successful Proposer and the County.

9.4 Contractual Requirements:

A. **Compliance with Anti-Discrimination Laws.** In connection with the execution of any Professional Services Agreement resulting from this RFP process, the Successful Proposer will be required to abide by the applicable provisions of: Title VI and Title VII of the Civil Rights Act of 1964; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975; the Food Stamp Act of 1977; Title II of the Americans with Disabilities Act of 1990; the California Fair Employment and Housing Act; California Civil Code Sections 51, *et seq*.; California Government Code Sections 4450, *et seq*.; California Welfare and Institutions Code Section 10000; Division 21 of the California Department of Social Services Manual of Policies and Procedures; United States Executive Order 11246, as amended and supplemented by United States Executive Order 11375; and any other applicable local, state and/or federal laws and regulations, all as may be amended from time to time.

B. **Disclosure of Confidential Information.** In connection with the execution of any Professional Services Agreement resulting from this RFP process, the Successful Proposer may receive information that is confidential under local, state and/or federal law. The Successful Proposer will be required to protect all confidential information in conformance with any and all applicable local, state and federal laws, regulations, policies, procedures and standards.

C. **Prevailing Wage Requirements.** The Successful Proposer and its subcontractors shall be responsible for complying with the applicable prevailing wage requirements set forth in California Labor Code, Sections 1770, *et seq*., as well as all other applicable local, state and federal wage requirements. California State Prevailing Wage information is available at the following California Department of Industrial Relations websites:

- http://www.dir.ca.gov/OPRL/FAQ_PrevailingWage.html
- http://www.dir.ca.gov/oprl/DPreWageDetermination.html

D. **Indemnification.** The Successful Proposer will be required to hold harmless, defend and indemnify the County, its agents, officers, officials, employees and volunteers from and against any and all claims, demands, losses, damages, liabilities, expenses and costs of any kind or nature, including, without limitation, attorney fees and other costs of litigation, arising out of, or in connection with, the Successful Proposer's negligent performance of, or failure to comply with, any of the obligations contained in any Professional Services Agreement resulting from this RFP process, except such loss or damage which was caused by the sole negligence or willful misconduct of the County.

E. **Insurance Requirements.** The Successful Proposer shall furnish the County with certificates and original endorsements effecting any and all required insurance coverage prior to the County's execution of a final Professional Services Agreement. In addition, the County may require additional insurance requirements dependent upon the final scope of products and services that will be provided by the Successful Proposer.

F. **Assignment.** The final Professional Services Agreement resulting from this RFP process shall not be assignable by the Successful Proposer without prior approval from the County.

G. **Jurisdiction and Venue.** The final Professional Services Agreement resulting from this RFP process shall be governed in all respects by the laws of the State of California. Any disputes regarding the final Professional Services Agreement shall be litigated in the State of California and venue shall lie in the County of Humboldt unless transferred by court order pursuant to California Code of Civil Procedure Sections 394 or 395.

10.0 MODIFICATION AND CORRECTION:

10.1 Requests for Clarification or Correction:

Proposers shall be responsible for meeting all of the requirements, specifications and conditions set forth in this RFP and any and all attachments hereto. If a Proposer discovers any ambiguity, conflict, discrepancy, omission or other error in this RFP, a written request for clarification or correction should be submitted to the County at the following address:

COUNTY: Humboldt County Administrative Office – Information Technology Division
Attention: Jim Storm, Information Technology Director
839 Fourth Street
Eureka, California 95501
Email: RFP@co.humboldt.ca.us

All requests for correction for clarification and any other questions pertaining to this RFP must be received before **1:30 p.m. PST** on **June 18, 2018**. All responses to such written requests and questions received by the County will be posted on the County's Purchasing website (Http://www.co.humboldt.ca.us/purchase) on or before **June 25, 2018.**

10.2 Addenda:

Any modifications to this RFP shall be made by written Addenda. Addenda to this RFP, if necessary, will be distributed via mail, email or facsimile to all Proposers by the County and will be posted on the County's Purchasing website. Addenda issued by the County interpreting or modifying any portion of this RFP shall be incorporated into the Proposal, if possible. The Addenda Cover Sheet shall be signed and dated by the Proposer and submitted to the County with the Proposal. Any oral communications concerning this RFP by County personnel are not binding on the County, and shall in no way modify this RFP or the obligations of the County or any Proposers.

11.0 CANCELLATION OF THE REQUEST FOR PROPOSALS PROCESS:

The County hereby reserves the right to cancel this RFP process at any time after the issuance of this RFP, but prior to the award of a final Professional Services Agreement, if the County determines that cancellation is in the County's best interest for reasons, including, but not limited to, the following: the Radio System Package and/or related services set forth in this RFP are no longer required; the Proposals did not independently arrive in open competition, were collusive or were not submitted in good faith; or the County determines, after review and evaluation of the Proposals, that the County's needs can be satisfied though an alternative method.

The County further reserves the right to amend or modify the preliminary scope of products and services set forth in this RFP prior to the award of a final Professional Services Agreement, as necessity may dictate, and to reject any and all Proposals received in response hereto. This RFP does not commit the County to award a Professional Services Agreement for the provision of a Radio System Package and related services equivalent to those set forth herein, or to pay any costs incurred in the preparation of any Proposals submitted in response hereto.

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT A – CURRENT REPEATER SITE, FREQUENCY AND CALL SIGN TABLE

Current Repeater Sites		
Site Name	**Latitude**	**Longitude**
County Courthouse	40 48 11.2N	124 9 43.7W
Horse Mountain	40 52 27.1N	123 44 0.86W
Mt Pierce	40 25 2.3N	124 7 13W
Pratt Mountain	40 7 13.52N	123 41 35.76W
Rodgers Peak	41 9 28.07N	124 1 23.51W
Shelter Cove	40 2 1.84N	124 2 25.63W
Sugar Pine Mountain	41 2 18.7N	123 44 55.6W
Trinidad	41 3 15.8N	124 9 2.7W

Transmit Frequencies (Megahertz)								
	County CH	Mt. Pierce	Horse Mtn.	Pratt Mtn.	Rodgers Peak	Sugarpine	Shelter Cove	Trinidad
Sheriff's Office Dispatch	154.7400	154.7400	154.7400	154.7400	154.7400	154.7400	154.7400	154.7400
SO TAC 3	155.0700							
SO TAC 4	155.8500							
Public Works	153.9050	153.9050	153.9050	153.9050	153.9050	153.9050		
District Attorney		154.1150						
Siren Notification					151.1900			

Receive Frequencies (Megahertz)								
Sheriff's Office Dispatch	155.7900	155.7900	155.7900	155.7900	155.7900	155.7900	155.7900	155.7900
SO TAC 3	155.0700							
SO TAC 4	155.8500							
Public Works	155.8950	155.8950	155.8950	155.8950	155.8950	155.8950		
District Attorney		154.8700						
Siren Notification					159.4575			

Current Federal Communications Commission Call Signs				
KDN602	KFW42	KJZ66	WAF939	WQIM304
KDN980	KIL338	KJZ68	WBL620	WQKU881
KDN981	KIL491	KJZ69	WFR354	WQNL256
KDN983	KJZ40	KMF377	WFR360	WQVV839
KFV82	KJZ41	KMF378	WGK233	WQXT297
KFV83	KJZ64	KNAW981	WGK234	WQYU725
KFW41	KJZ65	KUJ569	WPJP621	

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT B – PRODUCT FEATURES AND REQUIREMENTS

TABLE OF CONTENTS

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REQUEST FOR PROPOSALS – NO. 18-100-COMM
RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT B – PRODUCT FEATURES AND REQUIREMENTS

1.0 INTRODUCTION:

The County is soliciting Proposals regarding the provision of the equipment and services necessary to implement a P25 VHF Phase I Digital Conventional Simulcast Radio Subsystem, a Simulcast Control Subsystem, an Analog VHF Conventional Simulcast Radio Subsystem, a countywide Microwave Backhaul Subsystem and a Subscriber Radio Network ("Radio System Package").

The County understands that the various components of the overall Radio System Package, including, without limitation, antennas, antenna components, microwave equipment and subscriber radio equipment, may come from different manufacturers. However, to the degree possible, the County envisions all five (5) subsystems to integrate with the other subsystems to form a single cohesive system. For example, the antenna system used for the P25 subsystem should be the same antenna system used for the analog Simulcast subsystem. The same would apply for power, microwave, network management and other components as a way to reduce overall cost and complexity.

Due to the topography of Humboldt County and the location of, and distance between, the existing remote radio sites, the County anticipates that a single frequency Simulcast system to cover the entire County would be very difficult to achieve. Therefore, the County believes that a P25 digital design for the Sheriff's Office would best fit the needs of the County. This design would utilize a single new repeater input frequency and up to three (3) new transmit frequencies configured in a combination of Simulcast cells and standalone sites. The existing repeater frequencies would remain in place in analog mode to retain interoperability capabilities with local jurisdictions. These multiple cells would all transmit at the same time and a field unit would either manually select the Simulcast cell or standalone site based on location or utilize the vote-scan feature to select the best cell based on signal strength and/or bit error rate.

Similarly, the analog subsystem would use a single repeater input frequency and up to two (2) different transmit frequencies configured in Simulcast cells. The existing repeater frequencies would be used in the new system, requiring one (1) additional transmit frequency. Since the analog system would be used by the Humboldt County Department of Public Works, which primarily operates from mobile radios, it is anticipated to require less sites to meet coverage requirements. Field units would manually select the Simulcast cell based on location.

The County is in process of licensing the frequencies for this Project and feels confident that the licenses will be in place prior to implementation of the Radio System Package. The County understands that completing a system design without knowing all details of the Federal Communications Commission ("FCC") licenses represent considerable difficulties. Therefore, Proposers shall include their assumptions regarding the system design, combiner loss, intermodulation, effective radiated power ("ERP") and any anticipated co-channel or adjacent channel interference in their proposed Radio System Package. Proposers must bear in mind ERP limitations on VHF frequencies as detailed in Section 90.205 of the FCC rules as it relates to the design of their proposed Radio System Package.

2.0 SIMULCAST CONTROL SUBSYSTEM SPECIFICATIONS AND REQUIREMENTS:

The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a Simulcast Control Subsystem which complies with all of the specifications and requirements set forth herein.

2.1 Required Components:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include all of the following components:

2.1.1 Subsystem Control:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include any and all equipment necessary to provide adequate subsystem control, including, without limitation, centralized Simulcast control and timing synchronization, centralized Simulcast audio distribution, receiver voting functionality and centralized interfacing to dispatch wireline consoles and network management components.

2.1.2 Network Management:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include any and all equipment necessary to provide adequate network management, including, without limitation, the ability to monitor, control, manage and report on system operations.

2.1.3 Interconnection:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include any and all networking and backhaul equipment to provide adequate interconnection to the other system components via the Microwave Backhaul Subsystem.

2.1.4 Spare Equipment:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include one (1) complete set of any and all spare equipment required for the repair, maintenance and alignment of the Simulcast Control Subsystem.

2.2 Simulcast Operation Requirements:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following operational requirements:

2.2.1 Non-Captured Delay Areas:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement must have the capability of minimizing non-captured overlap areas with delay spreads in excess of those required to meet the required DAQ objective inside the Service Area. Any areas outside the acceptable delay spread must be indicated on coverage maps as areas that do not meet coverage requirements.

2.2.2 Signal Processing:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement must use Simulcast signal processing as required to optimize voice quality in coverage overlap areas.

2.2.3 System Optimization:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement must operate without the need for manual optimization and system/subsystem alignment. All alignment and adjustments must be automated where possible.

2.3 P25 Conventional Feature Requirements:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include conventional features that comply with the applicable P25 specifications set forth herein. All equipment used to support such features must be tested to ensure compliance with the requirements of TSB-102.CBBA and TSB-102.CBBC.

2.3.1 Group Voice Call:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a group voice call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The group voice call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The group voice call feature shall comply with any and all applicable testing specifications set forth in Section 5 of TIA-102.CAEA.

C. **Functional Requirements.** Subscribers must be equipped to operate on more than one (1) talk group. A subscriber that is in-range of a radio subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall initiate a group call by selecting a talk group and pushing the push-to-talk switch. Other users in the talk group, including dispatchers and subscribers on other sites, shall receive the call if they have selected that talk group and the appropriate channel and backhaul resources are available. All parties in the group shall be able to respond, one (1) at a time, and all parties shall hear the speaker.

2.3.2 Emergency Alarm:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an emergency alarm feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The emergency alarm feature shall comply with any and all technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-

102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The emergency alarm feature shall comply with any and all applicable testing specifications set forth in Section 5 of TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of a radio subsystem shall initiate an emergency alarm by pressing a dedicated emergency button. Dispatcher positions that are so programmed shall be notified of the emergency alarm and be capable of acknowledging such alarm. The initiating subscriber shall be the only party capable of cancelling the alarm. The Simulcast Control Subsystem shall process emergency alarms as the highest priority in order to allow the emergency alarm to be transmitted upon availability of an unused channel.

2.3.3 Emergency Group Call:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an emergency group call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The emergency group call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The emergency alarm feature shall comply with any and all applicable testing specifications set forth in Section 7 of TIA-102.CAEA.

C. **Functional Requirements.** A subscriber that is in-range of a radio subsystem can initiate an emergency group call on a selected talk group by either: pressing the push-to-talk switch after pressing the emergency button; or by selecting a pre-defined emergency talk group and pushing the push-to-talk switch. Other users in the talk group, including dispatchers and subscribers on other sites, will receive the call and be notified that it is an emergency call, if they have selected that talk group and the appropriate channel and backhaul resources are available. The Simulcast Control Subsystem shall process emergency group calls as the highest priority in order to allow the emergency alarm to be transmitted upon availability of an unused channel.

2.3.4 Individual Voice Call:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an individual voice call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The individual voice call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The individual voice call feature shall comply with any and all applicable testing specifications set forth in Section 6 of TIA-102.CAEA.

C. **Functional Requirements.** A subscriber that is in-range of a radio subsystem shall initiate a call to one (1) specific subscriber by selecting that subscriber's ID and pushing

the push-to-talk switch. The other specific subscriber, even if it is on another site, shall receive notification of an individual call request if the appropriate channel and backhaul resources are available. If the other specific subscriber accepts the request by pushing the push-to-talk switch within a specified time, the parties shall communicate with each other and no other parties will participate.

2.3.5 Radio Check:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a radio check feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The radio check feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The radio check feature shall comply with any and all applicable testing specifications set forth in Section 7 of TIA-102.CABA.

C. **Functional Requirements.** The system infrastructure (management terminals) shall be capable of initiating a message to a subscriber to determine if it is registered and in range. A subscriber that receives a radio check message shall acknowledge it and that acknowledgement shall be returned to the infrastructure component that initiated the check. The Simulcast Control Subsystem must process the delivery of radio checks to subscribers and the return of received acknowledgements to the initiating party.

2.3.6 Call Alert:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a call alert feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The call alert feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The call alert feature shall comply with any and all applicable testing specifications set forth in Section 6 of TIA-102.CABA.

C. **Functional Requirements.** A subscriber, including, without limitation, dispatchers, shall have the ability to send a non-voice alert to another subscriber. The receiving subscriber shall indicate that it has been alerted and identify the subscriber that initiated the alert. The initiating subscriber shall receive notification that the alert was received.

2.3.7 Inhibit and Uninhibit:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include inhibit and uninhibit features which comply with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The inhibit and uninhibit features shall comply with any

and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA, TIA-102.CAEB and TIA-102.AABC-C.

B. **P25 Testing Specifications.** The inhibit and uninhibit features shall comply with all applicable testing specifications set forth in Sections 11 and 12 of TIA-102.CABA.

C. **Functional Requirements.** Dispatchers and/or system managers shall have the ability to disable (inhibit) and re-enable (uninhibit) a subscriber from operation on the radio system. The Simulcast Control Subsystem shall require and process (displays to the initiator) a subscriber radio's positive or negative acknowledgement of an inhibit or uninhibit command. A subscriber radio that has been inhibited shall only be uninhibited by a proper uninhibit command sent from a dispatcher or system manager.

2.3.8 Encryption:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an encryption feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The encryption feature shall comply with any and all applicable technical specifications set forth in TIA-102.AAAD.

B. **P25 Testing Specifications.** The encryption feature shall comply with any and all applicable testing specifications set forth in TIA-102.AAAC.

C. **Functional Requirements.** A subscriber that is in-range of the radio system and that has encryption capabilities shall be able to place a group call to other encryption-capable subscribers who are affiliated to the same talk group and possess matching encryption keys. Radios affiliated to the same talk group that do not possess any encryption keys, or that possess different encryption keys, shall be unable to understand the message. The implemented encryption method shall be Type 3 encryption via an Advanced Encryption Standard algorithm. Key length for the Advanced Encryption Standard algorithm shall be 256 bits.

2.3.9 GPS Location (Optional):

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional GPS location feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The GPS location feature shall comply with any and all applicable technical specifications set forth in TIA-102.BAJB and TIA-102.BAJC.

B. **Functional Requirements.** The Simulcast Control Subsystem shall support GPS location reporting from all mobile and portable subscriber radios through the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. GPS location shall be displayed for selected mobile and portable subscriber radios on a computer workstation dedicated for this purpose, located in the dispatch center. The GPS location feature shall allow a workstation user to:

1. Query the location of a particular subscriber radio or group of subscriber radios at any time.

2. Enable or disable GPS reporting functionality on a particular subscriber radio or group of subscriber radios at any time.

3. Set cadence or timing for GPS reporting functionality on a particular subscriber radio or group of subscriber radios by time, distance traveled, push-to-talk usage and upon emergency activation.

C. Capability Requirements. The Simulcast Control Subsystem shall have the capability to support a GPS location feature, but shall not be equipped with GPS location software or hardware unless optionally added by the County.

2.4 Non-P25 Conventional Feature Requirements:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include the following conventional features that are not defined by the P25 specifications:

2.4.1 Over-The-Air Programming (Optional):

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional over-the-air programming feature which complies with all of the following requirements:

A. Functional Requirements. The Simulcast Control Subsystem shall support over-the-air programming to enable software upgrades and changes to switches and personality profiles to be made remotely over a connected radio subsystem with no direct wired connection to the subscriber radios. The over-the-air programming feature shall operate per the following behaviors:

1. New files or changes to existing files that are downloaded over the air will not be implemented into the subscriber radio until it is confirmed that the entire new file or the entire set of changes to the existing file have been downloaded.

2. A subscriber unit that has been reprogrammed via the over-the-air programming feature will provide an acknowledgment of the successful programming change once the change is fully and successfully made.

3. The server that supports the over-the-air programming feature shall have configuration settings for the number of times or a period of time over which it will attempt to complete a programming change.

4. Over-the-air programming messages will be treated with lower priority than all voice calls.

5. Over-the-air programming instructions can be set to be delivered to one (1) single subscriber radio or a group of subscriber radios at one (1) time.

B. Capability Requirements. The Simulcast Control Subsystem shall have the capability to support an over-the-air programming feature, but shall not be equipped with over-the-

air programming software or hardware unless optionally added by the County.

2.5 Expansion Requirements:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall have the ability to expand in terms of the number of distinct radio subsystems, total conventional channels, radio sites, subscriber radios (distinct subscriber radio IDs) and talk groups and announcement groups that it can support. For purposes of this requirement, any Simulcast subsystem shall be considered one (1) radio subsystem.

2.6 Reliability Requirements:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be designed in accordance with all of the specifications and requirements set forth herein.

2.6.1 System Reliability:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final professional Services Agreement shall comply with all of the following reliability specifications and requirements:

A. **Simulcast Control and Audio Distribution Reliability.** The Simulcast control and audio distribution paths utilized by the Simulcast Control Subsystem shall not include any single point of failure that would cause either of the following to occur:

1. The loss of any of the P25 conventional features set forth herein across one (1) or more radio subsystems.

2. The loss of interconnection and processing of user audio between the Simulcast Control Subsystem and the RF Subsystem which results in the loss of two (2) or more radio sites across one (1) or more Simulcast subsystems.

B. **System Reliability Rating.** The Simulcast Control Subsystem shall have an overall product reliability rating of 99.999%, meaning that the hardware and software utilized thereby shall not be inoperable or unavailable for more than five and one-quarter (5.25) minutes per year.

2.6.2 Equipment Reliability:

All equipment used to support the Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following reliability specifications and requirements:

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A. **Simulcast Control and Audio Distribution Equipment Reliability.** The reliability of the equipment that provides Simulcast control and audio distribution paths for the Simulcast Control Subsystem shall be ensured through the utilization of one (1) of the following methods (listed in descending order of preference):

1. Hot-standby via external redundancy (redundant equipment located in different physical housing as the main equipment).

2. Hot-standby via internal redundancy (redundant equipment located in the same physical housing as the main equipment).

3. Warm-standby via external redundancy (redundant equipment located in different physical housing as the main equipment).

4. Warm-standby via internal redundancy (redundant equipment located in the same physical housing as the main equipment).

2.6.3 Points of Failure:

For purposes of the reliability requirements set forth herein, connections, equipment, equipment power supplies, electric power cords and concerns beyond electronics equipment shall be considered possible points of failure. The Successful Proposer shall be responsible for eliminating, at its cost, any such points of failure that are identified by the County during the warranty period of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

2.7 P25 Network Management Feature Requirements:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include centralized network management features that comply with the specifications and requirements set forth herein.

2.7.1 Fault Management:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a fault management feature which complies with all of the following specifications and requirements:

A. Functional Requirements. The Simulcast Control Subsystem shall support centralized fault management of the overall Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The fault management feature shall:

1. Allow a trained user to view system, component, link and other faults with identification of the failed item and the time and location of the failure.

2. Allow a trained user to view, sort, and clear fault alarms, including, without limitation, historical alarms.

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3. Allow a trained user to configure alarm severity levels and processing routines, including, without limitation, sending any and all appropriate emails and other documentation.

4. Send simple network management protocol traps to an external server or alarm system.

2.7.2 Configuration Management:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a configuration management feature which complies with all of the following specifications and requirements:

A. Functional Requirements. The Simulcast Control Subsystem shall support centralized configuration management of the overall Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The configuration management feature shall:

1. Allow a trained user to add new subscribers to the system, including, without limitation, the addition of the subscriber ID.

2. Allow a trained user to define an alias for each new subscriber added to the system.

3. Allow a trained user to define and change feature profiles for each subscriber added to the system.

4. Allow a trained user to create new talk groups and assign subscribers to each talk group added to the system.

5. Allow a trained user to define radio consoles, including, without limitation, assigning talk groups and conventional channels to those consoles.

6. Support typical subscriber radio programming features, including, without limitation, centralized management of radio programming files.

2.7.3 Accounting Management:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an accounting management feature which complies with all of the following specifications and requirements:

A. Functional Requirements. The Simulcast Control Subsystem shall support centralized accounting management of the overall Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The accounting management feature shall:

1. Allow a trained user to prepare and print and export call activity reports, which include, without limitation, when calls occurred, which group or individual radio were targeted by each call and the total amount time that each radio was active.

2. Allow a trained user to prepare and print system and radio activity reports which summarize both system and radio call activity, including, without limitation, the number and length of any and all group and private calls, by hour, day or any other specified time period.

3. Allow a trained user to prepare and print channel activity reports which contain detailed statistical summaries, including, without limitation, the number and

duration of each call type, the percentage of the total available time that a channel was used and any channel malfunctions that were recorded, by hour, day or entire time period in order to determine the over or under utilization of each channel.

4. Allow a trained user to prepare and print group emergency push-to-talk occurrence and trend reports which list any and all emergency push-to-talk activity by time, day and group.

5. Allow a trained user to prepare and print group push-to-talk occurrences and trend reports which list any and all group and individual push-to-talk call activity by time, day and group.

6. Allow a trained user to prepare and print group usage reports which contain group usage summaries for each radio ID.

7. Allow a trained user to prepare and print radio activity reports which track any and all commands sent to, and events received by, radios from any radio talk group combinations in order to determine if all commands were acknowledged.

8. Allow a trained user to prepare and print radio commands which contain the timelines for each command from origination through purge.

9. Allow a trained user to prepare and print radio event reports which track individual events, including, but not limited to, messages, emergencies and statuses, from all or specific radios.

10. Allow a trained user to prepare and print radio push-to-talk reports which identify which radios have the most activity and when the heaviest and lightest activity occurs.

11. Allow a trained user to prepare and print system diagnostics reports which track any and all hardware failures and alarms by alarm name and time of occurrence.

12. Allow a trained user to prepare and print export system usage reports which track the percentage of channel time used, the amount of unused time per channel, the number and length of calls, the average length of each call, call counts and times by the hour and channel use time in seconds.

13. Allow a trained user to export all reports to comma-separated-value (text) and Microsoft Excel formats.

14. Maintain all collected data, including raw data and reports, for a period of not less than one (1) year.

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2.7.4 <u>Performance Management</u>:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a performance management feature which complies with all of the following specifications and requirements:

A. Functional Requirements. The Simulcast Control Subsystem shall support centralized performance management of the overall Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. The performance management feature shall:

1. Allow a trained user to view all subscribers enabled on the system, including, without limitation, system configuration parameters and status.

2. Allow a trained user to develop reports regarding the utilization levels of network control subsystems and individual radio systems (sites) in order to determine the need for additional resources, including, without limitation, additional channels and sites.

3. Allow a trained user to initiate any and all applicable P25 conventional features and functions, including, without limitation, radio check and encryption.

2.7.5 Security Management:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a security management feature which is capable of supporting centralized security management of the overall radio system. The security management feature shall allow a trained user to inhibit subscriber radios from operation on the entire system (all sites) in such a way that causes the subscriber radio to remain entirely inoperable until it receives an uninhibit (allow operation) command from the system.

2.8 Network Management Architecture Requirements:

2.8.1 Network Management Design:

The network management features of the Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be available on one (1) set of hardware located at the a mutually agreed upon location. Any and all network management features shall be designed to allow remote access to one (1) remote user or workstation from Microsoft Windows based personal computers that are connected to the same local area network, including virtual or secured network extensions, as the hardware upon which such features are stored. Remote users shall have access to all of the network management features of the Simulcast Control Subsystem.

2.8.2 Administrative Access:

The Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall support multiple levels of administrative access to the network management features thereof so that a "root" user may access all such features and may create other user accounts that restrict access to selected features.

2.8.3 Data Recovery:

Any and all databases used to store information regarding unit registration, system configuration and other critical programming information regarding the Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms

and conditions of a final Professional Services Agreement must be automatically backed-up, either internally or externally to another component on the network, to allow for the recovery thereof in case of hardware failure.

2.8.4 Monitoring:

In order to support the network management feature requirements for the Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, the RF Subsystem that will be utilized by the Radio System Package shall include a method for a technician to monitor radio control, radio repeater, environmental, power source and other equipment at all radio, microwave and Simulcast controller main sites both remotely and at all RF remote sites. Such monitoring methods shall define the hardware and software interfaces necessary to allow the required management and/or reporting information to be gathered and transported to the network management equipment.

3.0 RF SUBSYSTEM SPECIFICATIONS AND REQUIREMENTS:

The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an RF Subsystem which complies with all of the requirements set forth herein.

3.1 Required Components:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include all of the following:

3.1.1 Digital RF Subsystem:

The digital component of the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include radio sites that house local site control equipment, radio repeaters, antennas, receiver multicouplers, transmitter combiner systems, Simulcast stability and site networking equipment and all other equipment necessary to provide adequate radio coverage.

3.1.2 Analog RF Subsystem:

The analog component of the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include radio sites that house local site control equipment, radio repeaters, antennas, receiver multicouplers, transmitter combiner systems, Simulcast stability equipment, site networking equipment, backhaul interconnection equipment, voting and Simulcast control equipment to route and manage audio between the Simulcast Control Subsystem and all radio sites in the RF Subsystem and any and all other equipment necessary to provide adequate radio coverage.

3.2 P25 and Non-P25 Conventional and Network Management Feature Requirements:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall support all of the P25 and non-P25 conventional features set forth in Sections 2.3 and 2.4 of this document.

3.3 Antenna System Requirements:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms

and conditions of a final Professional Services Agreement shall include a comprehensive antenna system that is designed in accordance with all of the following requirements:

3.3.1 Required Equipment:

The antenna system shall include any and all low passive intermodulation antenna equipment and other components necessary to support the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, antennas, antenna feedlines, receiver multicouplers, transmitter combiners and all other components between the antennas and radios. Each component of the antenna system, along with any and all frequencies identified in Attachment A – Current Repeater Site, Frequency and Call Sign Table that will be utilized thereby on a per-site basis, shall be incorporated into the overall design of the RF Subsystem such that intermodulation and interference are not generated within the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. To the degree allowable, the antenna system shall use transmitter combiners and receiver multicouplers to minimize the number of antennas mounted on the tower.

3.3.2 Quality Control:

The antenna system shall be comprised of high quality components that exhibit low loss and meet any and all applicable FCC rules and regulations. Each component of the antenna system shall be sized for proper power limits for the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement with a twenty percent (20%) growth factor. Any and all antennas utilized by the antenna system shall be mounted in accordance with any and all applicable County approved specifications and requirements.

3.4 Coverage Requirements:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be designed in accordance with all of the specifications and requirements set forth herein.

3.4.1 Coverage Areas:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall provide digital and analog radio coverage to all of the following areas:

A. **Digital Portable Coverage Area.** The RF Subsystem shall provide digital coverage to portable radios over fifty-five percent (56%) of the overall Service Area.

B. **Digital Mobile Coverage Area.** The RF Subsystem shall provide digital coverage to mobile radios over eighty-six percent (86%) of the overall Service Area.

C. **Analog Mobile Coverage Area.** The RF Subsystem shall provide analog coverage to mobile radios over seventy percent (70%) of the overall Service Area.

3.4.2 Coverage Reliability:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the

terms and conditions of a final Professional Services Agreement shall provide ninety-five percent (95%) on-street, talk-in and talk-out coverage reliability at a DAQ level of 3.4, as defined by TSB-88.1D or the latest revision thereof, in the Digital Portable, Digital Mobile and Analog Mobile Coverage Areas.

3.4.3 Radio Configuration:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following configuration specifications and requirements:

A. **Portable Radio Configuration.** The RF Subsystem shall be designed to utilize portable radios that are worn in a swivel holster at a height of three (3) feet for coverage and testing purposes. Both transmission and reception shall occur from this position using a remote speaker microphone.

B. **Mobile Radio Configuration.** The RF Subsystem shall be designed to utilize mobile transceivers mounted in the trunk of a typical sedan with a unity gain antenna mounted in the center of the roof at a height of five (5) feet for coverage and testing purposes.

3.4.4 TSB-88 Compliance:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be designed in accordance with the methods prescribed by the latest version of TSB-88, including, without limitation, utilizing a Lognormal Fading Standard Deviation of 5.6 dB, as required by TSB-88.2D, for coverage reliability purposes.

3.4.5 Regulatory Compliance:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be designed to comply with the coverage requirements for public-safety pool channels as set forth in the FCC rules, and be consistent with any and all applicable interference requirements for neighboring or co-channel systems. The RF Subsystem shall also be designed to utilize the appropriate ERP for antenna height above average terrain, site selection, directional antennas or downtilt, if necessary.

3.4.6 Coverage Testing Criteria and Specifications:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall meet or exceed all of the following testing criteria and specifications:

A. **Digital RF Subsystem.** The digital component of the RF Subsystem shall have a bit error rate of two percent (2.0%) or less using the standard P25 transmitter 511 bit test pattern, as required by Section O.153 of the standards published by the International Telecommunication Union's Telecommunication Standardization Sector ("ITU-T"), formerly Section V.52 of the standards published by the International Telecommunication Union's Consultative Committee for International Telephony and Telegraphy, or 1011 hertz ("Hz") test tone pattern, as defined in TIA102.CAAA-C.

B. **Analog RF Subsystem.** A subjective voice test using an odd number of participants (X

vendor representatives and X+1 County representatives), shall be used to determine the adequacy of the coverage provided by the analog component of the RF Subsystem.

C. Simulcast Components. Any and all Simulcast components of the RF Subsystem shall be tested in Simulcast mode.

3.5 Expansion Requirements:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall have the ability to expand the total number of subsystems, channels, distinct radio sites, radios and talk groups that it can support.

3.6 Reliability Requirements:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be designed in accordance with all of the specifications and requirements set forth herein.

3.6.1 System Reliability Requirements:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final professional Services Agreement shall comply with all of the following reliability specifications and requirements:

A. Simulcast Control and Audio Distribution Reliability. The Simulcast control or audio selection/distribution paths utilized by the RF Subsystem shall not include any single point of failure that would cause either of the following to occur:

1. The loss of any of the P25 conventional features set forth herein across one (1) or more radio subsystems.

2. The loss of interconnection and processing of user audio between the RF Subsystem and the Simulcast Control Subsystem which results in the loss of two (2) or more radio sites across one (1) or more Simulcast subsystems.

B. System Reliability Rating. The RF Subsystem shall have a product reliability rating of 99.999%, meaning that the hardware and software utilized thereby shall not be inoperable or unavailable for more than five and one-quarter (5.25) minutes per year.

3.6.2 Equipment Reliability Requirements:

Any and all equipment used to support the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following reliability specifications and requirements:

A. Simulcast Control and Audio Distribution Equipment Reliability. The reliability of the equipment that provides Simulcast control and audio distribution paths for the RF Subsystem shall be ensured through the utilization of one (1) of the following methods (listed in descending order of preference):

1. Hot-standby via external redundancy (redundant equipment located in different physical housing as the main equipment).

2. Hot-standby via internal redundancy (redundant equipment located in the same physical housing as the main equipment).

3. Warm-standby via external redundancy (redundant equipment located in different physical housing as the main equipment).

4. Warm-standby via internal redundancy (redundant equipment located in the same physical housing as the main equipment).

3.6.3 Points of Failure:

For purposes of the reliability requirements set forth herein, connections, equipment, equipment power supplies, electric power cords and concerns beyond electronics equipment shall be considered possible points of failure. The Successful Proposer shall be responsible for eliminating, at its cost, any such points of failure that are identified by the County during the warranty period of the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

3.7 Equipment Requirements:

All equipment used to support the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the specifications and requirements set forth herein.

3.7.1 Radio Repeaters:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include radio repeaters which comply with all of the following specifications and requirements:

A. Radio Parametric Specifications. The radio repeaters utilized by the RF Subsystem shall be of the type accepted by the FCC for use in the appropriate frequency bands and comply with any and all applicable specifications and requirements set forth in Part 90 of the FCC rules and regulations, including, without limitation, all of the following radio parametric performance specifications:

1. Radio repeaters shall receive and transmit radio signals using a frequency band of 148-174 megahertz ("MHz").

2. Radio repeaters shall have a channel capacity of one (1) transmit and one (1) receive and a channel spacing increments of 12.5 and 15 kilohertz ("kHz").

3. Radio repeaters shall generate frequencies through an internal synthesizer and/or embedded microprocessor technology.

4. Radio repeaters shall have a carrier output power rating that is capable of producing 100 watts (before combiner) continuous duty, constant @ +/- 10% rated power with <1 dB power variation over the range of input power.

5. Radio repeaters shall have a modulation fidelity rate of <5% as required by Section 2.2.16.2 of TSB-102.CAAA.

6. Radio repeaters shall have a conducted spurious emissions rate of -70 dB (25 kHz).

7. Radio repeaters shall have a minimum transmission duration of one (1) to four (4) minutes that is programmable in one (1) minute increments.

8. Radio repeaters shall have a carrier attack time of <150 milliseconds.

9. Radio repeaters shall have an output-input impedance rate of 50 ohms.

10. Radio repeaters shall have a signaling digital mode which is capable of generating and/or decoding all P25 network access codes listed in TIA-102.

11. Radio repeaters shall have a carrier frequency stability of less than ±0.5 parts per million.

12. Radio repeaters shall have a reference sensitivity of -116 decibel-milliwatts ("dBm") while in digital mode (five percent (5%) bit error rate).

13. Radio repeaters shall have an adjacent channel rejection rate of 60 dB as required by Section 3.1.7.1 of TIA-102.CAAB-B.

14. Radio repeaters shall have a spurious and image response rejection rate of 90 dB as required by Section 3.1.10 of TIA-102.CAAB-B.

15. Radio repeaters shall have a co-channel rejection rate of <9 dB as required by Section 2.1.8 of TIA-102.CAAB-B (ref. Section 3.1.8 of TIA-102.CAAB-B).

16. Radio repeaters shall have an intermodulation rejection rate of 80 dB (12.5 / 25 kHz).

B. **Indicator Specifications.** Radio repeaters utilized by the RF Subsystem shall be equipped with transmit, primary power (on-off) and fault alarm indicators that are mounted on the front panel thereof.

C. **Electrical Power Specifications.** Radio repeaters utilized by the RF Subsystem shall be capable of operating from a repeater power source of -48 volts of direct current. Any and all fuses or other current limiting devices shall be contained within the radio repeater.

D. **Auxiliary Programming Equipment and Software Specifications.** Radio repeaters utilized by the RF Subsystem shall include a total of three (3) complete sets of any and all cables, software and equipment, excluding the computers used to operate the applicable software, required to program and maintain such radio repeaters. Any and all necessary programming software shall be compatible with Microsoft Windows based personal computers and be capable of operating in Microsoft Windows 10 environments.

3.7.2 Spare Equipment:

The RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include one (1) complete set of any and all spare equipment required for the repair, maintenance and alignment of both the digital and analog components of the RF Subsystem.

4.0 MICROWAVE BACKHAUL SUBSYSTEM SPECIFICATIONS AND REQUIREMENTS:

The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a Microwave Backhaul Subsystem which complies with all of the specifications and requirements set forth herein.

4.1 Network Microwave Link Requirements:

The Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall utilize digital microwave links, which comply with all of the specifications and requirements set forth herein, to interconnect the radio sites included in the RF Subsystem to each other and the Simulcast Control Subsystem.

4.1.1 Frequency Band Coverage:

Any and all equipment used to provide the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall operate on FCC licensed frequency bands and be compliant with any and all applicable FCC requirements.

4.1.2 Modulation:

Any and all equipment used to provide the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall offer a selection of user-configurable modulation schemes for each capacity within the allowable practical and regulatory limits. Modulation options shall encompass quadrature phase shift keying ("QPSK"), 16 quadrature amplitude modulation ("QAM"), 32QAM, 64QAM, 128QAM, 256QAM, 512QAM and 1024QAM to allow for maximization of the subsystems utilized by the Radio System Package, including, without limitation, system gain, performance and/or spectrum efficiency, as required.

4.1.3 Adaptive Modulation:

Adaptive modulation of the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be supported over a minimum of six (6) modulation rates, including QPSK, 16QAM, 64QAM, 256QAM, 512QAM and 1024QAM, on channel bandwidths of 10 MHz, 30 MHz and 40 MHz. Intermediate modulation steps shall be available as additional modulation rates or as coding options on each of the specified QPSK to 1024QAM rates. Any and all modulation steps provided by coding options shall be enabled for maximum throughput or maximum gain for each modulation rate to provide a total of eight (8) modulation states. Switching between modulation rates, including coding options, shall be error-free for all traffic, including, without limitation, Ethernet and time-division multiplexing ("TDM").

4.1.4 Radio Transmitter Performance:

Any and all radio transmitters used to operate the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall

have matching manual and automatic transmitter power control ranges that are adjustable in 0.1 dB steps and have a change-rate capability of six (6) dB per second.

4.1.5 Synchronization:

Frequency synchronization of the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be maintained over Ethernet-only transport links using synchronous Ethernet with Ethernet synchronization message channels. It shall be possible to set the source and priority, and monitor the quality, of multiple radio link clocks. Radio link clock quality shall meet the limits set forth in ITU-T G.8262, with the limits set forth in ITU-T G.8261 being met over a network of up to ten (10) tandem links. The radio link clock quality on TDM links shall meet the limits set forth in ITU-T G.824.

4.1.6 System Protection Features:

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include system protection features that comply with all of the following system protection specifications and requirements:

A. **Equipment Protection.** Any and all equipment used to provide the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of supporting hot-standby, space diversity, combined hot-standby and space diversity and frequency diversity link configurations, and include all of the following:

1. Error-free receiver path switching and/or voting features that automatically revert when required to preserve the integrity of the protected system and/or equipment.

2. Transmitter path switching features that automatically revert when required to preserve the integrity of the protected system and/or equipment. The Average transmitter switching times for hot-standby and space diversity systems shall not exceed fifty (50) milliseconds.

3. Silent transmit protection features that are capable of guarding against non-detected transmit failures on hot-standby and space diversity systems.

B. **Network Protection.** Any and all equipment used to provide the digital microwave links utilized by the Microwave Backhaul Subsystem that will be included with the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include all of the following:

1. Ethernet ring/mesh protection features that comply with Section 802.1w – "Rapid Spanning Tree Protocol" of the standards published by the Institute of Electrical and Electronics Engineers ("IEEE") and ITU-T G.8032v2 – "Ethernet Ring Protection Switching."

2. Selectable revert or non-revert switching features that comply with any and all applicable regulatory standards and requirements. Switch operation shall act on individual Digital Signal 1 ("DS1") tributaries and each switch event shall not cause a data hit of more than fifty (50) milliseconds.

3. Integrated TDM loop/route protection features for NxDS1 ring networks that comply with any and all applicable regulatory standards and requirements.

4. Redundancy options for the ring switch and drop-insert elements used within the ring. Ring capacity shall be configurable to 63xDS1.

5. Operational features that are designed to ensure low data latency on the ring circuits in accordance with all applicable regulatory standards and requirements.

4.2 Equipment Requirements:

All equipment used to support the Microwave Backhaul Subsystem utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the specifications and requirements set forth herein.

4.2.1 Radio Units:

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include radio units which comply with all of the following specifications and requirements:

A. Outdoor Radio Units. The outdoor radio units utilized by the Microwave Backhaul Subsystem shall be 1+0 optimized and comply with all of the following technical and functional specifications and requirements:

1. Outdoor radio units shall have direct attachment to its antenna, or to a direct-mount antenna coupler unit for single antenna monitored hot-standby, frequency diversity or co-channel dual polarization configurations.

2. Outdoor radio units shall be capacity independent up to their design maximum within each band.

3. Outdoor radio units shall be modern, compact and light-weight in order to ensure maximum efficiency.

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4. Outdoor radio units shall have a single coaxial cable feed to the indoor radio units utilized by the Microwave Backhaul Subsystem.

5. Outdoor radio units shall be capable of supporting normal operations on cable lengths up to nine hundred and fifty (950) feet.

6. Outdoor radio units shall be capable of supporting normal operations under ambient temperatures of negative twenty-seven degrees Fahrenheit (-27ºF) to one hundred thirty-one degrees Fahrenheit (131ºF) and one hundred percent (100%) humidity.

7. Outdoor radio units shall be designed to allow for quick and efficient direct mounting onto its antenna.

8. Outdoor radio units shall include a received signal strength indicator port for antenna alignment purposes.

9. Outdoor radio units shall have direct-mount coupler options for single antenna monitored hot-standby or frequency diversity operation and co-channel dual polarization or cross-polarization interference cancelling operation.

10. Outdoor radio units shall have couplers that are capable of supporting equal and unequal split operation.

11. Outdoor radio units shall have an indirect mount option with a short section of flexible waveguide to connect to an industry-standard antenna.

12. Outdoor radio units shall include built-in lightning surge suppression features.

B. <u>Indoor Radio Units</u>. The indoor radio units utilized by the Microwave Backhaul Subsystem shall comply with all of the following technical and functional specifications and requirements:

1. Indoor radio units shall be capable of providing any and all required traffic, service, network management and Intermediate Frequency (IF) interfaces to the RF Unit (RFU).

2. Indoor radio units shall be capable of supporting up to four (4) 1+0 links or two (2) 1+1 links.

3. Indoor radio units shall be capable of supporting normal operations at any and all altitudes that are within the highest and lowest points in Humboldt County.

4. Indoor radio units shall be capable of supporting normal operations under ambient temperatures of twenty-three degrees Fahrenheit (23ºF) to one hundred thirty-one degrees Fahrenheit (131ºF) and zero percent (0%) to ninety-three percent (93%) humidity (non-condensing).

5. Indoor radio units shall have cards or modules that are hot-swappable for service and upgrade purposes.

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6. Indoor radio units shall have redundancy options for plug-in cards, power supply and unit management.

4.2.2 <u>Antennas</u>:

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include high performance shielded antennas that comply with any and all applicable regulatory requirements, including, without limitation, any and all relevant electrical, mechanical and structural performance and construction standards set forth in EIA 195 and EIA 222.

4.2.3 <u>Power Supply and Power Consumption</u>:

Any and all equipment used to support the Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of operating from a battery-backed power

source of -48 volts of direct current and be protected against reverse voltage.

4.2.4 Regulatory Compliance:

Any all equipment used to support the Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with any and all applicable electromagnetic compatibility, radio frequency, link operation, safety, security and transportation regulations and standards, including, without limitation: the federal standards for radio frequency devices contained in Part 15 of Title 47 of the Code of Federal Regulations ("C.F.R."); the federal standards for fixed microwave services contained in 47 C.F.R. Part 101; the operational standards set forth in 47 C.F.R. Section 15.247 and Annex 8 of Canada's Radio Standards Specification 210; and the safety standards contained in Section 60950-1 of the standards published by UL, LLC.

4.2.5 Spare Equipment:

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include one (1) complete set of any and all spare equipment required for the repair, maintenance and alignment of the Microwave Backhaul Subsystem.

4.3 System Management Requirements:

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include centralized system management and security features that comply with all of the specifications and requirements set forth herein.

4.3.1 Network Management:

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a comprehensive network management system which complies with all of the following specifications and requirements:

A. Platform Management System. The platforms utilized by the Microwave Backhaul Subsystem shall be supported by a platform management system which complies with all of the following technical and functional specifications and requirements:

1. The platform management system shall utilize a Layer 3 network for hosting purposes.

2. The platform management system shall include a router function with configurable address and routing capabilities.

3. The platform management system shall include dual-stack Internet Protocol versions 4 and 6 addressing capabilities so that either or both can be configured.

4. The platform management system shall include static and dynamic routing options under Internet Protocol version 4, including Routing Information Protocol versions 1 and 2 and the Open Shortest Path First Protocol, and Internet Protocol version 6, including Routing Information Protocol next generation and Open Shortest Path First Protocol version 3.

5. The platform management system shall be capable of setting trap destinations to either itself or to a third-party element management system.

6. The platform management system shall include options that will allow for the provision of a common trap for all alarms, or traps specific to each alarm, with a description of the event and the severity thereof.

B. **Element Management System.** The equipment utilized by the Microwave Backhaul Subsystem shall be supported by an advanced element management system, for fault, configuration, accounting and security management purposes, which complies with all of the following technical and functional specifications and requirements:

1. The element management system shall be capable of supporting electronic installation and commissioning checklists and verification of commissioning specifications.

2. The element management system shall be capable of maintaining comprehensive logs to ensure the capture of events and alarm conditions on all network elements.

3. The element management system shall include filtering options that will allow for the sorting and viewing of information by priority, type, product and area.

4. The element management system shall be capable of performing all of the following advanced performance and report management functions:

a. Collecting RF and Ethernet performance data from all RF and Ethernet network elements and other customized data based on selected parameters.

b. Graphing performance history reporting trends for all RF and Ethernet network elements and other selected network element interfaces.

c. Setting user-defined performance thresholds, specifications, standards and events.

d. Reporting TDM bandwidth availability and utilization across the network.

e. Reporting Ethernet bandwidth utilization across all Ethernet circuits in the network.

f. Reporting RF path availability across all RF links in the network.

g. Reporting end-to-end circuit performance.

5. The element management system shall be capable of performing all of the following carrier Ethernet management functions:

a. Virtual local area network end-to-end discovery, visualization and provisioning.

b. Ethernet operation, administration and maintenance (ITU-T Y.1732, IEEE 802.1ag) end-to-end discovery, visualization, provisioning and diagnostics.

c. Ethernet Ring Protection (ITU-T G.8032) end-to-end discovery, visualization and provisioning.

6. The element management system shall be capable of supporting end-to-end circuit provisioning for deploying, configuring and managing circuits, including, without limitation, Ethernet virtual circuits, through a network.

7. The element management system shall be capable of performing circuit diagnostics for testing and isolating traffic affecting faults.

8. The element management system shall be capable of performing health reporting, capacity planning and license management functions in order to identify excess capacity and capacity bottlenecks.

9. The element management system shall be capable of generating network health reports for analyzing RF interfaces and Ethernet ports across the network to ensure rapid identification of performance, capacity and congestion issues.

10. The element management system shall be capable of maintaining link configuration and capacity utilization data for each microwave path, including, without limitation, details of total link capacity together with contributing TDM and Ethernet packet data capacity.

11. The element management system shall be capable of supporting link layer fault diagnostics (IEEE 802.3ah).

12. The element management system shall include office support system integration which is capable of supporting all of the following:

a. Extensible Markup Language script-based network element provisioning application programmer interfaces to allow an office support system to configure and/or provision the network elements individually or in bulk through a common interface.

b. Extensible Markup Language-based network element configuration auditing application programmer interfaces to allow an office support system to read and/or audit the network element configurations through a common interface.

13. The element management system shall be capable of supporting Simple Network Management Protocol version 3 and remote authentication dial-in user service servers for security purposes.

14. The element management system shall be capable of providing generic device support for fault, inventory and performance management of third party vendor devices supporting the Simple Network Management Protocol.

15. The element management system shall be capable of supporting individual and bulk upgrades of network element system software.

16. The servers utilized by the element management system shall be capable of supporting N+1 hot-standby redundancy.

4.3.2 **Security Management:**

The Microwave Backhaul Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a comprehensive security management system which complies with all of the following specifications and requirements:

A. **System Alarm Interfaces.** The security management system utilized by the Microwave Backhaul Subsystem shall include a services plug-in card that is capable of providing system alarm interfaces which comply with all of the following technical and functional specifications and requirements:

1. The system alarm interfaces shall be capable of selecting and directing internal equipment alarms and/or external alarm inputs from any platform within the network to any other platform within the network.

2. The system alarm interfaces shall be capable of supporting user-mappable Internal alarms and/or external alarm inputs to relay-provisioned outputs on the host platform and/or remote platforms.

3. The system alarm interfaces shall be capable of capturing external alarm inputs on time to live interfaces.

4. The system alarm interfaces shall be capable of supporting up to six (6) time to live alarm inputs and up to four (4) Form C relay outputs.

5. The system alarm interfaces shall be capable of naming individual alarm inputs and relay outputs.

6. The system alarm interfaces shall be capable of assigning severity levels to alarm inputs.

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7. The system alarm interfaces shall include configurable input high or input low selection options for time to live alarm triggers.

8. The system alarm interfaces shall have minimum high and low-level time to live input thresholds of 2 volts and 0.8 volts respectively.

9. The system alarm interfaces shall be capable of providing high voltage (spike) protection for all time to live inputs.

10. The system alarm interfaces shall be capable of capturing input state changes on an alarm log.

11. The system alarm interfaces shall be capable of supporting an alarm output relay configuration for energized or de-energized upon receipt of an alarm event.

12. The system alarm interfaces shall be capable of accessing normally closed and normally open contacts on the relay output.

13. The system alarm interfaces shall be capable of capturing alarm output actions on

the network management system event log.

14. The system alarm interfaces shall be capable of supporting a minimum rating of 50 watts on relay contacts with voltages up to 60 volts of direct current.

5.0 PORTABLE SUBSCRIBER RADIO SPECIFICATIONS AND REQUIREMENTS:

The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include portable subscriber radios which comply with all of the specifications and requirements set forth herein.

5.1 P25 Conventional Feature Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include conventional features that comply with the applicable P25 specifications set forth herein.

5.1.1 Group Voice and Broadcast Group Call:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a group voice and broadcast group call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The group voice and broadcast group call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The group voice and broadcast group call feature shall comply with any and all applicable testing specifications set forth in TIA-102.CAEA and TIA-102.CABA.

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C. **Functional Requirements.** Subscribers must be equipped to operate on more than one (1) talk group. A subscriber that is in-range of the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall initiate a group call by selecting that talk group and pushing the push-to-talk switch. Other users in the talk group, including dispatchers and subscribers on other sites, shall receive the call if they have selected that talk group and the appropriate channel and backhaul resources are available. All parties in the group shall be able to respond, one (1) at a time, and all parties shall hear the speaker.

5.1.2 Emergency Alarm:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an emergency alarm feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The emergency alarm feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The emergency alarm feature shall comply with any and all applicable testing specifications set forth in TIA-102.CAEA and TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the RF Subsystem shall initiate an emergency alarm by pressing a dedicated emergency button. Dispatcher positions that are so programmed shall be notified of the emergency alarm and be capable of acknowledging and clearing such alarm. Only the initiating subscriber shall be capable of cancelling the alarm. The portable subscriber radios shall be capable of enabling or disabling the emergency alarm feature on a unit-by-unit basis. The portable subscriber radios shall also be capable of configuring the emergency alarm feature for silent or user-notification operation upon activation of the emergency button. Additionally, the portable subscriber radios shall be capable of adjusting the length of time the emergency button must be depressed before an emergency alarm is generated.

5.1.3 Emergency Group Call:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an emergency group call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The emergency group call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The emergency group call feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the RF Subsystem can initiate an emergency group call on a selected talk group by either: pressing the push-to-talk switch after pressing the emergency button; or by selecting a pre-defined emergency talk group and pushing the push-to-talk switch. Other users in the talk group, including dispatchers and subscribers on other sites, will receive the call and will have notification that it is an emergency call if they have selected that talk group and the appropriate channel and backhaul resources are available. Portable subscriber radios must be equipped to initiate and receive emergency group calls and be capable of enabling or disabling the emergency group call feature on a unit-by-unit basis. Portable subscriber radios shall also be capable of configuring the emergency group call feature for silent or user-notification operation upon activation of the emergency button. Additionally, the portable subscriber radios shall be capable of configuring the microphone to be active or inactive upon activation of the emergency button.

5.1.4 Individual Voice Call:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an individual voice call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The individual voice call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA

and TIA-102.CAEB.

B. **P25 Testing Specifications.** The individual voice call feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the RF Subsystem shall initiate a call to one (1) specific subscriber by selecting that subscriber's ID and pushing the push-to-talk switch. The other specific subscriber, even if it is on another site, shall receive notification of an individual call request if the appropriate channel and backhaul resources are available. If the other specific subscriber accepts the request by pushing the push-to-talk switch within a specified time, the parties shall communicate with each other and no other parties will participate.

5.1.5 Radio Check:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a radio check feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The radio check feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The radio check feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** The system infrastructure (management terminals) shall be capable of initiating a message to a subscriber to determine if it is registered and in range. A portable subscriber radio that receives a radio check message shall acknowledge it and that acknowledgement shall be returned to the infrastructure component that initiated the check.

5.1.6 Call Alert:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a call alert feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The call alert feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The call alert feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber, including, without limitation, dispatchers, shall have the ability to send a non-voice alert to another subscriber. The receiving subscriber shall provide an indication that it has been alerted and the alert shall contain the ID of the subscriber that initiated the alert. The initiating subscriber shall receive an indication that the receiving subscriber received the alert.

5.1.7 Inhibit and Uninhibit:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include inhibit and uninhibit features which comply with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The inhibit and uninhibit features shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The inhibit and uninhibit features shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** Dispatchers and/or system managers shall have the ability to disable (inhibit) and re-enable (uninhibit) a subscriber from operation on the radio system. While inhibited, the subscriber's display shall be blanked and the subscriber shall not be able to participate in any calls other than the receipt of an uninhibit command. Portable subscriber radios shall be capable of generating a positive or negative acknowledgement of an inhibit or uninhibit command. Portable subscriber radios shall not transmit or receive radio signals, produce any tone or indicators or allow active use of any user controls while inhibited. A portable subscriber radio that has been inhibited shall only be uninhibited by a proper uninhibit command sent from a dispatcher or system manager.

5.1.8 Encryption (Optional):

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional encryption feature which complies with all of the following specifications and requirements:

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A. **P25 Technical Specifications.** The encryption feature shall comply with any and all applicable technical specifications set forth in TIA-102.AAAD.

B. **P25 Testing Specifications.** The encryption feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the radio system and that has encryption capabilities shall be able to place a group call to other encryption-capable subscribers who are affiliated to the same talk group and possess matching encryption keys. Portable subscriber radios affiliated to the same talk group that do not possess any encryption keys, or that possess different encryption keys, shall be unable to understand the message. The implemented encryption method shall be Type 3 encryption via an Advanced Encryption Standard algorithm. Key length for the Advanced Encryption Standard algorithm shall be 256 bits.

D. **Capability Requirements.** Portable subscriber radios shall have the capability to support an encryption feature, but shall not be equipped with encryption hardware or software unless optionally added by the County.

5.1.9 GPS Location (Optional):

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional GPS location feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The GPS location feature shall comply with any and all applicable technical specifications set forth in TIA-102.BAJB, TIA-102.BAJC.

B. **Functional Requirements.** Portable subscriber radios shall support GPS location reporting through the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. GPS location hardware shall be integral to the portable subscriber radios (i.e. internal to the portable radio housing). Additionally, the GPS antenna shall be an integral component of the land mobile radio antenna on the portable subscriber radio.

C. **Capability Requirements.** Portable subscriber radios shall have the capability to support a GPS location feature, but shall not be equipped with GPS location hardware or software unless optionally added by the County.

5.2 Non-P25 Conventional Feature Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include the following conventional features that are not defined by the P25 specifications:

5.2.1 Over-The-Air Programming (Optional):

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional over-the-air programming feature which complies with all of the following requirements:

A. **Functional Requirements.** Portable subscriber radios shall support over-the-air programming to enable software upgrades and changes to switches, personality profiles and transmitter and receiver parameters and alignment to be made remotely over the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement with no direct wired connection from the radio infrastructure. The over-the-air programming feature shall operate per the following behaviors:

1. New files or changes to existing files that are downloaded over the air will not be implemented into the portable subscriber radio until it is confirmed that the entire new file or the entire set of changes to the existing file have been downloaded.

2. A portable subscriber radio that has been reprogrammed via the over-the-air programming feature will provide an acknowledgment of the successful programming change once the change is fully and successfully made.

3. The server that supports the over-the-air programming feature shall have configuration settings for the number of times or a period of time over which it will attempt to complete a programming change.

4. Over-the-air programming messages will be treated with lower priority than all

voice calls.

5. Over-the-air programming instructions can be set to be delivered to one (1) single portable subscriber radio or a group of portable subscriber radios at one (1) time.

B. Capability Requirements. Portable subscriber radios shall have the capability to support an over-the-air programming feature, but shall not be equipped with over-the-air programming hardware or software unless optionally added by the County.

5.2.2 Man-down functionality (Optional):

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional man-down functionality feature which complies with all of the following requirements:

A. Functional Requirements. Portable subscriber radios shall include an accelerometer that monitors movement and orientation. Portable subscriber radios shall support man-down functionality which allows for the automatic transmission of an emergency alert if a radio is in a horizontal position and/or motionless for a preset amount of time.

B. Capability Requirements. Portable subscriber radios shall have the capability to support man-down functionality, but shall not be equipped with man-down functionality hardware or software unless optionally added by the County.

5.3 Operational Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the operational specifications and requirements set forth herein.

5.3.1 Mode of Operation Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall support P25 phase 1 conventional operations. Portable subscriber radios shall also support direct, unit-to-unit, conventional communications on simplex channels in both P25 and analog modes of operation which are compatible with the modulation methods used by the Simulcast Control Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

5.3.2 Vote Scan Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall come equipped with a vote scan feature wherein each channel in a pre-programmed scan list is qualified to see if it contains the correct continuous tone coded squelch signal or P25 network access code to open the receiver, it is then further qualified by measuring the received signal strength and/or the bit error rate of each received frequency at the portable subscriber radio. The portable subscriber radio then votes among received frequencies, selecting either the best signal and/or the first signal that exceeds a preprogrammed threshold.

5.3.3 Vocoder Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall support either the P25 improved multi-band excitation vocoder or the P25 enhanced full rate advanced multi-band excitation vocoder, however, the latter is preferred.

5.3.4 Performance Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following performance specifications and requirements:

A. Radio Parametric Specifications. The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be of the type accepted by the FCC for use in the appropriate frequency bands and comply with any and all applicable specifications and requirements set forth in Part 90 of the FCC rules and regulations, including, without limitation, all of the following radio parametric performance specifications:

1. Portable subscriber radios shall receive and transmit radio signals using a frequency band of 136-174 MHz.

2. Portable subscriber radios shall have channel spacing rates of 12.5 kHz, 15 kHz and 25 kHz.

3. Portable subscriber radios shall generate frequencies through an internal synthesizer and/or embedded microprocessor technology.

4. Portable subscriber radios shall have a power rating of 6.0 watts (VHF) and be power adjustable on a per-channel and/or mode basis.

5. Portable subscriber radios shall have a modulation limiting rate of 2.5 kHz (12.5 kHz).

6. Portable subscriber radios shall have audio frequency response rates of +1-3 dB, 300-3000 Hz and 6 dB / octave as required by Section 4.2.6 of TIA-603 and Section 4.1.10 of TIA-603B.

7. Portable subscriber radios shall have a maximum audio distortion rate of three percent (3%).

8. Portable subscriber radios shall have a frequency modulation hum and noise ratio of 34/40 dB (12.5/25 kHz).

9. Portable subscriber radios shall have a conducted spurious emissions rate of -70/-70 dB (12.5/25 kHz).

10. Portable subscriber radios shall have a transmission duration of thirty (30) seconds to three and one-half (3.5) minutes with automatic reset within one hundred (100) milliseconds after interruption of the transmitter keying circuit.

11. Portable subscriber radios shall have a signaling digital mode which is capable of

generating and/or decoding all P25 network access codes listed in TIA-102.

12. Portable subscriber radios shall have a reference sensitivity of -118 dBm while in analog mode (EIA 12 dB sound-to-noise and distortion ratio) and digital mode (five percent (5%) bit error rate).

13. Portable subscriber radios shall have an adjacent channel rejection rate of -60/-70 dB (12.5/25 kHz).

14. Portable subscriber radios shall have a spurious response rejection rate of -70/-70 dB (12.5/25 kHz).

15. Portable subscriber radios shall have an intermodulation rejection rate of -70/-70 dB (12.5/25 kHz).

16. Portable subscriber radios shall have an audio output rate of 1000 milliwatts.

B. **Environmental Specifications.** The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of supporting normal operations under ambient temperatures of negative thirty degrees Celsius (-30ºC) to sixty degrees Celsius (60ºC) and comply with any and all applicable environmental specifications set forth in United States Military Standards ("MIL-STD") 810E – Environmental Test Methods and Engineering Guidelines, or equivalent specifications set forth in MIL-STD-810F and MIL-STD-810G, including, without limitation, all of the following:

1. Portable subscriber radios shall meet or exceed the low pressure operation specifications set forth in Procedure II of Method 500.3 of MIL-STD-810E.

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2. Portable subscriber radios shall meet or exceed the high temperature storage and operation specifications set forth in Procedures I and II of Method 501.3 of MIL-STD-810E.

3. Portable subscriber radios shall meet or exceed the low temperature storage and operation specifications set forth in Procedures I and II of Method 502.3 of MIL-STD-810E.

4. Portable subscriber radios shall meet or exceed the temperature shock specifications set forth in Procedure I of Method 503.3 of MIL-STD-810E.

5. Portable subscriber radios shall meet or exceed the solar radiation specifications set forth in Procedure I of Method 505.3 of MIL-STD-810E.

6. Portable subscriber radios shall meet or exceed the humidity specifications set forth in Procedure II of Method 507.3 of MIL-STD-810E.

7. Portable subscriber radios shall meet or exceed the dust specifications set forth in Procedure I of Method 510.3 of MIL-STD-810E.

8. Portable subscriber radios shall meet or exceed the vibration specifications set forth

in Procedure I of Method 514.4 of MIL-STD-810E.

9. Portable subscriber radios shall meet or exceed the shock specifications set forth in Procedure I of Method 516.4 of MIL-STD-810E.

10. Portable subscriber radios shall meet or exceed the rain and dripping water specifications for metal case units set forth in Procedures I and II of Method 506.3 of MIL-STD-810E.

11. Portable subscriber radios shall meet or exceed the salt fog specifications for metal case units set forth in Procedure I of Method 509.3 of MIL-STD-810E.

C. Public Safety Model User Control and Display Specifications. The public safety portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include user controls and displays which comply with all of the following specifications and requirements:

1. Public safety portable subscriber radios shall include an easily accessible push-to-talk switch.

2. Public safety portable subscriber radios shall include an easily accessible, top-mounted on-off and volume knob.

3. Public safety portable subscriber radios shall include an easily accessible, top-mounted emergency button.

4. Public safety portable subscriber radios shall include easily accessible, top-mounted rotary switches which allow for the use of three (3) "banks" of channels and/or talk groups. Each bank of channels and/or talk groups shall consist of sixteen (16) or more channels and/or talk groups.

5. Public safety portable subscriber radios shall include in-range, battery and encryption status indicators that are capable of being disabled in surveillance mode.

6. Public safety portable subscriber radios shall include an easily accessible, front or top-mounted display screen which is capable of displaying a minimum of eight (8) characters and status indicators. The display screen utilized by public safety portable subscriber radios shall be readable in all conditions from direct sunlight to total darkness and allow users to change the size and number of characters and/or status indicators displayed thereon.

5.3.5 Programming Requirements:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of supporting a minimum of six hundred fifty (650) programmable channels, and possess the ability to program more than sixteen (16) analog and/or P25 digital conventional channels within a single bank or zone.

5.4 Auxiliary Equipment Requirements:

All auxiliary equipment used to support the portable subscriber radios that will be utilized by the Radio

System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the specifications and requirements set forth herein.

5.4.1 Connectors:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include antenna, battery and radio transceiver connectors which comply with all of the following specifications and requirements:

A. Antenna Connection Specifications. All portable subscriber radios shall be equipped with a flexible, covered antenna that is readily removable through the use of a screw-in connector. Bayonet Neill-Concelman (BNC) connectors are not acceptable.

B. Battery Connection Specifications. All portable subscriber radios shall be equipped with a rechargeable battery that can be securely connected thereto, and easily removed therefrom, without the use of tools.

C. Radio Transceiver Connection Specifications. All portable subscriber radios shall be equipped with universal or individual radio transceiver connectors which are capable of supporting programming interface connections and connections to external speakers, microphones and earpieces that mute the internal speakers and microphones upon connection thereof.

5.4.2 Batteries:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include rechargeable batteries which comply with all of the following specifications and requirements:

A. Capacity Specifications. All batteries utilized by the portable subscriber radios shall, when fully charged, allow for twelve (12) hours of operation at a duty cycle of five percent (5%) transmit, five percent (5%) receive and ninety percent (90%) idle.

B. Charging Specifications. All batteries utilized by the portable subscriber radios shall be capable of recharging or reconditioning from fully-drained to fully-charged in eight (8) hours or less.

C. Safety Specifications (Optional). All batteries utilized by the portable subscriber radios shall be optionally approved for use in Division 1, Class I, Groups C, D, Class II, Group E, F, G and Class III hazardous locations in accordance with the applicable requirements set forth in TIA-4950 (preferred) or Factory Mutual Standard 3610_88.

5.4.3 Battery Charger Units:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include both single and multiple-unit battery chargers which comply with all of the following specifications and requirements:

A. Electrical Power Specifications. All battery charger units utilized by the portable subscriber radios shall operate from sources which produce 110 volts of alternating current and be capable of completing a full recharge in one (1) to two (2) hours.

B. **Capacity Specifications.** All multiple-unit battery charger units utilized by the public-safety portable subscriber radios shall support up to six (6) standard and/or high-capacity batteries whether connected to the radios or not.

5.4.4 Accessory and Programming Equipment:

The portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include accessory and programming equipment that complies with all of the following specifications and requirements:

A. **General Accessory Specifications (Optional).** Each model of the portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include, without limitation, all of the applicable accessories set forth herein:

1. Portable subscriber radios shall include leather or plastic swivel holsters that are designed to be worn at the hip.

2. Portable subscriber radios shall include corded remote speaker microphones, wireless remote speaker microphones (e.g. Bluetooth), if available, earpieces and covert microphones and/or headsets.

3. Portable subscriber radios shall include single and multi-unit rapid battery chargers.

4. Portable subscriber radios shall include vehicle-mounted cigarette lighter battery chargers that are capable of supporting 12 volts of direct current.

5. Portable subscriber radios shall include vehicle-mounted direct connection battery chargers that are capable of supporting 12 volts of direct current.

6. Portable subscriber radios shall include spare batteries, including, without limitation, intrinsically safe batteries that are capable of supporting twelve (12) hours of operation at a duty cycle of five percent (5%) transmit, five percent (5%) receive and ninety percent (90%) idle.

7. Portable subscriber radios shall include clamshell battery holders that are designed to hold "AA" batteries.

B. **Programming Equipment and Software Specifications.** Each model of the portable subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a total of three (3) complete sets of any and all cables, software and equipment, excluding the computers used to operate the applicable software, required to program and maintain such portable subscriber radios. Any and all necessary programming software shall be compatible with Microsoft Windows based personal computers and be capable of operating in Microsoft Windows 10 environments.

6.0 MOBILE SUBSCRIBER RADIO SPECIFICATIONS AND REQUIREMENTS:

The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include mobile subscriber radios which comply with all of the specifications and

requirements set forth herein.

6.1 P25 Conventional Feature Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include conventional features that comply with the applicable P25 specifications set forth herein.

6.1.1 Group Voice and Broadcast Group Calls:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a group voice and broadcast group call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The group voice and broadcast group call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The group voice and broadcast group call feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** Subscribers must operate on more than one (1) talk group. A subscriber that is in-range of the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall initiate a group call by selecting that talk group and pushing the push-to-talk switch. Other users in the talk group, including dispatchers and subscribers on other sites, shall receive the call if they have selected that talk group and the appropriate channel and backhaul resources are available. All parties in the group shall be able to respond, one (1) at a time, and all parties shall hear the speaker.

6.1.2 Emergency Alarm:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an emergency alarm feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The emergency alarm feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The emergency alarm feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the RF Subsystem shall initiate an emergency alarm by pressing a dedicated emergency button. Dispatcher positions that are so programmed shall be notified of the emergency alarm and be capable of acknowledging and clearing such alarm. Only the initiating subscriber shall be capable of cancelling the alarm. The mobile subscriber radios shall be capable of enabling or disabling the emergency alarm feature on a unit-by-unit basis. The mobile subscriber radios shall also be capable of configuring the emergency alarm feature for silent or user-

notification operation upon activation of the emergency button. Additionally, the mobile subscriber radios shall be capable of adjusting the length of time the emergency button is depressed before an emergency alarm is generated.

6.1.3 Emergency Group Call:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an emergency group call feature which complies with all of the following requirements:

A. **P25 Technical Specifications.** The emergency group call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The emergency group call feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the RF Subsystem can initiate an emergency group call on a selected talk group by either: pressing the push-to-talk switch after pressing the emergency button or by selecting a pre-defined emergency talk group and pushing the push-to-talk switch. Other users in the talk group, including dispatchers and subscribers on other sites, will receive the call and will have notification that it is an emergency call if they have selected that talk group and the appropriate channel and backhaul resources are available. Mobile subscriber radios must be equipped to initiate and receive emergency group calls and be capable of enabling or disabling the emergency group call feature on a unit-by-unit basis. Mobile subscriber radios shall also be capable of configuring the emergency group call feature for silent or user-notification operation upon activation of the emergency button. Additionally, the mobile subscriber radios shall be capable of configuring the microphone to be active or inactive upon activation of the emergency button.

6.1.4 Individual Voice Call:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include an individual voice call feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The individual voice call feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The individual voice call feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber that is in-range of the RF Subsystem shall initiate a call to one (1) specific subscriber by selecting that subscriber's ID and pushing the push-to-talk switch. The other specific subscriber, even if it is on another site, shall receive notification of an individual call request if the appropriate channel and backhaul resources are available. If the other specific subscriber accepts the request by pushing the push-to-talk switch within a specified time, the parties shall communicate with each other and no other parties will participate.

6.1.5 Radio Check:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a radio check feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The radio check feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The radio check feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** The system infrastructure (management terminals) shall be capable of initiating a message to a subscriber to determine if it is registered and in range. A mobile subscriber radio that receives a radio check message shall acknowledge it and that acknowledgement shall be returned to the infrastructure component that initiated the check.

6.1.6 Call Alert:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a call alert feature which complies with all of the following specifications and requirements:

/ / / /

A. **P25 Technical Specifications.** The call alert feature shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The call alert feature shall comply with any and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** A subscriber, including, without limitation, dispatchers, shall have the ability to send a non-voice alert to another subscriber. The receiving subscriber shall provide an indication that it has been alerted and the alert shall contain the ID of the subscriber that initiated the alert. The initiating subscriber shall receive an indication that the receiving subscriber received the alert.

6.1.7 Inhibit and Uninhibit:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include inhibit and uninhibit features which comply with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The inhibit and uninhibit features shall comply with any and all applicable technical specifications set forth in TIA-102.AABG, TIA-102.CAEA and TIA-102.CAEB.

B. **P25 Testing Specifications.** The inhibit and uninhibit features shall comply with any

and all applicable testing specifications set forth in TIA-102.CABA.

C. **Functional Requirements.** Dispatchers and/or system managers shall have the ability to disable (inhibit) and re-enable (uninhibit) a subscriber from operation on the radio system. While inhibited, the subscriber's display shall be blanked and the subscriber shall not be able to participate in any calls other than the receipt of an uninhibit command. Mobile subscriber radios shall be capable of generating a positive or negative acknowledgement of an inhibit or uninhibit command. Mobile subscriber radios shall not transmit or receive radio signals, produce any tome or indicators or allow active use of any user controls while inhibited. A mobile subscriber radio that has been inhibited shall only be uninhibited by a proper uninhibit command sent from a dispatcher or system manager.

6.1.8 Encryption (Optional):

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional encryption feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The encryption feature shall comply with any and all applicable technical specifications set forth in TIA-102.AAAD.

B. **P25 Testing Specifications.** The encryption feature shall comply with any and all applicable testing specifications set forth in Section 2.2.10 of TIA-102.CABA.

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C. **Functional Requirements.** A subscriber that is in-range of the radio system and that has encryption capabilities shall be able to place a group call to other encryption-capable subscribers who are affiliated to the same talk group and possess matching encryption keys. Mobile subscriber radios affiliated to the same talk group that do not possess any encryption keys, or that possess different encryption keys, shall be unable to understand the message. The implemented encryption method shall be Type 3 encryption via an Advanced Encryption Standard algorithm. Key length for the Advanced Encryption Standard algorithm shall be 256 bits.

D. **Capability Requirements.** Mobile subscriber radios shall have the capability to support an encryption feature, but shall not be equipped with encryption hardware or software unless optionally added by the County.

6.1.9 GPS Location (Optional):

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional GPS location feature which complies with all of the following specifications and requirements:

A. **P25 Technical Specifications.** The GPS location feature shall comply with any and all applicable technical specifications set forth in TIA-102.BAJB and TIA-102.BAJC.

B. **Functional Requirements.** Mobile subscriber radios shall support GPS location reporting through the RF Subsystem that will be utilized by the Radio System Package

provided pursuant to the terms and conditions of a final Professional Services Agreement. GPS location hardware shall be integral to the mobile subscriber radios (i.e. internal to the mobile radio housing).

C. Capability Requirements. Mobile subscriber radios shall have the capability to support a GPS location feature, but shall not be equipped with GPS location hardware or software unless optionally added by the County.

6.2 Non-P25 Conventional Feature Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include the following conventional features that are not defined by the P25 specifications:

6.2.1 Over-The-Air Programming (Optional):

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of including an optional over-the-air programming feature which complies with all of the following requirements:

A. Functional Requirements. Mobile subscriber radios shall support over-the-air programming to enable software upgrades and changes to switches and personality profiles to be made remotely over the RF Subsystem that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement with no direct wired connection from the radio infrastructure. The over-the-air programming feature shall operate per the following behaviors:

1. New files or changes to existing files that are downloaded over the air will not be implemented into the mobile subscriber radio until it is confirmed that the entire new file or the entire set of changes to the existing file have been downloaded.

2. A mobile subscriber radio that has been reprogrammed via the over-the-air programming feature will provide an acknowledgment of the successful programming change once the change is fully and successfully made.

3. The server that supports the over-the-air programming feature shall have configuration settings for the number of times or a period of time over which it will attempt to complete a programming change.

4. Over-the-air programming messages will be treated with lower priority than all voice calls.

5. Over-the-air programming instructions can be set to be delivered to one (1) single mobile subscriber radio or a group of mobile subscriber radios at one (1) time.

B. Capability Requirements. Mobile subscribers shall have the capability to support an over-the-air feature, but shall not be equipped with over-the-air programming hardware or software unless optionally added by the County.

6.2.2 Mobile Scanning:

Mobile subscriber radios that will be utilized by the Radio System Package provided pursuant

to the terms and conditions of a final Professional Services Agreement shall include a mobile scan feature which complies with the following requirements:

A. **Functional Requirements.** The mobile scan feature shall be capable of scanning sixteen (16) or more analog and/or P25 digital conventional channels or talk groups within a single, programmable operating group based on the assigned scan priority. Mobile subscriber radios shall include operator controls which allow the user to enable or disable the mobile scan feature. Mobile subscriber radios shall beep to indicate that priority traffic is active. The mobile scan feature, whether enabled or disabled, shall not be affected by the operation of a mobile subscriber radio's primary power switch.

B. **Configuration Requirements.** The mobile scan feature shall allow users to configure or alter scan operations, including, without limitation, defining scan lists and setting scan priorities.

6.3 Operational Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the operational specifications and requirements set forth herein.

6.3.1 Mode of Operation Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall support P25 phase 1 conventional operations. Mobile subscriber radios shall also support direct, unit-to-unit, conventional communications on simplex channels in both P25 and analog modes of operation which are compatible with the modulation methods used by the Simulcast Control System that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement.

6.3.2 Vote Scan Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall come equipped with a vote scan feature wherein each channel in a pre-programmed scan list is qualified to see if it contains the correct continuous tone coded squelch signal or P25 network access code to open the receiver, it is then further qualified by measuring the received signal strength and/or the bit error rate of each received frequency at the mobile subscriber radio. The mobile subscriber radio then votes among received frequencies, selecting either the best signal and/or the first signal that exceeds a preprogrammed threshold.

6.3.3 Vocoder Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall support either the P25 improved multi-band excitation vocoder or the P25 enhanced full rate vocoder, however, the latter is preferred.

6.3.4 Performance Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided

pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following performance specifications and requirements:

A. **Radio Parametric Specifications.** The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be of the type accepted by the FCC for use in the appropriate frequency bands and comply with any and all applicable specifications and requirements set forth in Part 90 of the FCC rules and regulations, including, without limitation, all of the following radio parametric performance specifications:

1. Mobile subscriber radios shall receive and transmit radio signals using a frequency band of 136-174 MHz.

2. Mobile subscriber radios shall have channel spacing rates of 12.5 kHz, 15 kHz and 25 kHz.

3. Mobile subscriber radios shall generate frequencies through an internal synthesizer and/or embedded microprocessor technology.

4. Mobile subscriber radios shall have a power rating of 50 watts and be adjustable on a per-channel and/or mode basis.

5. Mobile subscriber radios shall have a modulation rate of 2.5 kHz (12.5 kHz).

6. Mobile subscriber radios shall have audio frequency rates of +1-3 dB, 300-3000 Hz and 6 dB / octave as required by Section 4.2.6 of TIA-603 and Section 4.1.10 of TIA-603B.

7. Mobile subscriber radios shall have a maximum audio distortion rate of three percent (3%).

8. Mobile subscriber radios shall have a frequency modulation hum and noise ratio of 34/40 dB (12.5/25 kHz).

9. Mobile subscriber radios shall have a conducted spurious emissions rate of -70/-70 dB (12.5/25 kHz).

10. Mobile subscriber radios shall have a transmission duration of thirty (30) seconds to three and one-half (3.5) minutes with automatic reset within one hundred (100) milliseconds after interruption of the transmitter keying circuit.

11. Mobile subscriber radios shall have a signaling digital mode which is capable of generating and/or decoding all P25 network access codes listed in TIA-102.

12. Mobile subscriber radios shall have a reference sensitivity of -118 dBm while in analog mode (EIA 12 dB sound-to-noise and distortion ratio) and digital mode (five percent (5%) bit error rate).

13. Mobile subscriber radios shall have an adjacent channel rejection rate of -60/-70 dB (12.5/25 kHz).

14. Mobile subscriber radios shall have a spurious response rejection rate of -75/-75 dB (12.5/25 kHz).

15. Mobile subscriber radios shall have an intermodulation rejection rate of -70/-70 dB (12.5/25 kHz).

16. Mobile subscriber radios shall have an audio output rate of 7500 milliwatts.

B. **Environmental Specifications.** The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of supporting normal operations under ambient temperatures of negative thirty degrees Celsius (-30ºC) to sixty degrees Celsius (60ºC) and comply with any and all environmental specifications set forth in MIL-STD-810E, or equivalent specifications set forth in MIL-STD-810F and MIL-STD-810G, including, without limitation, all of the following:

1. Mobile subscriber radios shall meet or exceed the low pressure operation specifications set forth in Procedure II of Method 500.3 of MIL-STD-810E.

2. Mobile subscriber radios shall meet or exceed the high temperature, storage and operation specifications set forth in Procedures I and II of Method 501.3 of MIL-STD-810E.

3. Mobile subscriber radios shall meet or exceed the low temperature, storage and operation specifications set forth in Procedures I and II of Method 502.3 of MIL-STD-810E.

4. Mobile subscriber radios shall meet or exceed the temperature shock specifications set forth in Procedure I of Method 503.3 of MIL-STD-810E.

5. Mobile subscriber radios shall meet or exceed the solar radiation specifications set forth in Procedure I of Method 505.3 of MIL-STD-810E.

6. Mobile subscriber radios shall meet or exceed the humidity specifications set forth in Procedure II of Method 507.3 of MIL-STD-810E.

7. Mobile subscriber radios shall meet or exceed the dust specifications set forth in Procedure I of Method 510.3 of MIL-STD-810E.

8. Mobile subscriber radios shall meet or exceed the vibration specifications set forth in Procedure I of Method 514.4 of MIL-STD-810E.

9. Mobile subscriber radios shall meet or exceed the shock specifications set forth in Procedure I of Method 516.4 of MIL-STD-810E.

10. Mobile subscriber radios shall meet or exceed the Rain dripping water specifications for metal case units set forth in Procedures I and II of Method 506.3 of MIL-STD-810E.

11. Mobile subscriber radios shall meet or exceed the salt fog specifications for metal case units set forth in Procedure I of Method 509.3 of MIL-STD-810E.

C. **User Control and Display Specifications.** The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include user controls and displays which

comply with all of the following specifications and requirements:

1. Mobile subscriber radios shall include an easily accessible push-to-talk switch on the microphone.

2. Mobile subscriber radios shall include easily accessible on-off and volume knobs and emergency buttons.

3. Mobile subscriber radios shall include easily accessible mode or zone selection buttons or knobs which allow for the use of three (3) "banks" of channels and/or talk groups. Each bank of channels and/or talk groups shall consist of sixteen (16) or more channels and/or talk groups.

4. Mobile subscriber radios shall include an easily accessible display screen which is capable of displaying two (2) lines of text, with a minimum twelve (12) characters per line, one (1) line of status indicator icons and one (1) line of menus. The display screen shall be readable in all conditions from direct sunlight to total darkness and allow users to adjust the backlighting thereof.

6.3.5 Programming Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be capable of supporting a minimum of six hundred fifty (650) programmable channels, and have the ability to program trunked and conventional channels within the same bank or zone.

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6.4 Auxiliary Equipment Requirements:

All auxiliary equipment used to support the mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the specifications and requirements set forth herein.

6.4.1 Physical Component Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include physical components which comply with the following specifications and requirements:

A. **Control Equipment and Speaker Specifications.** All mobile subscriber radios shall include a dash mounted control head equipped with an external speaker that is configured for remote mounting (i.e. transceiver mounted in trunk). The dash mounted control heads shall include round-type cables that have a minimum length of seventeen (17) feet and a single protective outer sheath enclosing all other conductors.

B. **Microphone Specifications.** All mobile subscriber radios shall include a microphone equipped with a self-retracting coil cord that has a minimum length of four (4) feet when fully extended.

C. **Antenna Specifications.** All mobile subscriber radios shall include an antenna equipped with a non-mag mount appropriate for permanent mounting on a vehicle.

D. **Installation Equipment Specifications.** All mobile subscriber radios shall include Installation brackets and interface cables that are appropriate for the type of console that is used in the vehicle.

6.4.2 Connector Requirements:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include, antenna, radio transceiver and power supply connectors which comply with all of the following specifications and requirements:

A. **Power Connection Specifications.** All mobile radios shall be equipped with ignition sense power supply connectors.

B. **Antenna Connection Specifications.** All mobile subscriber radios shall be equipped with an easily removable screw-in antenna connector. Bayonet Neill-Concelman (BNC) connectors are not acceptable.

C. **Radio Transceiver Connection Specifications.** All mobile subscriber radios shall be equipped with universal or individual radio transceiver connectors which are capable of supporting connections to internal and external speakers and microphones.

6.4.3 Programming Equipment and Software Specifications:

The mobile subscriber radios that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include a total of three (3) complete sets of any and all cables, software and equipment, excluding the computers used to operate the applicable software, required to program and maintain such mobile subscriber radios. Any and all necessary programming software shall be compatible with Microsoft Windows based personal computers and be capable of operating in Microsoft Windows 10 environments.

7.0 RADIO CONTROL STATION SPECIFICATIONS AND REQUIREMENTS:

The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include radio control stations which comply with all of the specifications and requirements set forth herein.

7.1 Desktop Mobile Control Stations:

The desktop mobile control stations that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be configured as a dash mount unit and have the same basic performance characteristics of the mobile subscriber radios that will be included with the Radio System Package. The desktop mobile control stations shall be equipped with an external power supply, a mag-mount antenna, a mounting-tray for use on a desk or other surface and a "paddle" style desktop microphone.

7.2 Console Backup Control Stations:

The console backup control stations that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be configured as an integrated (enclosed) unit and have the same basic performance characteristics of the mobile

subscriber radios that will be included with the Radio System Package. The console backup control stations shall be equipped with an internal power supply, a fixed-mount base station antenna and a "paddle" style desktop microphone. The console backup control station must also be capable of sitting on a desktop as well as being rack-mounted in a nineteen (19) inch rack, with the addition of a locking shelf or mounting ears, and include the optional capability of being controlled from a remote deskset or console employing EIA tone-remote keying.

8.0 GENERAL EQUIPMENT SPECIFICATIONS AND REQUIREMENTS:

Any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the specifications and requirements set forth herein.

8.1 Electrical Requirements:

Any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following electrical specifications and requirements:

8.1.1 Radio Equipment:

Any and all radio equipment that will be located at the radio sites utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Agreement, including, without limitation, radio repeaters and base stations, shall be capable of operating from a power source of 48 volts of direct current. The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include batteries that are sufficiently sized to accommodate one hundred twenty percent (120%) of the load required by the radio equipment that will be utilized thereby and rectifiers that will be powered by the appropriate power circuits located at the radio sites.

8.1.2 Non-Radio Equipment:

Any and all non-radio equipment that will be located at the radio sites utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, including, without limitation, controllers and local area network components, which is designed to operate from a power source of 110 volts of alternating current shall be powered from a fault-tolerant direct current to alternating current inverter that is tied to a 48 volt of direct current battery supply. The Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall include sufficient battery capacity to power all connected equipment for a minimum of two (2) hours plus the anticipated travel time from the radio site at which the non-radio equipment is located to the downtown Eureka area. For power calculations purposes, the Radio System Package should be designed to accommodate an eighty/twenty (80/20) duty cycle, with the stations actively transmitting for twenty percent (20%) of the time and in standby mode for the remaining eighty percent (80%) of the time, in order to allow for troubleshooting and /or repair in the event of an alternating current power loss alarm notification and failure of the on-site generator.

8.2 Storage, Mounting and Access Requirements:

Any and all equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be racked and mounted, if applicable, in accordance with all of the following specifications and requirements:

8.2.1 Storage Requirements:

Any and all rackable radio and microwave equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be housed in nineteen (19) inch, seven and one-half (7.5) foot, open, two (2) rail racks. Any and all radio and/or microwave equipment stored in racks or cabinets shall be placed such that heavier items are below lighter items in order to minimize the effect of centrifugal forces and swaying during an earthquake. The Successful Proposer's as-built documentation package must include certification that the racks and/or cabinets used to store any equipment that will be utilized by the Radio System Package are in compliance with any and all applicable Zone 4 earthquake requirements set forth in the GR-63-CORE Network Equipment Building System guidelines published by Telcordia (formerly Bellcore).

8.2.2 Mounting Requirements:

The mounting of any and all racks and/or cabinets used to store radio, microwave or other equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be in compliance with any and all applicable Zone 4 earthquake requirements set forth in the GR-63-CORE Network Equipment Building System guidelines.

8.2.3 Access Requirements:

Any and all fixed location radio equipment racks and cabinets that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall have at least three (3) feet of access space to perform repairs. If equipment racks that will be utilized by the Radio System Package are mounted away from a wall, power cords and other cables shall be protected so that people in the equipment space will not accidentally step on, trip over, pull out power plugs or damage the cables. Any and all power outlets that will be utilized by radio equipment that is stored in equipment racks or cabinets shall be placed on the finished ceiling or cable ladder above such equipment racks.

8.3 Cabling Requirements:

Any and all radio site equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be equipped with electrical systems that have been approved for operation of the current generation of computer-controlled radio systems in accordance with all of the following best practices and requirements:

8.3.1 Connection Requirements:

Any and all cabling located at the dispatch sites that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall attach to consoles or logging recorders and racks in the electronic equipment room of each location through the use of appropriate cable connectors to facilitate ease of removal for maintenance purposes.

8.3.2 Punch Block Requirements:

Any and all cables, other than those carrying digital signaling, between the electronic equipment racks, consoles and all other equipment that will be utilized by the Radio System

Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be placed between punch blocks that will be used as terminations for the radio system. All inter-equipment connections, including alarm contact wiring, shall be made through punch blocks. Any and all punch blocks that will be utilized by the Radio System Package shall be mounted on appropriately sized fire-retardant plywood.

8.3.3 Labeling Requirements:

Any and all external wiring and cabling connecting different pieces of equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement must be identified by machine-printed permanent adhesive labels at each end of the cable, hand written labels will not be accepted. All labels shall be printed in a color contrasting with the color of the cable and must indicate self-evident cable use and routing, without the need to refer to a separate index. Labels shall be resistant to environmental conditions, including, without limitation, ultraviolet light, moisture and heat, and should have a design life equal to, or greater than, that of the labeled component. At sites with multiple antennas, labeling shall appear at the base of the antennas, the base of the antenna supporting structure and in the vicinity of the duplexer, radio, combiner and multicoupler equipment. Color coding and labeling specifications for cables shall be provided by the Successful Proposer during the contract negotiation process.

8.3.4 Routing Requirements:

Any and all cabling that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall comply with all of the following routing specifications and requirements:

A. **Anchoring and Attachment Specifications.** Coaxial cables shall be anchored to antenna support structures through the use of suitable clamps that are spaced in intervals of no more than the lesser of five (5) feet or the maximum distance recommended by the manufacturer of such cables. Transmission line cables may be attached across the face of an antenna support structure; however, no part of any guide or line shall be within two (2) inches of any other guide or line.

B. **Support and Clamp Specifications.** Any and all cable runs from buildings to antenna support structures that are more than two (2) feet long shall be supported using the supports and clamps recommended by the manufacturer of such cables. All supports and clamps used to support such cable runs shall be spaced in intervals of no more than the lesser of five (5) feet or the maximum distance recommended by the transmission line manufacturer. All cable runs housed inside buildings shall be supported on cable ladders supported from above. Transmission line cables supported by cable ladders shall be installed in parallel in a neat and professional manner.

C. **Length Specifications.** Each cable run from an antenna to a radio, multicoupler, combiner, duplexer or lightning arrestor shall be one (1) continuous piece without a splice or connector, except that a jumper may be used at the equipment end. All cables must be cut to length plus a small allowance for slack and similarly-routed cables must have equal-length slack loops. The use of techniques designed to absorb excessive cable, such as zigzag bundles, will not be accepted by the County. The length of each cable shall be determined before they are ordered. RF cable runs between a shelter and tower or monopole that are over five (5) feet long must be covered by an ice bridge.

D. **Bundling Specifications.** All cable bundles must be "combed out" to contain only

neatly-routed parallel cables, and be tied as a single unit with only one (1) black nylon or velcro fastener around the entire bundle. Single cables or sub-bundles may be incorporated into an existing cable bundle taking the same path, but cannot be attached thereto. Nylon cable ties shall not be used for network or soft-shield cables which may be deformed due to fastener tension. Where nylon cable ties are used, a flush-cut automatic tensioning tool, properly set according to the cable tie specifications, shall be employed. Natural (white) nylon ties shall not be employed as they degrade with time and ultraviolet exposure.

8.4 Grounding Requirements:

Any and all new site equipment that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be equipped with grounding systems that have been approved for operation of the current generation of computer-controlled radio systems in accordance with all following specifications and requirements:

8.4.1 Antenna Line Requirements:

Any and all antenna lines that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be equipped with antenna cable ground kits placed at points nearest to the connection to the antenna, near where the line leaves the support structure at the bottom of, and near to, the grounding bulkhead or other suitable ground where the line enters a shelter or building.

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8.4.2 Transmission Line Requirements:

Any and all transmission lines that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be equipped with grounding kits that are appropriate for the size, RF power and frequency of the transmission line. Grounding leads from lightning arrestors and grounding kits shall be connected to the appropriate ground bus bar and treated with a listed conductive anti-oxidant compound.

8.4.3 Ground Bus Bar Requirements:

New tower, external and internal ground bus bars shall be installed at the County Courthouse, Mt. Pierce, Horse Mountain, Pratt Mountain, Sugarpine and Rodgers Peak radio sites, if such sites will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. Any and all ground bus bars that will be utilized by the Radio System Package shall be bonded directly to the existing site grounding electrode most appropriate for the bus bar using an exothermic weld or listed irreversible high-compression connections. All ground bus bars shall be minimally sized, provided they are large enough to accommodate all transmission lines and other grounding connections.

8.4.4 Equipment Rack Grounding Requirements:

Any and all equipment racks and/or cabinets that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be bonded together with copper conductors no smaller than American wire Gauge number 2 and connected to a suitable ground. Any and all ground conductors utilized by the Radio

System Package shall not have any sharp bends and have as few gradual bends as possible. Cabinet ground connections, as well as connections to the grounding system, shall not feed through the cabinet and only be made to bare metal on the exterior of the cabinet using a suitable connector that complies with any and all applicable safety standards published by UL, LLC. All such connections shall be mechanically secured with nuts, bolts and star type washers.

8.5 Transient Voltage Surge Suppression Requirements:

Any and all electrical lines and antenna transmission lines that enter any shelter or building utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be protected against lightning-caused and other transient electrical surges in accordance with all of the following specifications and requirements:

8.5.1 Lightning Arrestor Requirements:

Any and all existing transmission lines that will be utilized by the Radio System Package provided pursuant to the terms and conditions of a Professional Services Agreement shall be equipped with a lightning arrestor and RF connectors that are appropriate for the size, RF power and frequency of such transmission lines. In addition, each new coax cable transmission line that will be utilized by the Radio System Package shall be equipped with an appropriate lightning arrestor that is mounted to a properly grounded bulkhead panel or other suitable ground where it enters the shelter or building.

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8.5.2 Surge Protective Device Requirements:

New surge protective devices shall be permanently installed on the main electrical panels that are currently in place at the County Courthouse, Mt. Pierce, Horse Mountain, Pratt Mountain, Sugarpine and Rodgers Peak radio sites, if such sites will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. Any and all surge protective devices that will be utilized by the Radio System Package shall consist of primary modules using silicon avalanche diode technology and secondary modules using metal oxide varistor technology and comply with the safety standards published by UL, LLC.

8.5.3 Transmission Line Entrance Panel Requirements:

The copper entrance panels that are currently in place at the County Courthouse, Mt. Pierce, Horse Mountain, Pratt Mountain, Sugarpine and Rodgers Peak radio sites shall be replaced with new transmission line entrance panels, if such sites will be utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement. Any and all transmission line entrance panels that will be utilized by the Radio System Package shall be sized to accommodate any and all existing and new transmission lines plus twenty percent (20%) growth (assuming that 0.875 inch transmission lines are used).

9.0 MAINTENANCE AND SUPPORT SPECIFICATIONS AND REQUIREMENTS:

Any and all maintenance and technical support services related to the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement shall be rendered in accordance with all of the specifications and requirements set forth herein.

9.1 Parts and Service Availability Requirements:

Any and all necessary parts and technical support services, including, without limitation, phone support, required to repair and/or maintain the network Simulcast Control Subsystem equipment, local Simulcast system control equipment at a radio site, key network (local area network and wide area network) components, including, without limitation, any and all components that connect controllers, audio processors, dispatch consoles, interoperability equipment and radio sites, dispatch consoles, site repeaters, network management system equipment, portable subscriber radios and mobile subscriber radios shall be available for seven (7) years after notice of discontinuation thereof.

9.2 Priority Requirements:

Any and all requests for maintenance of, and/or technical support related to, any and all equipment utilized by the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement must be acknowledged within one (1) hour after receipt thereof. Any and all operational issues reported by the County shall be resolved in accordance with the following issue resolution standards:

9.2.1 System Failure:

Any and all issues which cause the entire Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, or any subsystem thereof, to be inoperative shall be repaired within five (5) hours after notification of such issues.

9.2.2 Component Failure:

Any and all issues which cause the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, or any subsystem thereof, to lose the ability to perform any major function due to component failure or other causes shall be repaired within one (1) business day after notification of such issues.

9.2.3 Minor Service Interruptions:

Any and all issues that cause the Radio System Package provided pursuant to the terms and conditions of a final Professional Services Agreement, or any subsystem thereof, to experience minor service interruption due to redundant component failure or other causes shall be repaired within two (2) business days after notification of such issues.

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT C – SAMPLE LINK BUDGET

Site Name		**Base TX Antenna Height (ft) / Az (deg)**			**Base RX Antenna Height (ft) / Az (deg)**
		80 / omni			**100 / omni**
Latitude XX-XX-XX.X N Longitude XXX-XX-XX.X W		**Antenna Model dBSpectra - DB806 3° mech tilt @ AZ 230°**		**Antenna Model dBSpectra - DB806**	
Link-Budget	**Units**	**Outbound**		**Inbound**	
		Base Station TX	**Subscriber RX**	**Subscriber TX**	**Base Station RX**
RX SYSTEM STATIC SENSITIVITY	dBm		-119.00		-119.00
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY	dBm		-108.90		-108.90
DIVERSITY GAIN (If applicable)	dB		0.00		0.00
RX ANTENNA GAIN	dBd		-8.50		6.00
COMBINED GAINS/LOSSES	dB				10.00
REQUIRED MINIMUM POWER	**dBm**		**-100.40**		**-124.90**
OUTPUT POWER	W	100.00		3.00	
OUTPUT POWER	dBm	50.00		34.77	
TX ANTENNA GAIN	dBd	3.00		-8.50	
COMBINED LOSSES	dB	-3.00		0.00	
TRANSMITTED POWER	**dBm**	**50.00**		**26.27**	
ERP	**W**	**100.00**		**0.42**	
MAXIMUM PATH LOSS	**dB**	**150.40**		**151.17**	

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT D – SIGNATURE AFFIDAVIT
(Submit with Proposal)

REQUEST FOR PROPOSALS – NO. 18-100-COMM SIGNATURE AFFIDAVIT	
NAME OF FIRM:	
STREET ADDRESS:	
CITY, STATE, ZIP	
CONTACT PERSON:	
PHONE #:	
FAX #:	
EMAIL:	

California Government Code Sections 6250, *et seq*., the "California Public Records Act," define a public record as any writing containing information relating to the conduct of public business. The California Public Records Act provides that public records shall be disclosed upon written request, and that any citizen has a right to inspect any public record, unless such record is exempted from disclosure.

In signing this Proposal, I certify that this firm has not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a Proposal; that this Proposal has been independently arrived at without collusion with any other Proposer, competitor or potential competitor; that this Proposal has not been knowingly disclosed prior to the opening thereof to any other Proposer or competitor; and that the above statement is accurate under penalty of perjury.

The undersigned is an authorized representative of the above named firm and hereby agrees to all the terms, conditions, and specifications required by the County in this Request for Proposals and declares that the attached Proposal is in conformity therewith.

_____ _____
Signature **Title**

_____ _____
Name **Date**

This Proposer hereby acknowledges receipt / review of the following Addendum(s), if any
Addendum # [_____] Addendum # [_____] Addendum # [_____] Addendum # [_____]

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT E – REFERENCE DATA SHEET
(Submit with Proposal)

REQUEST FOR PROPOSALS – NO. 18-100-COMM REFERENCE DATA SHEET		
Provide a minimum of three (3) references with name, address, contact person, and telephone number whose scope of business or services is similar to those of the County of Humboldt (preferably in California). Previous business with the County of Humboldt does not qualify.		
NAME OF AGENCY:		
STREET ADDRESS:		
CITY, STATE, ZIP:		
CONTACT PERSON:		**EMAIL:**
PHONE #:		**FAX #:**
Department Name:		
Approximate County (Agency) Population:		
Number of Departments:		
General Description of Scope of Work:		
NAME OF AGENCY:		
STREET ADDRESS:		
CITY, STATE, ZIP:		
CONTACT PERSON:		**EMAIL:**
PHONE #:		**FAX #:**
Department Name:		
Approximate County (Agency) Population:		
Number of Departments:		
General Description of Scope of Work:		

Applicant Tracking System Implementation Date:		
NAME OF AGENCY:		
STREET ADDRESS:		
CITY, STATE, ZIP:		
CONTACT PERSON:		**EMAIL:**
PHONE #:		**FAX #:**
Department Name:		
Approximate County (Agency) Population:		
Number of Departments:		
General Description of Scope of Work:		

REQUEST FOR PROPOSALS – NO. 18-100-COMM]
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT F – SAMPLE PROFESSIONAL SERVICES AGREEMENT

PROFESSIONAL SERVICES AGREEMENT
BY AND BETWEEN
COUNTY OF HUMBOLDT
AND
[NAME OF CONTRACTOR]
FOR FISCAL YEARS [20__-20__] THROUGH [20__-20__]

This Agreement, entered into this ____ day of _____, 20[__], by and between the County of Humboldt, a political subdivision of the State of California, hereinafter referred to as "COUNTY," and [Name of Contractor], a [Name of State] [type of business], hereinafter referred to as "CONTRACTOR," is made upon the following considerations:

WHEREAS, COUNTY, by and through its [Name of Department] – [Name of Division], desires to retain the services of a qualified professional to [general description of the services being provided]; and

WHEREAS, such work involves the performance of professional, expert and technical services of a temporary and occasional character; and

WHEREAS, COUNTY has no employees available to perform such services and is unable to hire employees for the performance thereof for the temporary period; and

WHEREAS, CONTRACTOR represents that it is adequately trained, skilled, experienced and qualified to perform the services required by COUNTY.

NOW THEREFORE, the parties hereto mutually agree as follows:

1. DESCRIPTION OF SERVICES:

CONTRACTOR agrees to furnish the services described in Exhibit A – Scope of Services, which is attached hereto and incorporated herein by reference. In providing such services, CONTRACTOR agrees to fully cooperate with the [Title of Department Head or Division Director] or designee thereof, hereinafter referred to as ["Short Title for Department Head or Division Director"].

2. TERM:

This Agreement shall begin upon execution by both parties and shall remain in full force and effect until [_____ __, 20__], unless sooner terminated as provided herein.

OR

2. TERM:

This Agreement shall begin on [_____ __, 20__] and shall remain in full force and effect until [_____ __, 20__], unless sooner terminated as provided herein.

/ / / /

3. TERMINATION:

A. Breach of Contract. If, in the opinion of COUNTY, CONTRACTOR fails to adequately perform the services required hereunder within the time limits specified herein, or otherwise fails to comply with the terms of this Agreement, or violates any ordinance, regulation or other law applicable to its performance herein, COUNTY may terminate this Agreement immediately, upon notice.

B. Without Cause. COUNTY may terminate this Agreement without cause upon thirty (30) days advance written notice. Such notice shall state the effective date of the termination.

C. Insufficient Funding. COUNTY's obligations under this Agreement are contingent upon the availability of local, state and/or federal funds. In the event such funding is reduced or eliminated, COUNTY shall, at its sole discretion, determine whether this Agreement shall be terminated. COUNTY shall provide CONTRACTOR seven (7) days advance written notice of its intent to terminate this Agreement due to insufficient funding.

D. Compensation Upon Termination. In the event this Agreement is terminated, CONTRACTOR shall be entitled to compensation for uncompensated services rendered pursuant to the terms and conditions of this Agreement through and including the effective date of such termination. However, this provision shall not limit or reduce any damages owed to COUNTY due to a breach of this Agreement by CONTRACTOR.

4. COMPENSATION:

A. Maximum Amount Payable. The maximum amount payable by COUNTY for services rendered, and costs and expenses incurred, pursuant to the terms and conditions of this Agreement is [_____] Dollars ($__,___.__). CONTRACTOR agrees to perform all services required by this Agreement for an amount not to exceed such maximum dollar amount. However, if local, state or federal funding or allowance rates are reduced or eliminated, COUNTY may, by amendment, reduce the maximum amount payable for services provided hereunder, or terminate this Agreement as provided herein.

B. Schedule of Rates. The specific rates and costs applicable to this Agreement are set forth in Exhibit B – Schedule of Rates, which is attached hereto and incorporated herein by reference.

C. Additional Services. Any additional services not otherwise provided for herein shall not be provided by CONTRACTOR, or compensated by COUNTY, without written authorization by COUNTY. All unauthorized costs and expenses incurred above the maximum payable amount set forth herein shall be the responsibility of CONTRACTOR. CONTRACTOR shall notify COUNTY, in writing, at least six (6) weeks prior to the date upon which CONTRACTOR estimates that the maximum payable amount will be reached.

5. PAYMENT:

CONTRACTOR shall submit to COUNTY [annual/quarterly/monthly] invoices itemizing all services rendered, and costs and expenses incurred, pursuant to the terms and conditions of this Agreement. Invoices shall be in a format approved by, and shall include backup documentation as specified by, [Short title of Department Head or Division Director] and the Humboldt County Auditor-Controller. CONTRACTOR shall submit a final invoice for payment within thirty (30) days following the expiration or termination date of this Agreement. Payment for services rendered, and costs and expenses incurred, pursuant to the terms and conditions of this Agreement will be made within thirty (30) days after the receipt of approved invoices. All invoices shall be sent to COUNTY at the following address:

COUNTY: [Name of Department] – [Name of Division]
Attention: [Name of Contact Person], [Job Title]
[Street Address]
[City, State Zip Code]

6. NOTICES:

Any and all notices required to be given pursuant to the terms of this Agreement shall be in writing and either served personally or sent by certified mail, return receipt requested, to the respective addresses set forth below. Notice shall be effective upon actual receipt or refusal as shown on the receipt obtained pursuant to the foregoing.

COUNTY: [Name of Department] – [Name of Division]
Attention: [Name of Contact Person], [Job Title]
[Street Address]
[City, State Zip Code]

CONTRACTOR: [Name of Contractor]
Attention: [Name of Contact Person], [Job Title]
[Street Address]
[City, State Zip Code]

7. REPORTS:

CONTRACTOR agrees to provide COUNTY with any and all reports that may be required by local, state and/or federal agencies for compliance with this Agreement. Reports shall be submitted no later than fifteen (15) days after the end of each calendar quarter using the format required by the State of California as appropriate.

8. RECORD RETENTION AND INSPECTION:

A. Maintenance and Preservation of Records. CONTRACTOR agrees to timely prepare accurate and complete financial, performance and payroll records, documents and other evidence relating to the services provided pursuant to the terms and conditions of this Agreement, and to maintain and preserve said records for at least three (3) years from the date of final payment hereunder, except that if any litigation, claim, negotiation, audit or other action is pending, the records shall be retained until completion and resolution of all issues arising therefrom. Such records shall be original entry books with a general ledger itemizing all debits and credits for the services provided pursuant to the terms and conditions of this Agreement.

B. Inspection of Records. Pursuant to California Government Code Section 8546.7, all records, documents, conditions and activities of CONTRACTOR, and its subcontractors, related to the services provided pursuant to the terms and conditions of this Agreement, shall be subject to the examination and audit of the California State Auditor and any other duly authorized agents of the State of California for a period of three (3) years after the date of final payment hereunder. CONTRACTOR hereby agrees to make all such records available during normal business hours to inspection, audit and reproduction by COUNTY and any other duly authorized local, state and/or federal agencies. CONTRACTOR further agrees to allow interviews of any of its employees who might reasonably have information related to such records by COUNTY and any other duly authorized local, state and/or federal agencies. All examinations and audits conducted hereunder shall be strictly confined to those matters connected with the performance of this Agreement, including, without limitation, the costs of administering this Agreement.

C. Audit Costs. In the event of an audit exception or exceptions related to the services provided pursuant to the terms and conditions of this Agreement, the party responsible for not meeting the requirements set forth herein shall be responsible for the deficiency and for the cost of the audit. If the allowable expenditures cannot be determined because CONTRACTOR's documentation is nonexistent or inadequate, according to generally accepted accounting practices, the questionable cost shall be disallowed by COUNTY.

9. MONITORING:

CONTRACTOR agrees that COUNTY has the right to monitor all activities related to this Agreement, including, without limitation, the right to review and monitor CONTRACTOR's records, programs or procedures, at any time, as well as the overall operation of CONTRACTOR's programs, in order to ensure compliance with the terms and conditions of this Agreement. CONTRACTOR will cooperate with a corrective action plan, if deficiencies in CONTRACTOR's records, programs or procedures are identified by COUNTY. However, COUNTY is not responsible, and will not be held accountable, for overseeing or evaluating the adequacy of CONTRACTOR's performance hereunder.

10. CONFIDENTIAL INFORMATION:

A. Disclosure of Confidential Information. In the performance of this Agreement, CONTRACTOR may receive information that is confidential under local, state or federal law. CONTRACTOR hereby agrees to protect all confidential information in conformance with any and all applicable local, state and federal laws, regulations, policies, procedures and standards, including, but not limited to: California Welfare and Institutions Code Sections 827, 5328, 10850 and 14100.2; California Health and Safety Code Sections 1280.15 and 1280.18; the California Information Practices Act of 1977; the California Confidentiality of Medical Information Act ("CMIA"); the United States Health Information Technology for Economic and Clinical Health Act ("HITECH Act"); the United States Health Insurance Portability and Accountability Act of 1996 ("HIPAA") and any current and future implementing regulations promulgated thereunder, including, without limitation, the Federal Privacy Regulations contained in Title 45 of the Code of Federal Regulations ("C.F.R.") Parts 160 and 164, the Federal Security Standards contained in 45 C.F.R. Parts 160, 162 and 164 and the Federal Standards for Electronic Transactions contained in 45 C.F.R. Parts 160 and 162, all as may be amended from time to time.

B. Continuing Compliance with Confidentiality Laws. The parties acknowledge that local, state and federal laws, regulations and standards pertaining to confidentiality, electronic data security and privacy are rapidly evolving and that amendment of this Agreement may be required to ensure compliance with such developments. Each party agrees to promptly enter into negotiations concerning an amendment to this Agreement embodying written assurances consistent with the standards and requirements of HIPAA, the HITECH Act, the CMIA and any other applicable local, state and federal laws, regulations or standards.

11. NON-DISCRIMINATION COMPLIANCE:

A. Professional Services and Employment. In connection with the execution of this Agreement, CONTRACTOR, and its subcontractors, shall not unlawfully discriminate in the provision of professional services or against any employee or applicant for employment because of race, religion or religious creed, color, age (over forty (40) years of age), sex (including gender identity and expression, pregnancy, childbirth and related medical conditions), sexual orientation (including heterosexuality, homosexuality and bisexuality), national origin, ancestry, marital status, medical condition (including cancer and genetic characteristics), mental or physical disability (including HIV status and AIDS), political affiliation, military service, denial of family care leave or any other

classifications protected by local, state or federal laws or regulations. Nothing herein shall be construed to require the employment of unqualified persons.

B. Compliance with Anti-Discrimination Laws. CONTRACTOR further assures that it, and its subcontractors, will abide by the applicable provisions of: Title VI and Title VII of the Civil Rights Act of 1964; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975; the Food Stamp Act of 1977; Title II of the Americans with Disabilities Act of 1990; the California Fair Employment and Housing Act; California Civil Code Sections 51, et seq.; California Government Code Sections 4450, et seq.; California Welfare and Institutions Code Section 10000; Division 21 of the California Department of Social Services Manual of Policies and Procedures; United States Executive Order 11246, as amended and supplemented by United States Executive Order 11375 and 41 C.F.R. Part 60; and any other applicable local, state and/or federal laws and regulations, all as may be amended from time to time. The applicable regulations of the California Fair Employment and Housing Commission implementing California Government Code Section 12990, set forth in Chapter 5, Division 4 of Title 2 of the California Code of Regulations are incorporated into this Agreement by reference and made a part hereof as if set forth in full.

12. NUCLEAR FREE HUMBOLDT COUNTY ORDINANCE COMPLIANCE:

CONTRACTOR certifies by its signature below that it is not a Nuclear Weapons Contractor, in that CONTRACTOR is not knowingly or intentionally engaged in the research, development, production or testing of nuclear warheads, nuclear weapons systems or nuclear weapons components, as defined by the Nuclear Free Humboldt County Ordinance. CONTRACTOR agrees to notify COUNTY immediately if it becomes a Nuclear Weapons Contractor as defined above. COUNTY may immediately terminate this Agreement if it determines that the foregoing certification is false or if CONTRACTOR subsequently becomes a Nuclear Weapons Contractor.

13. DRUG-FREE WORKPLACE CERTIFICATION:

By executing this Agreement, CONTRACTOR certifies that it will comply with the requirements of the Drug-Free Workplace Act of 1990 (California Government Code Sections 8350, et seq.) and will provide a drug-free workplace by doing all of the following:

A. Drug-Free Policy Statement. Publish, as required by California Government Code Section 8355(a)(1), a Drug-Free Policy Statement which notifies employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited, and specifies the actions to be taken against employees for violations.

B. Drug-Free Awareness Program. Establish, as required by California Government Code Section 8355(a)(2), a Drug-Free Awareness Program which informs employees about the following:

1. The dangers of drug abuse in the workplace;

2. CONTRACTOR's policy of maintaining a drug-free workplace;

3. Any available counseling, rehabilitation and employee assistance programs; and

4. Penalties that may be imposed upon employees for drug abuse violations.

C. Drug-Free Employment Agreement. Ensure, as required by California Government Code Section 8355(a)(3), that every employee who provides services pursuant to the terms and conditions of this Agreement will:

1. Receive a copy of CONTRACTOR's Drug-Free Policy Statement; and

2. Agree to abide by CONTRACTOR's Drug-Free Policy as a condition of employment.

D. Effect of Noncompliance. Failure to comply with the above-referenced requirements may result in suspension of payments under this Agreement and/or termination thereof, and CONTRACTOR may be ineligible for award of future contracts if COUNTY determines that the foregoing certification is false or if CONTRACTOR violates the certification by failing to carry out the above-referenced requirements.

14. INDEMNIFICATION:

A. Hold Harmless, Defense and Indemnification. CONTRACTOR shall hold harmless, defend and indemnify COUNTY and its agents, officers, officials, employees and volunteers from and against any and all claims, demands, losses, damages, liabilities, expenses and costs of any kind or nature, including, without limitation, attorney's fees and other costs of litigation, arising out of, or in connection with, CONTRACTOR's negligent performance of, or failure to comply with, any of the duties and/or obligations contained herein, except such loss or damage which was caused by the sole negligence or willful misconduct of COUNTY.

B. Effect of Insurance. Acceptance of the insurance required by this Agreement shall not relieve CONTRACTOR from liability under this provision. This provision shall apply to all claims for damages related to CONTRACTOR's performance hereunder regardless of whether any insurance is applicable or not. The insurance policy limits set forth herein shall not act as a limitation upon the amount of indemnification or defense to be provided hereunder.

15. INSURANCE REQUIREMENTS:

This Agreement shall not be executed by COUNTY, and CONTRACTOR is not entitled to any rights hereunder, unless certificates of insurance, or other proof that the following provisions have been complied with, are filed with the Clerk of the Humboldt County Board of Supervisors.

A. General Insurance Requirements. Without limiting CONTRACTOR's indemnification obligations provided for herein, CONTRACTOR shall, and shall require that all subcontractors hereunder, take out and maintain, throughout the entire period of this Agreement, and any extended term thereof, the following policies of insurance, placed with insurers authorized to do business in the State of California with a current A.M. Bests rating of no less than A: VII or its equivalent against personal injury, death and property damage which may arise from, or in connection with, the activities of CONTRACTOR and its agents, officers, directors, employees, licensees, invitees, assignees or subcontractors:

1. Comprehensive or Commercial General Liability Insurance at least as broad as Insurance Services Office Commercial General Liability Coverage (occurrence form CG 0001), in an amount of Two Million Dollars ($2,000,000.00) per occurrence for any one (1) incident, including, but not limited to, personal injury, death and property damage. If a general aggregate limit is used, such limit shall apply separately hereto or shall be twice the required occurrence limit.

2. Automobile/Motor Liability Insurance with a limit of liability not less than One Million Dollars ($1,000,000.00) combined single limit coverage. Such insurance shall include coverage of all owned, hired and non-owned vehicles. Said coverage shall be at least as broad as Insurance Service Offices Form Code 1 (any auto).
3. Workers' Compensation Insurance, as required by the Labor Code of the State of California, with

statutory limits, and Employers Liability Insurance with a limit of no less than One Million Dollars ($1,000,000.00) per accident for bodily injury or disease. Said policy shall contain, or be endorsed to contain, a waiver of subrogation against COUNTY and its agents, officers, officials, employees and volunteers.

4. Professional Liability Insurance – Error and Omission Coverage including coverage in an amount no less than Two Million Dollars ($2,000,000.00) for each occurrence (Four Million Dollars ($4,000,000.00) general aggregate). Said insurance shall be maintained for the statutory period during which CONTRACTOR may be exposed to liability. CONTRACTOR shall require that such coverage be incorporated into its professional services agreements with any other entities.

B. Special Insurance Requirements. Said policies shall, unless otherwise specified herein, be endorsed with the following provisions:

1. The Comprehensive or Commercial General Liability Policy shall provide that COUNTY, and its agents, officers, officials, employees and volunteers, are covered as additional insured for liability arising out of the operations performed by, or on behalf of, CONTRACTOR. The coverage shall contain no special limitations on the scope of protection afforded to COUNTY or its agents, officers, officials, employees and volunteers. Said policy shall also contain a provision stating that such coverage:

   a. Includes contractual liability.

   b. Does not contain exclusions as to loss or damage to property caused by explosion or resulting from collapse of buildings or structures or damage to property underground, commonly referred to as "XCU Hazards."

   c. Is the primary insurance with regard to COUNTY.

   d. Does not contain a pro-rata, excess only and/or escape clause.

   e. Contains a cross liability, severability of interest or separation of insureds clause.

2. The above-referenced policies shall not be canceled, non-renewed or materially reduced in coverage without thirty (30) days prior written notice being provided to COUNTY in accordance with the notice provisions set forth herein. It is further understood that CONTRACTOR shall not terminate such coverage until COUNTY receives adequate proof that equal or better insurance has been secured.

3. The inclusion of more than one (1) insured shall not operate to impair the rights of one (1) insured against another insured, and the coverage afforded shall apply as though separate policies had been issued to each insured, but the inclusion of more than one (1) insured shall not operate to increase the limits of the insurer's liability.

4. For claims related to this Agreement, CONTRACTOR's insurance is the primary coverage to COUNTY, and any insurance or self-insurance programs maintained thereby are excess to CONTRACTOR's insurance and will not be used to contribute therewith.

5. Any failure to comply with the provisions of this Agreement shall not affect coverage provided to COUNTY or its agents, officers, officials, employees and volunteers.
6. CONTRACTOR shall furnish COUNTY with certificates and original endorsements effecting the required coverage prior to execution of this Agreement. The endorsements shall be on forms

approved by the Humboldt County Risk Manager or County Counsel. Any deductible or self-insured retention over One Hundred Thousand Dollars ($100,000.00) shall be disclosed to, and approved by, COUNTY. If CONTRACTOR does not keep all required policies in full force and effect, COUNTY may, in addition to other available remedies, take out the necessary insurance, and CONTRACTOR agrees to pay the cost thereof. COUNTY is also hereby authorized with the discretion to deduct the cost of said insurance from the monies owed to CONTRACTOR under this Agreement.

7. COUNTY is to be notified immediately if twenty-five percent (25%) or more of any required insurance aggregate limit is encumbered, and CONTRACTOR shall be required to purchase additional coverage to meet the above-referenced aggregate limits.

C. Insurance Notices. Any and all insurance notices required to be given pursuant to the terms of this Agreement shall be sent to the addresses set forth below in accordance with the notice provisions described herein.

COUNTY: County of Humboldt
Attention: Risk Management
825 Fifth Street, Room 131
Eureka, California 95501

CONTRACTOR: [Name of Contractor]
Attention: [Name of Contact Person], [Job Title]
[Street Address]
[City, State Zip Code]

16. RELATIONSHIP OF PARTIES:

It is understood that this Agreement is by and between two (2) independent entities and is not intended to, and shall not be construed to, create the relationship of agent, servant, employee, partnership, joint venture or any other similar association. Both parties further agree that CONTRACTOR shall not be entitled to any benefits to which COUNTY employees are entitled, including, but not limited to, overtime, retirement benefits, leave benefits or workers' compensation. CONTRACTOR shall be solely responsible for the acts or omissions of its agents, officers, employees, assignees and subcontractors.

17. COMPLIANCE WITH APPLICABLE LAWS AND LICENSURE REQUIREMENTS:

CONTRACTOR agrees to comply with any and all local, state and federal laws, regulations, policies and procedures applicable to the services provided pursuant to the terms and conditions of this Agreement. CONTRACTOR further agrees to comply with any and all applicable local, state and federal licensure and certification requirements.

18. PROVISIONS REQUIRED BY LAW:

This Agreement is subject to any additional local, state and federal restrictions, limitations, or conditions that may affect the provisions, terms or funding of this Agreement. This Agreement shall be read and enforced as though all legally required provisions are included herein, and if for any reason any such provision is not included, or is not correctly stated, the parties agree to amend the pertinent section to make such insertion or correction.

19. REFERENCE TO LAWS AND RULES:

In the event any law, regulation or standard referred to in this Agreement is amended during the term hereof, the parties agree to comply with the amended provision as of the effective date thereof.

20. SEVERABILITY:

If any provision of this Agreement, or any portion thereof, is found by any court of competent jurisdiction to be unenforceable or invalid for any reason, such provision shall be severable and shall not in any way impair the enforceability of any other provision of this Agreement.

21. ASSIGNMENT:

Neither party shall delegate its duties nor assign its rights hereunder, either in whole or in part, without the other party's prior written consent. Any assignment by CONTRACTOR in violation of this provision shall be void, and shall be cause for immediate termination of this Agreement. This provision shall not be applicable to service agreements or other arrangements usually or customarily entered into by either party to obtain supplies, technical support or professional services.

22. AGREEMENT SHALL BIND SUCCESSORS:

All provisions of this Agreement shall be fully binding upon, and inure to the benefit of, the parties and to each of their heirs, executors, administrators, successors and permitted assigns.

23. WAIVER OF DEFAULT:

The waiver by either party of any breach or violation of any requirement of this Agreement shall not be deemed to be a waiver of any such breach in the future, or of the breach of any other requirement of this Agreement. In no event shall any payment by COUNTY constitute a waiver of any breach of this Agreement or any default which may then exist on the part of CONTRACTOR. Nor shall such payment impair or prejudice any remedy available to COUNTY with respect to any breach or default. COUNTY shall have the right to demand repayment of, and CONTRACTOR shall promptly refund, any funds disbursed to CONTRACTOR which COUNTY determines were not expended in accordance with the terms of this Agreement.

24. NON-LIABILITY OF COUNTY OFFICIALS AND EMPLOYEES:

No official or employee of COUNTY shall be personally liable for any default or liability under this Agreement.

25. AMENDMENT:

This Agreement may be amended at any time during the term of this Agreement upon the mutual consent of both parties. No addition to, or alteration of, the terms of this Agreement shall be valid unless made in writing and signed by the parties hereto.

26. STANDARD OF PRACTICE:

CONTRACTOR warrants that it has the degree of learning and skill ordinarily possessed by reputable professionals practicing in similar localities in the same profession and under similar circumstances. CONTRACTOR's duty is to exercise such care, skill and diligence as professionals engaged in the same profession ordinarily exercise under like circumstances.

27. TITLE TO INFORMATION AND DOCUMENTS:

It is understood that any and all documents, information and reports concerning the subject matter of this Agreement prepared and/or submitted by CONTRACTOR shall become the property of COUNTY. However, CONTRACTOR may retain copies of such documents and information for its records. In the event this Agreement is terminated, for any reason whatsoever, CONTRACTOR shall promptly turn over all such information, writings and documents to COUNTY without exception or reservation.

28. JURISDICTION AND VENUE:

This Agreement shall be construed in accordance with the laws of the State of California. Any dispute arising hereunder, or relating hereto, shall be litigated in the State of California and venue shall lie in the County of Humboldt unless transferred by court order pursuant to California Code of Civil Procedure Sections 394 or 395.

29. ADVERTISING AND MEDIA RELEASE:

All informational material related to this Agreement shall receive approval from COUNTY prior to being used as advertising or released to the media, including, but not limited to, television, radio, newspapers and internet. CONTRACTOR shall inform COUNTY of all requests for interviews by the media related to this Agreement before such interviews take place; and COUNTY shall be entitled to have a representative present at such interviews. All notices required by this provision shall be given to [Short title of Department Head or Division Director].

30. SUBCONTRACTS:

CONTRACTOR shall obtain prior written approval from COUNTY before subcontracting any of the services to be provided pursuant to the terms and conditions of this Agreement. Any and all subcontracts shall be subject to all applicable terms and conditions of this Agreement, including, without limitation, the licensing, certification and confidentiality requirements set forth herein. CONTRACTOR shall remain legally responsible for the performance of all terms and conditions of this Agreement, including work performed by third parties under subcontracts, whether approved by COUNTY or not.

31. ATTORNEYS' FEES:

If either party shall commence any legal action or proceeding, including an action for declaratory relief, against the other by reason of the alleged failure of the other to perform or keep any provision of this Agreement to be performed or kept, the party prevailing in said action or proceeding shall be entitled to recover court costs and reasonable attorneys' fees, including the reasonable value of services rendered by the Humboldt County Counsel's Office, to be fixed by the court, and such recovery shall include court costs and attorneys' fees on appeal, if applicable. As used herein, "prevailing party" means the party who dismisses an action or proceeding in exchange for payment of substantially all sums allegedly due, performance of provisions allegedly breached, or other considerations substantially equal to the relief sought by said party, as well as the party in whose favor final judgment is rendered.

32. SURVIVAL:

The duties and obligations of the parties set forth in Section [__] – Compensation Upon Termination, Section [__] – Record Retention and Inspection, Section [__] – Confidential Information and Section [__] – Indemnification shall survive the expiration or termination of this Agreement.

/ / / /

33. CONFLICTING TERMS OR CONDITIONS:

In the event of any conflict in the terms or conditions set forth in any other agreements in place between the parties hereto and the terms and conditions set forth in this Agreement, the terms and conditions set forth herein shall have priority.

34. INTERPRETATION:

This Agreement, as well as its individual provisions, shall be deemed to have been prepared equally by both of the parties hereto, and shall not be construed or interpreted more favorably for one (1) party on the basis that the other party prepared it.

35. INDEPENDENT CONSTRUCTION:

The titles of the sections and subsections set forth herein are inserted for convenience of reference only, and shall be disregarded in construing or interpreting any of the provisions of this Agreement.

36. FORCE MAJEURE:

Neither party hereto shall be liable or responsible for delays or failures in performance resulting from events beyond the reasonable control of such party and without fault or negligence of such party. Such events shall include, without limitation, acts of God, strikes, lockouts, riots, acts of war, epidemics, acts of government, fire, power failures, nuclear accidents, earthquakes, unusually severe weather, acts of terrorism or other disasters, whether or not similar to the foregoing.

37. ENTIRE AGREEMENT:

This Agreement contains all of the terms and conditions agreed upon by the parties hereto and no other agreements, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind either of the parties hereto. In addition, this Agreement shall supersede in their entirety any and all prior agreements, promises, representations, understandings and negotiations of the parties, whether oral or written, concerning the same subject matter. Any and all acts which may have already been consummated pursuant to the terms and conditions of this Agreement are hereby ratified.

38. AUTHORITY TO EXECUTE:

Each person executing this Agreement represents and warrants that he or she is duly authorized and has legal authority to execute and deliver this Agreement. Each party represents and warrants to the other that the execution and delivery of this Agreement and the performance of such party's obligations hereunder have been duly authorized.

[Signatures of Following Page]

IN WITNESS WHEREOF, the parties have entered into this Agreement as of the first date written above.

TWO SIGNATURES ARE REQUIRED FOR CORPORATIONS:
(1) CHAIRPERSON OF THE BOARD, PRESIDENT, OR VICE PRESIDENT; AND
(2) SECRETARY, ASSISTANT SECRETARY, CHIEF FINANCIAL OFFICER OR TREASURER.

[CONTRACTOR'S NAME]:

By: _____ Date: _____

Name: _____

Title: _____

By: _____ Date: _____

Name: _____

Title: _____

COUNTY OF HUMBOLDT:

By: _____ Date: _____
[Ryan Sundberg]
Chair, Humboldt County Board of Supervisors

INSURANCE AND INDEMNIFICATION REQUIREMENTS APPROVED:

By: _____ Date: _____
Risk Management

LIST OF EXHIBITS:

Exhibit A – Scope of Services
Exhibit B – Schedule of Rates

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT G – RADIO SYSTEM PACKAGE COMPLIANCE WORKBOOK
(Submit with Proposal)

REQUEST FOR PROPOSALS – NO. 18-100-COMM
HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

ATTACHMENT H – RADIO SYSTEM PACKAGE PRICING WORKBOOK
(Submit with Proposal)