Lewiston-Auburn 9-1-1 Regional Radio System

January 2, 2019

Request for Proposal

for

800 MHz Project-25-Phase-II Public Safety Trunked Radio System

The purpose of this document is to provide interested parties with information to enable them to prepare and submit a proposal for a regional 800 MHz trunked radio communications system.

Key Dates

Pre-RFP Conference and Site Visits	**January 16, 2019 - 10:00 AM**
RFP Due Date	**February 22, 2019 - 2:00 PM**

FAXED OR ELECTRONIC PROPOSALS WILL BE REJECTED

Table of Contents

1 INTRODUCTION

The Cities of Lewiston and Auburn, ME 9-1-1 [LA911] currently operate VHF Public Safety regional communications systems at multiple locations. LA911 has secured funding to replace and upgrade this regional communications system. This document provides specifications for the upgrade that includes migrating to an 800 MHz, P25 Phase-II trunked radio system, including an 8-position Communications Dispatch Console.

IP Microwave radio will be used for connectivity; however, the microwave system purchase is a separate project.

Dispatch console furniture is also being replaced under a separate procurement process.

The system is bid as a single system and will be awarded to a single bidder. This procurement will be funded through two different cycles as follows:

1. Communications =Radio Dispatch Console: Currently funded
2. 800 MHz trunked system: Funding approval subject to FY20 Budget process (FY20 Budget effective 7-1-19)

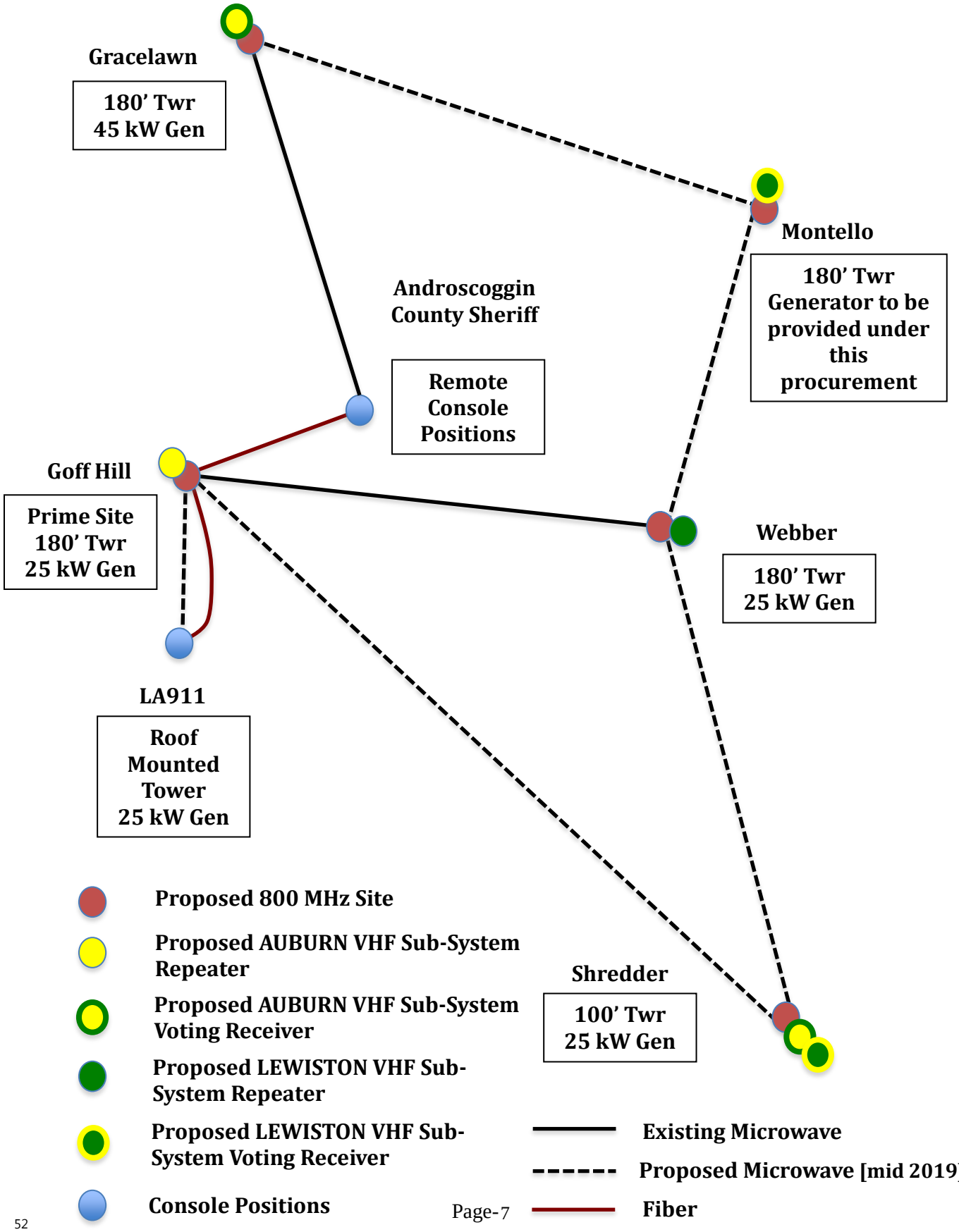
The project will commence upon Vendor award. It is LA911's intent to have a single implementation schedule to include both the console and trunked infrastructure installation without project delays. Due to the critical nature of the console condition, the existing console needs immediate replacement and should the first sub-system to be implemented. The successful Proposer shall develop an implementation plan, with a detailed schedule, to implement the console first, then the trunked infrastructure based on funding cycles.

Consideration should be taken to minimize delays or disruptions until funding becomes available. LA911 is looking for the Proposer to work with them with regards to the funding constraints while not delaying the project.

The equipment and services to be supplied under this procurement include:

- Complete System Design
- Communications Dispatch Console
- Logging Recorder
- 800 MHz Project-25-Phase-2 Trunked radio system
- Transmitter Simulcast Repeaters
- Receiver Voting System
- Antennas and feeder systems [transmission lines, duplexers, lightning protection, etc.]
- IP Gateways
- GPS Synchronization Equipment
- Alarms / System Monitoring
- Project Management
- Installation and System Provisioning
- Optimization of Simulcast Timing
- System Testing and Acceptance
- Documentation Including As-Built Drawings
- Maintenance services

Proposed LA911 System



1.1 RFP Issuing Office, Inquiries, and Point of Contact

As noted, LA911 shall be the lead agency for the procurement of the regional system. Questions regarding this bid shall be made in writing only and be sent to the 9-1-1 Center Director, being received no later than five working days prior to the bid opening. All inquiries concerning any commercial or technical aspect of the project should be directed to the individuals below, no later than 3 business days before the scheduled bid opening.

Mr. Allen Ward
Purchasing Agent
Lewiston Town Hall
27 Pine St
Lewiston, ME 04240
award@lewistonmaine.gov

A copy of the technical questions shall also be sent to

Mr. Paul M. LeClair
Director
Lewiston-Auburn 9-1-1
552 Minot Ave
Lewiston, ME 04210
207 786 5380 x2 (Office)
911director@auburnmaine.gov

RFP addenda, if any, will be emailed to all those on record as having submitted a Proposal Request Form and placed on LA911 (Auburn & Lewiston) website. Any clarifications or addenda shall become part of this RFP. Proposers will be required to certify that they received all addenda issued by the Committee.

1.2 RFP Schedule and Key Dates

EVENT	DATE
RFP Issued to Proposers	**January 2, 2019**
Pre-RFP Conference and Site Visits	**January 16, 2019 - 10:00 AM**
Deadline for Submission of Pre-Bid Questions	**COB - February 11 2019**
Answers to questions by email	**COB - February 15, 2019**
Proposal Due Date: **Mr. Allen Ward** **Purchasing Agent** **Lewiston City Hall** **27 Pine Street** **Lewiston, ME 04210** **award@lewistonmaine.gov**	**February 22, 2019** **2:00 PM** ***"Lewiston-Auburn 911 Regional Radio System"***
Evaluation - estimate	**February 25 - March 20, 2019**
LA911 Committee awards project to selected vendor	**March 21, 2019**

1.3 Pre-Proposal Conference and Site Tour

A Pre-Bid conference will be held on the date shown on Section-1.2 to discuss items of this RFP. The Pre-Bid Conference will be held at:

NOTE THAT THE PRE-PROPOSAL CONFERENCE IS MANDATORY.

Date / Time: January 16, 2019 - 10:00 AM

Lewiston-Auburn 9-1-1
552 Minot Ave
Lewiston, ME

1.4 *Pre-RFP Conference Process*

STEP-1

Questions, request for interpretation or clarification, petition for changes, additions or deletions to technical or commercial items in this RFP, shall be submitted in writing [via email] prior to the Pre-Bid Conference. Questions are due by the date listed in Section-1.2 schedule.

STEP-2

Proposers will convene jointly on the date and time specified to receive answers to the proposer questions submitted in advance; to submit additional questions or requests; and, to receive any updated information regarding the project.

It is expected that additional proposer questions will be asked at the pre bid conference. LA911 will issue Addendum-1, which will include the prebid attendance roster along with the prebid questions and answers. These will be sent via email within 5-business days after the Pre-Bid Conference.

SITE TOUR

In order for Proposers to determine their scope of work, a site tour will be conducted on the day of the pre-bid conference. It is expected that the site tour will take the rest of the day. The purpose of these visits is for each potential proposer to gather information on conditions that will assist in the accurate preparation of costs for installation labor and services, equipment, materials and site improvements. LA911 will escort proposers to the sites but proposers must have their own transportation. Please only send **two people** from your company for the site visit.

The Proposer shall review site/tower conditions, inspect the site facilities to determine equipment rack space requirements as well as antenna space on the tower.

Electrical service at each site should be evaluated by the proposer to determine its suitability to power the proposed equipment. Any electrical modifications required shall be identified by the proposer and submitted in its proposal.

The Proposer shall inspect grounding conditions, lightning protection devices, and other site facilities to determine if suitable for the proposed equipment.

Environmental controls at the sites should be assessed by the proposer for their ability to maintain the proposed equipment within its specified operating parameters as needed by the proposer's equipment.

Note that this is the only opportunity prospective Proposers will have to visit and inspect LA911's communications facilities. Therefore, attendance is mandatory for prospective Vendors interested in submitting a response.

2 RFP INSTRUCTIONS

LA911 will accept sealed proposals identified in the bid schedule where they will be publicly opened.

Sealed proposals will be received in the office of the Purchasing Agent on February 22, 2019 until 2:00 p.m. at which time they will be publicly opened and a list of proposals received for

Please submit one [1] original proposal and four [4] copies delivered to: City of Lewiston; Allen Ward, Purchasing Agent, 27 Pine Street, Lewiston, Maine 04240 on the required due date in a sealed package with the Bid Number and Name clearly marked on the outside. The proposal shall also be submitted on a thumb drive, note that the proposal file submitted must mirror the paper versions exactly, and as a single PDF file.

2.1 RFP Information & Work Conditions

This RFP establishes the requirements for this Project and it is believed that all information necessary to complete a response is included in this document.

All Proposers are expected to carefully examine the RFP. Any ambiguities or inconsistencies should be brought to the attention of the individuals identified in the 'INQUIRIES' subsection of this RFP.

It is the responsibility of the Proposer to clarify any information, which is contained in this RFP and not fully understood.

The Proposer, by and through the submission of a response, agrees to be held responsible for:

- having become familiar with the existing site facilities
- having become familiar with the existing radio system
- having completely understood the nature and scope of the work and
- any local conditions that may affect the materials, parts, labor and work to be done.

Nothing in this RFP shall relieve the Proposer from supplying a totally turnkey system package, including, but not limited to all materials, hardware, cabling and labor FOB Destination to be furnished under this contract. The Proposer shall, in all cases, be solely responsible for the delivered system, and for furnishing complete system documentation for each and every part of the furnished system.

2.2 Termination for Unavailability of Funds

In the event that LA911 funding for the contract becomes unavailable, LA911 shall have the right to terminate the contract without penalty. Availability of funds will be determined at the sole discretion of LA911.

2.3 Rights of LA911

This RFP does not commit LA911 to award a contract or contracts or to pay any costs incurred in the preparation of a proposal in response to this request.

LA911 reserves the right to accept or reject any or all proposals received as a result of this request; to negotiate with qualified Proposers, or to cancel in part or in its entirety this request for proposal, if it is determined to be in the best interest of LA911 to do so.

LA911 reserves the right to waive any informalities in bids, to accept any bid or portions thereof (bidders are advised to note this and quote accordingly) and to reject any or all bids should it be deemed for the best interest of LA911 to do so. LA911 reserves the right to substantiate the bidder's qualifications, capability to perform, availability, including past performance record.

2.4 Confidentiality

LA911 is subject to the Freedom of Access law. Under this law, it must make public information that it receives in the solicitation of proposals. The Freedom of Access law does, however, have an exception applicable to "proprietary information." In the event that the proposal you submit contains any proprietary information, LA911 agrees that it will not disclose such information to any third party, and that such disclosure shall occur only if LA911 is compelled to disclose such information by a final judgment, after giving you the opportunity to litigate the issue. Proprietary information must be submitted in a separate sealed envelope to LA911 along with your sealed quotation l. The outside of the envelope must clearly be marked "Proprietary information/confidential." LA911 agrees that proprietary information will only be viewed by LA911 officials and will be reviewed only on a "need to know" basis. The information will not be shared with any third party without your express consent or a court order.

2.5 Insurance Requirements

The Contractor shall take all responsibility of the work and take all precautions for preventing injuries to persons and property in or about the work; shall bear all losses resulting to him/her on account of the amount or character of the work or because the nature of the land in or on which the work is done is different from what was estimated or expected or on account of the weather, elements or other cause; and he/she shall assume the defense of and indemnify and save harmless the LA911 and its officers, agents and servants from all claims relating to labor and materials furnished for the work; to inventions, patents and patent rights used in doing the work; to injuries to any person or corporation received or sustained by or from the Contractor and his/her employees in doing the work, or in consequence of any improper

materials, implements or labor used therein; and to any act, omission or neglect of the Contractor and his/her employees therein.

The Contractor shall furnish proof of coverage with adequate insurance of the types and to the limits specified below naming LA911 as additional insured. Certificate of such insurance shall be filed with the Purchasing Agent for his/her approval before permission to commence work will be granted

2.5.1 Insurance Coverage

a) Commercial General Liability to include products and completed operations, and blanket contractual. The limits of liability shall be as follows:

Bodily Injury and Property Damage	$1,000,000
Personal Injury and Advertising Injury	$1,000,000
Per Project Aggregate	$1,000,000
General Aggregate	$2,000,000
Products and Completed Operations Aggregate	$2,000,000
Medical Payments	$ 10,000

b) Business Automobile Liability

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractors to maintain business automobile liability insurance covering all owned, non-owned, leased, rented or hired automobiles (symbol 1). The limits of liability shall be as follows:

Bodily Injury and Property Damage $1,000,000

Automobile physical damage coverage shall be at the option of the CONTRACTOR, all sub-contractors and lower tier contractors. The COMMITTEE shall not be liable for physical loss or damage to any owned, non-owned, leased, rented or hired automobile.

c) Workers' Compensation Insurance

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractor's to maintain Workers' Compensation and Employers Liability in accordance with the laws and regulations of the State of Maine. The limits of liability provided shall be as follows:

Coverage A:	Statutory
Coverage B:	$100,000/$500,000/$100,000

d) Professional Liability

If the CONTRACTOR is an Architect, Engineer or Surveyor, they shall maintain a policy of insurance to pay on their behalf whatever amounts that may become legally required to pay on account of an error, omission or negligent act. Limits of Liability shall be as follows:
$1,000,000 per occurrence and in the aggregate site specific.

It is a requirement that this policy be maintained for a period of three (3) years following completion of the project.

e) Certificates of Insurance of the types and in the amounts required shall be delivered to the COMMITTEE prior to the commencement of any work by the CONTRACTOR, subcontractor or lower tier contractor or any person or entity working at the direction or under control of the CONTRACTOR. The CONTRACTOR shall assume the obligation and responsibility to confirm insurance coverage for all sub-contractors or lower tier contractors who will participate in the project.

f) The Certificate of Insurance and the policies of insurance shall include a sixty (60) day notice to the COMMITTEE of cancellation, non-renewal or material change in coverage or form.

g) The CONTRACTOR and his surety shall indemnify and save harmless the COMMITTEE, his officers and employees from all suits, actions or claims of any character brought because of any injuries or damage received or sustained by any person, persons or property on account of the operations of the said CONTRACTOR; or on account of or in

consequence of any neglect in safeguarding the work; or through use of unacceptable materials in construction of the work; or because of any act or omission, neglect, or misconduct of said CONTRACTOR; or because of any claims or amounts recovered from any infringements or patent trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act" or of any other law, ordinance, order or decree; and so much of the money due to the said CONTRACTOR under and by virtue of his/her contract as shall be considered necessary by the COMMITTEE for such purpose, may be retained; or in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims, for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the COMMITTEE.

2.6 Contractor Project Manager

The proposer shall identify an individual who will serve as the contractor's Project Manager [PM] if awarded a contract. This individual shall serve as the single point of contact between the successful contractor and LA911 PM.

The identified PM shall be an employee of the proposer at the time of the response submission. The PM shall have a proven record of experience in projects of similar scope. LA911 reserves the right to accept or reject the identified PM. If, during the term of the contract, it is necessary to replace the PM, LA911 reserves the right to accept or reject the newly identified PM.

The response shall include the following information on the identified PM:

- Name
- Employment history with proposer
- Home base of operations
- Relevant experience for each listed project, provide name, title and telephone number of a reference contact possessing a technical background
- Education & training

2.7 Standards & Codes

In all instances, offered and delivered goods shall be new, unused, in current production and meeting or exceeding all applicable standards and codes of:

All facilities constructions, labor, equipment and cabling installations shall comply with the following applicable codes:

General

1. ADA - American with Disabilities Act
2. OSHA - Occupational Safety and Health Administration
3. EIA - Electronic Industry Association
4. FCC - Federal Communications Commission

Electrical

Installation of all electrical equipment, power distribution, lighting and outlet assemblies, alarm and grounding systems, including associated wire ways, and wiring, shall comply with the most recent edition of:

1. NEC - National Electrical Code
2. NFPA - National Fire Protection Association
3. UL - Certified by Underwriters Laboratories
4. NEMA - National Electrical Manufacturers Association

Radio

1. TSB-88C- Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification
2. NFPA 1221 – Standards for the Installation/Maintenance and Use of Emergency Services Communications Systems
3. EIA-310 – Racks, Panels, and Associated Equipment
4. EIA/TIA 603 - Land Mobile FM Communications Equipment Measurement and Performance Standards
5. EIA/TIA 329B - Minimum Standards for Communications Antennas

Towers/Shelters

1. TIA/EIA 222-H – Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
2. R-56 - Standards and Guidelines for Communications Sites

3. ANSI - American National Standards Institute
4. ASME - American Society of Mechanical Engineers
5. ASTM - American Society for Testing & Materials

Federal Communications Commission [FCC]:

1. Rules, Part 2
2. Rules, Part 15, Subpart B for Class A devices
3. Rules, Part 101, Fixed Microwave Services

Federal Aviation Administration [FAA]

2.8 Exceptions and Clarifications

Proposers taking exception to or clarifying the requirements, or offering substitutions, shall clearly state so in their response. All exceptions and clarifications shall be submitted in a separate section of the response.

LA911 is the final judge that determines what is a clarification or exception.

The absence of exceptions, clarifications and/or substitutions shall indicate that the Proposer has accepted all the requirements of the RFP in the manner described and shall hold the Proposer responsible to perform in strict accordance with the requirements of the RFP. LA911 reserves the right to accept or reject any or all of the exceptions, clarifications and/or substitutions, in whole or in part, if it is deemed to be in the best interest of LA911.

2.9 *Delivery, Storage and Risk of Loss*

It shall be the Contractor's responsibility to provide secure and dry storage space for all equipment prior to the approved installation date. The Contractor shall be responsible to inspect all deliveries and take the necessary corrective action to replace any damaged equipment. Copies of shipping documents for all undamaged equipment shall be the basis of the Contractor's payment as stated in the payment schedule.

The contractor shall be responsible for coordinating, unloading, inspecting, accepting and storing all material deliveries. LA911 personnel shall be excluded from performing any of these activities.
All claims necessary as a result of damage or loss during shipment shall be the responsibility of the contractor. The contractor shall assume all risk of loss or damage to the equipment while it is at the Proposer's storage or service facilities and until it is secured at the installation locations.

The PM or contractor's designate shall be the only individuals authorized to accept materials delivered to LA911. The contractor shall present to LA911's PM a receipt of items being delivered. LA911's PM signature on the receipt shall constitute acceptance of the materials.

Proposers shall list in their response the facilities where they plan to deliver the major system items prior to installation.

2.10 Detailed Equipment List by Site

Proposals must contain detailed equipment list [model numbers, description, etc.] as required by the RFP. The detailed equipment list must be cross-referenced to the Proposer's itemized pricing sheets required in the submittal.
Where applicable, detailed equipment lists must be provided by location and includes details of requirements needed for the installation and operation of their equipment as deemed necessary.

At project close out, the contractor shall provide LA911 an updated "as-built" equipment list by site showing location, quantities, model number and description, and serial numbers.

2.11 Software Licensing

Proposers responding to this RFP shall provide detailed information on all software licensing, use or access to computer programs that will be part of the Proposer's offering. All costs, terms and conditions of use and access must be defined and clearly indicated as part of the Proposer's offering.

Software to support the network, either by leasing, renting, or selling, shall clearly define the ownership or associated costs. Proposers are to provide definitions of software upgrades, enhancements and the costs, terms, leasing arrangements, use, etc. must be clearly defined as part of the Proposer's proposal.

2.11.1 Software Maintenance Services

The Contractor shall be responsible for all aspects of system software maintenance and system/database administration during the warranty and purchased maintenance periods within the fixed prices elements of the contract.

This work shall include, without limitation, monitoring and tuning of all operating systems, network software, databases, and support of all other Contractor provided system software components.

The Contractor shall also be responsible for installation of third party software patches and revisions at no additional charge to LA911.

In cases where the manufacturer, Contractor, or LA911 discovers a defective product or component design, the Contractor shall have sole responsibility for new replacements at no cost to LA911.

2.11.2 Software Updates

The Contractor shall provide the latest software/firmware updates prior to final acceptance, during the warranty period and any exercised maintenance period(s). A software licensing fee should be included to ensure the latest current software is provided.

The Contractor shall notify LA911 when any software updates are released following system acceptance for any licensed software associated with the system. Updates should be one per year with annual software refresh included.

Bug fixes cannot count as a software refresh action.

The refresh under the contract must be full implementation including installation, engineering, PM and logistics.

Software updates shall include the following, at a minimum:

- Enhancements and/or corrections to existing features for all supplied system components,
- New features implemented in existing system components
- Software for product migrations, where a new generation of software is developed for a designated system component, rather than an update of the older generation of software
- Software refresh must be a coordinated system-centric event, mitigating the risk of disparate software versions causing problems

2.11.3 Software Change Notification Service

LA911 shall be informed of updates for all software provided within this Project upon release.

LA911 shall be placed on the Contractor's mailing/subscription list to receive announcements of the discovery, documentation and solution of software problems, as well as other improvements, updates, new software releases and other improvements that could be made to the system provided to The State.

This service shall commence at the time of Final Acceptance, and shall continue through the maintenance period or five years, whichever is longer.

2.11.4 Software Licenses

The Contractor shall grant to or obtain in the name of LA911 a perpetual, non-revocable, non-transferable, and non-exclusive license to use the Software and documentation related thereto for the upgraded System provided.

2.12 Bid and Performance Bonds

No Proposal will be considered unless it is accompanied by a bid security in the form of a bid bond or certified check in the amount of five percent [5%] of the total bid price, made out in favor of LA911. All bid securities will be released upon deliverance of a signed Contract or, if no Contract award is made, within forty-five (45) days after the opening of the Proposals, unless forfeited as herein stipulated.

A Performance Bond and a Labor and Material Payment Bond, preferably executed on AIA Bond Form Number A311, in an amount equal to the total Contract price, of a surety company satisfactory to the Purchasing Agent, will be required of the successful bidder to ensure completion of the work and the proper fulfillment of the conditions of the Contract. The total Contract price shall mean the total bid price as stated in the Proposal based on the estimated quantities of the various items of work.

3 BASIS OF AWARD AND EVALUATION BASIS OF AWARD

This section will outline the evaluation criteria to be used by an Evaluation Committee in the selection of the submitted proposals. After review of the written proposals, the Evaluation Committee may request some or all Proposers to provide oral presentations. After any oral presentations, the technical proposals will be ranked based on the criteria set forth in this RFP. The cost proposals will then be opened and evaluated by the Project Manager/LA911 Treasurer. The contract will ultimately be awarded to that Proposer whose proposal, conforming to the RFP, that best meets the needs of LA911, as reflected by the requirements of this RFP, technical and cost factors considered.

3.1 *Evaluation Process*

Technical proposals will be reviewed first. The Technical Evaluation Committee will independently evaluate and score the technical proposals received by using the evaluation factors defined below. The factors may not all be given the same weight in the evaluation process. The Technical Evaluation Committee will then use each committee member's evaluation to rank the technical proposals that meet the criteria of this RFP and are deemed capable of fulfilling this RFP. The scores and ranks will be submitted to the Project Manager/LA911 Treasurer.

The Project Manager/LA911 Treasurer will then open the Cost Proposals and transmit them to the Cost Evaluation Committee for review and comment. The Project Manager/LA911 Treasurer shall then use each committee member's information to numerically rank the Cost Proposals. The Project Manager/LA911 Treasurer will then combine the Technical and Cost Scores and will determine the total score for each Proposer.

The Project Manager/LA911 Treasurer may enter contract negotiations with the Proposer with the highest total score. If the Project Manager/LA911 Treasurer and a Proposer are unable to enter into a contract for any reason, the Project Manager/LA911 Treasurer may begin contract negotiations with the next lowest ranked Proposer.

3.2 Proposal Scoring Criteria

The technical proposal will be given more weight than the cost proposal as follows:

25% Technical satisfaction of meeting LA911's requirements

25% Overall responsiveness to the RFP

20% Experience/Qualifications/Past performance on similar projects

30% Cost

Evaluation criteria will be as follows:

- **Proposal Content:** All deliverables, and other supported documentation are included, and the evaluation of the content by the Technical Committee, excluding the cost.
- **Overall Compliance:** Extent to which proposal is compliant with the RFP and capable of completing the proposed SOW.
- **Radio Coverage:** Guaranteed 95%/DAQ-3.4 in-building portable system coverage. Proposals that fail to meet the coverage requirements and guarantees are subject to possible disqualification.
- **System Architecture and Features:** Extent to which Supplier's proposal achieves the objective of a Project-25, Phase-II voice radio system.
- **Redundancy:** Extent to which the Proposer's proposal has no single points of failure.
- **System Expansion Capability**: Extent to which Proposer's proposal facilitates shared use and provides additional bandwidth, features, and functions in the future without the replacement of infrastructure. Extent to which the Proposer's system design can expand, preferably with software, than equipment replacement

- **System Integration:** Extent to which and the ease with which Proposer's proposed System can be integrated with the existing system and proposed simulcast equipment and sub-systems.
- **System Interoperability:** Extent to which and the ease with which internal (e.g., City departments) and external users [e.g., local conventional systems] can interoperate.
- **Experience and Qualifications:** Evaluation of the experience and qualifications of the Successful Proposer and proposed project team, including demonstrated successful performance on systems similar in size and scope specified by this RFP.
- **Implementation Plan:** Evaluates the proposal's feasibility and engineering competence of phase plan and schedules.
- **Local Support Performance:** Evaluates the availability and qualifications of local service and maintenance facilities, and availability, location, and quality of training for maintenance and user group personnel.
- **Schedule and Responsibilities:** The proposer's project plan that details milestone dates, target delivery schedules and project completion and responsibilities.
- **Optional: Proposer oral presentation,** graded as extra points, for technical clarity, understanding of LA911's needs and concerns, willingness to work with LA911, and overall SOW implementation.

3.3 Award of Contract

LA911 will award a contract to the most qualified Proposer based upon evaluation criteria used and other considerations deemed appropriate by LA911. LA911 reserves the right, in its discretion to accept the lowest and most compliant response, which may or may not necessarily be the lowest cost response. The right is reserved to reject any or all responses, accept all or any portion of a response, and to waive technical errors, discrepancies or information if, to do so, is deemed to best serve the interest of LA911.

NOTE: Any personnel or subcontractors assigned to this project may not be substituted with other personnel or subcontractors unless approved by LA911 in writing. Any proposal to substitute shall be in writing and include the substitute's qualifications. LA911 reserves the right to reject any substitute.

The contract shall consist of the following:

- General Terms & Conditions
- Actual Contract Document with Exhibits
- Exhibit 1 – Request for Proposal
- Exhibit 2 - Response
- Exhibit 3 – Issued Addenda, Correspondence & Subsequent Project Documentation relating to the Project

Purchase Order

Upon the approval of LA911, a purchase order(s) will be generated by LA911 to the successful vendor. The purchase order number must appear on all itemized invoices and packing slips. LA911 will not be held responsible for any orders placed, delivered, or installed without a valid, current purchase order number.

Change Orders

No oral statement of any person shall modify, otherwise change or affect the terms, conditions or requirements stated in the resulting contract. All changes will be made in writing and incorporated in the contract by amendment executed by the appropriate parties.

3.4 Agreement for Services

A sample of the Agreement for Services is found in Appendix-C.

3.5 Detailed Design Review

LA911 requires the Contractor to perform a comprehensive detailed design prior to project commencement. LA911 shall actively participate in the detailed design review the entire system with the Contractor; Offerors shall note, however, that LA911 participation in the detailed design and detailed design review shall in no way relieve the Contractor from full responsibility for system performance. Completion of the detailed design process shall take place upon mutual agreement between the Contractor and LA911. Detailed design documents shall be supplied to LA911 in both electronic

(original file format) and paper format. The Contractor shall supply six (6) copies of the detailed design document in both electronic (CD-ROM) format and paper format. The detailed design shall include, at a minimum, the following items for all system elements, as applicable, Site acquisition risk analysis:

- Revised detailed statement of work
- Revised detailed implementation plan
- Revised project schedule
- Network and Subsystem Block Drawings
- Line Item Equipment Lists
- Infrastructure and Network Element Programming Parameters
- Fleet mapping Parameters
- IP/Transport Requirements/Design
- Racking/Floor plan Drawings
- Physical Site Requirements
- Power and HVAC Requirements
- Channel Bank Layouts/Configurations
- Network Timing Requirements/Design
- Antenna Subsystems
- Failure Mode Analysis
- LAN/W AN Design
- TCP/IP Network Addressing Scheme, as applicable
- Deployment Strategy/Impact to existing systems interfaced
- Change Orders
- Test plans
- Spares

4 PROPOSAL FORMAT AND CONTENTS

Proposals shall contain the following information in the format and order set forth below

Response contents as outlined below - note that two [2] Volumes are requested:

Volume-I: Main Proposal

Volume-II: Specifications Sheets and Appendices

VOLUME-I CONTENT

COVER LETTER

Proposers must include a cover letter transmitting the proposal to LA911, signed by an official authorized to contract for the firm. The letter must contain the name, title, address, telephone number and email of the firm's contact person for the Proposal. The letter shall contain a statement that the Proposer understands and agrees with the scope of work and accepts all other requirements and terms and conditions of the RFP.

Immediately following the cover letter shall include any forms required by LA911.

Note that the original signature of the above listed documents is required in the response copy marked as 'ORIGINAL'.

TABLE OF CONTENTS

SECTION 1 – SYSTEM OVERVIEW, REFERENCES, AND WARRANTY

- **System Overview** - Submit an executive summary of your proposed system and/or equipment provided, covering the main features and benefits that distinguish it, in non-technical terms. Do not exceed three pages [3] or include any price information.

- **Prime Proposer -** Introduction of the prime Proposers company including history, qualifications, experience, main line of business, how business is organized (corporation, partnership, public, private, etc.). Do not exceed three pages [3].

- **Sub-contractors** - Introduction of the Sub-contractors including history, qualifications, experience, main line of business, how business is organized (corporation, partnership, public, private, etc.). Identify all Sub-contractors by listing name, address, phone and contact person. State whether the prime Proposer has worked with the Sub-contractors in the past. If so, provide brief descriptions on: the projects - no more than 3; the system elements; the Scope of each Sub-contractors responsibility; the approximate start date and duration of the project. The sub-contractor should meet LA911 Insurance requirements. No greater than three pages [3].
- **List of References** - For both Prime and Sub-contractors. Provide a list of three (3) references with radio systems having similar requirements of this solicitation. The systems identified shall have been accepted no less than six (6) months and no greater than two (2) years from the due date of this response. Include a brief description of the system, approximate date of acceptance, contact name and telephone number.

- **Warranty** - This sub-section shall also contain all the information requested in the 'WARRANTY' & 'PREVENTIVE MAINTENANCE' sections of the procurement specification.

SECTION 2 – COMPLIANCE SECTION

- If there are any exceptions, clarification, or other notes of concern, please list in detail all exceptions and related discussion to the specification. In addition, discussion regarding any clarification points shall also be provided in this section. Use as many pages as necessary to describe each exception or clarification. Please provide clear references to the Specification document where needed.
- Note that LA911 will have final interpretation of what is a clarification or an exception. In no instance shall the Proposer deemed an exception as a clarification.
- Please identify the anticipated responsibilities of LA911 in this section.
- Any item of clarification or exception that is not included in this section will be deemed to have been accepted and agreed to by the Proposer.
- For clarifications or substitutions, provide an explanation of the difference between what the specification requested and what the Proposer will supply. Proposer shall explain why they believe their method of accomplishing the requested functionality will be equal or better.
- It is the Proposer's choice to submit a point-by-point response to the specifications.

SECTION 3 - TECHNICAL SYSTEM INFORMATION

- Description of the system or equipment being offered.
- Description of specification items requesting a detailed response
- Include block system diagrams, network configuration, equipment interfaces, plan views and diagrams that clearly depict the proposed system, its equipment, and components. These diagrams shall be provided on a per site basis.
- Other diagrams as required.
- Include a detailed itemized list and quantities, in matrix form, of all equipment supplied and their intended installed location. Matrix should have equipment items on the vertical scale [rows], and site locations on the horizontal scale [columns]. Do not include costs.

SECTION 4 – STATEMENT OF WORK AND SCHEDULE

- Describe the work [on a per site basis] to be performed in detail by the prime Proposer by identifying all major project tasks and milestones.
- Describe the work to be performed by each Sub-contractor by identifying all major project tasks and milestones. Group all project tasks by their associated sub-contractors.
- Provide a proposed project organizational chart.

- Provide a Project Schedule

SECTION 5 – RADIO COVERAGE

This section shall contain all detailed discussion coverage parameters and performance, path propagation, path profiles, and antenna calculation sheets, and other items as specified in this document.

SECTION 6 - PRICING

- Cost shall be submitted on the Summary Pricing Sheet found in the Attachment.
- Detailed cost sheets shall be in matrix form to the greatest extent possible. Intended locations of items shall appear as columns on the matrix.
- The costs shall cover all the items to be supplied by the successful contractor. Costs shall be shown on a per unit and extended basis.
- Identify all cost sheet items as line items, at a minimum and in the following order: item number, manufacturer, model number, descriptor, quantity and intended location, total quantity, unit cost and extended cost.
- Cost for major services such as installation, licensing, systems engineering, program management, coverage testing, training, etc., shall be clearly identified as separate line items. Costs for these services shall not be lumped.
- List all sub-items associated with each major item.
- Any costs for optional items or offerings shall be presented on a separate cost sheet.

VOLUME-II CONTENT

SPECIFICATIONS SHEETS AND APPENDICES

- Include equipment catalog, cut sheets, brochures or specification sheets in this section.
- Appendices are optional. This section is for Proposers who wish to submit additional material that they believe will clarify or enhance their Proposal. Cross-references in the main RFP to the appendices are required.

5 PROJECT-25 TRUNKED RADIO SYSTEM

LA911 seeks to acquire and implement a new eight [8] channel 800 MHz Project-25 simulcast trunked radio system that will replace the existing VHF conventional radio system that are currently being utilized by the Law Enforcement, Fire Department, and Public Works.

The system shall guarantee portable in-street radio coverage reliability within the jurisdictional boundaries of the Lewiston and Auburn.

The proposed system upgrade design shall comply with APCO minimum recommendations and EIA/TIA standards for Project-25 Phase-II TDMA [2-slot on 12.5 kHz channel] digital voice Public Safety 800MHz trunked radio systems.

The proposed Phase II system shall be backward-compatible with Phase I subscriber equipment and shall be capable of supporting "mixed-mode" Phase I and Phase II equipment calls. The Proposer shall clearly describe how "mixed mode" calls are processed and what impact those calls have on the system configuration.

The new system will be installed while the current systems are still in place and operating. This provides the ability for both the current and the new systems to work together during the implementation phases. The existing system infrastructure shall continue to interface and be operational from the dispatch center. A training period will follow the installation period, where the dispatchers and radio users are to become familiar with the new systems operations prior to system cut-over. Technical training for LA911's technical staff shall also be provided.

The system is intended to support LA911 well into the future. System size, capacity, functionality and flexibility must be sufficient to support LA911's growth and changing needs, as well as the possibility of other agencies within LA911 participating in the system. The design approach shall have the flexibility to accommodate additional users, which may enter the system at a later time.

LA911 seeks a system design that will:

- Provide 99.995% system availability

- Upgrade overall citywide in-building coverage
- Use its existing pool of eight [8] licensed 800 MHz frequencies for trunking operations
- Implementation of regional NPSPAC channels [ICALL, 8TAC] and VCALL/VTAC
- Implement new Communications Dispatch IP Console
- Logging recorder
- Use new and/or existing radio sites for coverage
- Work with the LA911 IP microwave network for site connectivity

Suppliers are cautioned that throughout the implementation of this project, existing operations cannot be disrupted. The dispatch consoles at the current center shall remain fully operational during the installation.

LA911 has determined that competition in the procurement of subscriber equipment in the future is of importance to its operations. While LA911 understands that the base station and interconnecting infrastructure comprising the initial system may contain certain unique and proprietary technologies, the future addition of subscriber units must be open to competition from multiple P25 manufacturers.

Supplier shall name in their proposal other manufacturers who have obtained the necessary technology licenses and who are manufacturing, or have proposed the manufacture of, compatible subscriber equipment. Mobile radios, portable radios, radio modems, control stations and conventional base stations are of interest to LA911.

5.1 System Availability

It is the intent of LA911 is to procure a fully functional system in accordance with the technical specifications.

The Proposer shall demonstrate a minimum system availability of 0.99995, and describe their method or combination of hardware/software to meet the system upgrade availability factor.

5.2 Basic Requirements

The system design must comply with APCO minimum recommendations for Project-25 Phase II digital trunked radio systems including, but not necessarily limited to, the following operational and functional characteristics:

- Phase-II TDMA operations
- Digital 9.6kb control channel; digital voice channels.
- Automatic Unit Identification
- Call Privacy
- Emergency communications priority routing
- System Management Capabilities
- Multiple, Software-Controlled Talk Groups
- Priority Talk Path Scanning
- Lost/Stolen Radio Inhibit
- User Priority Levels
- Dynamic user regrouping
- AMBE+2 digital voice coder
- Encrypted digital voice operation
- Interoperability with outside conventional/trunked radio networks
- Direct interconnectivity with other Project-25 compliant network switches

5.3 Basic Functions and Features

The 800 MHz trunked system shall be managed by Server[s] that selects the communications channel requested from a subscriber unit; acknowledges that request and assigns an idle channel for communications. The proper talkgroup also shall be assigned.

The system shall allow a transmitting unit access to an available channel and unmute a receiving unit's speaker with the transmitting unit's audio, within 0.5-seconds of the transmitting units Push-To-Talk (PTT).

Should system traffic be at a level where all channels are busy, the system will automatically give preference to higher priority units attempting. The system shall indicate to the user that channels are busy, that the unit is placed in queue and will be offered a channel in a call back mode. The Supplier shall describe in their proposal the extent of priority the system offers.

The mobile and portable units shall be equipped with a dedicated switch or function that allows emergency access. The switch shall be easily accessed, but minimizing the chances for accidental activation. Upon emergency activation, the field unit shall transmit the emergency message on a periodic basis until acknowledged by the dispatch/console operator.

The proposed system shall include RF site monitoring and infrastructure alarm equipment that reports major/minor infrastructure alarms to a Network Management Terminal located at LA911. The alarm reporting system shall have the capability of being remotely accessed for the monitoring and remote-interrogation of conditions, status, and alarms via a VPN network connection.

The proposed infrastructure, without limitation, shall support other sub-systems or applications that may include Computer Aided Dispatch [CAD] interfaces; Automatic Vehicle Location [AVL] interfaces; encryption; low speed text data; and audio recording of talk groups and conventional radio equipment.

5.4 System Operating Modes

The trunked radio system shall be capable of operating in the following modes:

Trunked Mode - Day-to-day communications by all users occur using this mode. While in the trunked mode, for the control of trunked channels at all sites. Expansion capabilities to support additional RF channels and dispatch consoles that may be required in the future. Supplier shall describe in the proposal expansion capabilities and limitations of the hardware being supplied, detailing maximum number system should initially provide or combinations of simulcast sites, non-simulcast sites/sub-systems, channels, dispatch positions and subscriber units.

Direct Mode - Mobile, Portable and Control Station radios shall be capable of transmitting and receiving on simplex frequencies for localized "Off Network" communications. The Direct Mode, or talk-around mode, shall be user selectable to allow communications between subscriber units.

Failure Mode - Trunking algorithms, without limitation, shall employ redundant design to ensure that a single point of failure does not result in any complete system failure. Should the system encounter a controller/server failure, the system should not lose any system features and shall continue to function in the trunked mode with all features operational. Supplier to clearly designate their failure mode.

Should the trunked backbone fail, the system shall revert to stand alone repeater operation. For worst case failure and if all base stations are operational, the system shall utilize all repeater stations to provide communications. The console dispatch operation should continue to be able to talk (Tx/Rx) into the system during this mode of operation. Dispatching should not be orphaned during any mode of operation. The assignment of repeater stations to other user groups shall be approved by LA911 during the development of the talkgroup mapping.

Encryption Mode - All trunked digital RF channels, if provisioned for this mode, shall be capable of processing AES/DES voice encryption that is supported under the P-25 standards. This includes end-to-end encryption [subscriber to dispatch console]. All equipment provided by the Supplier must be capable of AES/DES multi-key encryption. Any other supported types of encryption shall be clearly identified by the Supplier. Furthermore, encrypted talk groups will require recording.

5.5 RFSS Server/Network Controller

The RFSS Server/Network Controller is a critical component of the system. The design shall provide, without limitation, high reliability under extreme emergency conditions that allows continued trunking operation in the event of a controller or link failure.

LA911 requires redundant, geographically spaced server/controller. One server/controller shall be installed at LA911's Prime site and the other at the Androscoggin Sheriff's Department. Switching to an alternate controller [or redundant controller; standby controller; or dual controller] shall not stop trunking operations. The alternate controller shall have complete control of wide-area call processing and assignments, utilizing the same user database and functionality.

General tasks to be performed by the RFSS Server include receipt and decoding of digital data from mobile, portable or control station radios; selection and assignment of vacant radio channels; transmission and encoding of digital data sent to mobile, portable or control station radios; control of base repeaters; transmission of station identification required by the FCC; and, monitoring of alarm functions.

5.6 Reliability and Redundancy

It is the intent of this specification to provide a trunked system that will not suffer the loss of trunking capability as a result of the failure of a single system component, in particular the Master Network Server/Controller. Should any component of the MNS/C fail, sufficient redundancy shall be incorporated in the system design so that full trunking operation continues without interrupting existing communications. Trunking capability is defined in this context as the ability of the system to assign voice channels to independent talkgroups, as required, and the ability of the system user groups to remain functionally independent.

Any system component enclosure or power distribution design that could render the system or 50% of its channel resources useless for communication from a single point of failure, shall incorporate redundancy. This may be in the form of a redundant component/enclosure or a distributed redundant design that distributes single points of failure among multiple card cages, cabinets or housings each operating on its own dedicated power circuit.

In the case of redundant controllers, both controllers shall remain on line continuously with parallel updating of the system database to provide minimal interruption of service in the event of failure of the main controller. Switching from main to alternate operation shall be fully automatic, with audible and visual indication of the switchover provided to the supervisory console positions at the dispatch center. Suppliers shall state in their proposal, the amount of time between main controller failure and the resumption of trunked operation under the standby system; and the type of failure indication that will be provided to the supervisory console operator.

Remote switching from main to standby operation shall be provided at the supervisory console as a manual override to automatic switchover. Suppliers shall state in their proposal the period of time required and the procedure for manual switchover to a redundant server/controller.

Switching between controllers (manually or automatically) shall not cause subscriber units to attempt to roam away from the site or subsystem they are currently on. Also, subscriber units shall not have to re-affiliate themselves with the system after a controller switch has occurred. This is to prevent inbound signaling overload of the controller.

Suppliers shall state in their proposal procedure and the time required for switchover to a conventional or reduced capability operating mode in the event of the failure of all trunked control logic. It is understood that all systems that meet the intent of this specification must suffer multiple system element failures before a conventional or reduced capability operating mode is encountered. Suppliers are nonetheless required to describe such a failure mode, regardless of how unlikely its occurrence.

5.7 System Feature and Functions

Software/firmware to provide functions and features described shall reside in the Master Network Controller and associated computer software/hardware. The controller and its associated computer software/hardware shall provide the following functions:

Alarm Monitoring and Diagnostic Functionality - Monitoring of the operational status of all system devices and providing alarms when subsystems fail. Diagnostic functions shall allow an operator to view current status and status history of the system. It shall also allow for diagnostic tests to be performed on network devices (i.e. site controllers, base stations, comparators, etc.) to verify component and path integrity.

Control Channel Backup - Automatic transfer of signaling functions to another control channel in the event of transmitter or receiver failure or interference on the signaling channel. The system shall have one active and be capable of backup signaling control channels. Backup is defined as a channel of different frequency.

Disablement of Failed Voice Channels - Automatic disablement of defective voice channels due to subsystem failure. Failures must be detected prior to the channel being assigned by the controller. Subsystem failures to be detected shall

include, at a minimum: low forward power, high reflected power, unidentified carrier on unassigned voice channel, signaling interface failure between base and controller, audio circuit failure between controller and base, voter receiver failed, and voter receiver disabled.

System Usage Reports - Collection and processing of data with regard to system usage. Suppliers are to describe how the data is parsed for displaying at the System Managers terminals. Also, at a minimum, data to be routed to a printer shall include the following: configuration information for all components in the system, functional configuration of controllers, channels and sites, manager database, inhibited radios, commands (tasks)-in-Progress (regroups, inhibits), subscriber configuration and attributes (by individual, talkgroup and multigroup), channel usage, identification of calling units by talkgroup and unit identification number, time of channel access, duration of transmission, classification of call, channel assigned, fault management, current alarms, alarm history (daily, weekly, monthly)alarm history (by component).

Channel Access Priority Levels - As a minimum requirement, control radio channel assignments and system access shall be provided in accordance with APCO 16. Levels of priority shall be variable from any console in the system to allow assignment of specific talkgroup members to a higher system access priority for the duration of a special event or tactical operation. Access and control of priority levels shall be partitioned so as to allow separate control by the respective agency.

Selective Disablement of Field Units - Selective disablement of individual mobile or portable radios shall be provided. Reactivation of such radios that have been disabled shall also be provided. These functions shall be performed on the signaling channel. Control of this feature is to be partitioned by manager user name.

Control of Time Out Parameters - Control of time out parameters shall be provided at any manager user terminal. Any valid manager logged in with this capability shall be able to control at a minimum: capable of message/transmission trunking; interfering Carrier Time (length of time channel remains enabled with an interfering carrier); remote Link Failure Time (length of time site remains enabled without a remote site data link); channel Fade Time (length of time channels remains assigned without a carrier or low speed data present); emergency Call Time (length of channel hang time when an emergency call is initiated).

5.8 System Programming

Programming of system operational parameters shall be provided by operator workstations controlled by the trunked system management computer located at the radio shop. These workstations shall provide for "user friendly" operation by trained personnel. Access to system programming functions shall be protected by password security. Hard copy printout of programming functions is required. Supplier shall provide laser printer.

To facilitate inter-departmental operations, system management shall be capable of being partitioned. Manager partitioning shall allow different City Agency managers to control their user database independently of another. The system shall allow the partitioning of subscribers and sub-system infrastructures. Partitioning shall be defined and protected by a user name and a respective password. Partitioning shall allow access to as well as prohibit users from different sub-systems, programming and system management areas, and subscriber ID ranges.

5.9 Operational Functions

Unit Identification - A real time display of push to talk unit identification at the dispatch positions shall be provided in an alias format. Display of the ID shall be on the operator console position. Suppliers shall specify the maximum number of alias IDs per console operator position and system wide in the proposal.

Control Channel Updating - The control channel shall continually transmit the current channel assignments of the system. This feature is intended to insure that radios "signing on", coming into range or switching talkgroup modes are directed to calls in progress on their selected talkgroup.

Voice Channel Embedded Signaling - Embedded or sub audible signaling shall be transmitted on assigned voice channels in order to prevent subscribers from being misdirected or allowed to transmit on an improperly assigned channel.

Emergency Alarm & Call - A display and audible alert to the dispatcher in an alias format upon activation of an emergency switch on portable or mobile radios shall be provided. The display shall identify the unit number of the radio initiating the emergency alarm. Upon activation of the "emergency unit's" PTT, a channel shall be assigned for a predetermined amount of time. The emergency call hang time shall be adjustable by the system manager. In the event all voice channels are occupied, the system shall be capable of functioning in at least the following two (2) modes:

Emergency Preemption - If all voice channels are occupied when an emergency call is made, then the unit initiating the emergency shall be allowed access to the voice channel with the lowest priority user currently assigned.

Emergency Priority Queuing - If all voice channels are occupied when an emergency call is made, the unit initiating the emergency shall be place at the top of the busy queue list and allowed access to the next available voice channel. The "emergency unit" shall be given the highest level of priority regardless of how many units are already in queue or what their priority is.

Private Call - Selected users and dispatchers shall have the ability to selectively communicate "privately" with another individual on the system regardless of what talkgroup either unit is in. The call shall allow the two users to utilize a single channel resource to communicate without the participation of other units in their respective talkgroups.

If the recipient of a private call has a display-type radio, the radio shall display the ID [or alias if programmed] of the calling party. Respectively, the calling party shall be able to determine if the recipient did not receive or is not available for the call (i.e. recipients radio is turned off, out of range, etc.) by hearing a distinctive tone and receiving a message in their display.

The subscriber units on the system shall be programmable for at least the following three (3) private call modes of operation:

Subscriber units shall be capable of Unlimited Private Call capability, if desired.

Subscriber units shall be programmable to hold a specific list of users that can be private called. Supplier shall specify the maximum size of this list and if this list is independent of the call alert list.

Subscriber units shall be programmable to only receive private calls from other users. These units shall never be capable (unless programmed otherwise) of initiating a private call.

Call Alert - Selected users and dispatchers shall have the ability to selectively alert another individual user on the system regardless of what talkgroup either unit is in. The call shall allow an individual to alert another user with a distinctive tone and their individual ID (on display radios only). The alert shall be accomplished over the signaling (control) channel and should not affect any voice channels on the system.

If the recipient of a call alert has a display-type radio, the radio shall display the ID of the alerting party. Respectively, the alerting party shall be able to determine if the recipient did not receive or is not available for the alert (i.e. recipients radio is turned off, out of range, etc.) by hearing a distinctive tone and receiving a message in their display.

The subscriber units on the system shall be programmable for at least the following three (3) call alert modes of operation:

Subscriber units shall be capable of Unlimited Call Alert capability if desired.

Subscriber units shall be programmable to hold a specific list of users that can be call alerted. The list shall be able to hold at least eight (8) individual IDs. Supplier shall specify the maximum size of this list and if this list is independent of the private call list.

Subscriber units shall be programmable to only receive private calls from other users. These units shall never be capable (unless programmed otherwise) of initiating a call alert.

Multi-Group Call - Multi-Group talkgroups shall allow multiple talkgroups to be affiliated to a single multi-group. When a call is placed on the multi-group talkgroup, all talkgroups associated with the multi-group shall be assigned to a single voice channel for the conversation. Every user involved in the multi-group call shall have talkback capabilities for the duration of the call (if message trunked). The system shall be programmable to allow for the following two (2) modes of operation:

System Wide Call - Shall allow a dispatcher to initiate a call that will transmit on all talkgroups on all sites or sub-systems.

Wait Mode - If a user initiates a multi-group call while calls are in progress on affiliated talkgroups, then the multi-group call will wait (busy-queued) until all participating talkgroups have finished their transmission. Initiating a multi-group call should transmission trunk all calls in progress on affiliated talkgroups in order to facilitate the multi-group call.

Scan - This function shall provide the ability to scan through multiple modes (talkgroups) within the same system. It shall also contain the capability to store and scan a list of conventional frequencies. Subscriber units shall be provided with at least one (1) scan list per system. Each list shall contain at least ten (10) talkgroups or frequencies.

Priority Scan - This feature shall provide the ability to apply two priority levels to a defined scan list. While in the scan mode, a Priority One transmission shall be received regardless of the activity on the Priority Two (or other non-priority modes). A Priority Two message is heard over all (except Priority One messages) non-priority modes.

5.10 Functional Specifications

Power Supply - Primary 120 V.A.C., 60 Hertz. Power supply to be protected by an uninterruptible power supply that will provide filtering of line voltage and will automatically switch to a battery supply/inverter upon failure of commercial power. An external bypass switch to allow maintenance or disablement of the U.P.S. shall be provided.

Environmental - The Network/Site servers required at remote transmitter sites shall be designed to operate under the following conditions:

1. Temperature: -30C to +60C
2. Humidity: 90% non-condensing
3. RF Fields: Equipment shall be properly shielded to allow proper operation in equipment rooms or buildings occupied by base station transmitters, with associated strong RF. fields.
4. Duty Cycle Equipment proposed by s shall be rated for continuous duty.

Radio Channel/Site Expansion Capabilities - The Master Network controller and any auxiliary servers shall provide for expansion of radio channels of operation at a minimum without major hardware modifications. Software upgrade or additional modules is considered desirable. The Supplier shall provide the maximum number of expansion channels the proposed system can be modified to.

Data/Control Interfaces - All necessary interfaces with base repeaters, peripheral computer hardware or the radio interconnect system shall be provided by the Successful Supplier. Interfaces shall include cabling, gateways, routers and switches all of which shall be identified by the Supplier's functional diagrams of the system.

Alarms & Diagnostics - The Master Network controller and its associated subsystems shall provide alarms for key operational parameters, and shall provide for remote inquiry, display, disablement and diagnostic functions via LAN connections. Alarms shall be displayed at a supervisory position in Dispatch Center, System Managers office, in the Radio Equipment room at the Communications Center.

5.11 Encryption and OTAR

The proposed system shall be capable of supporting P25 Phase-II digital voice encryption calls. All properly equipped subscriber units with multiple key encryption shall be able to scan between encrypted and clear talk groups. All dispatch positions shall be capable of end-to-end multiple key encryption.

The encryption process shall not degrade the required delivered audio quality of the system. Encryption shall be available in trunked mode. Encryption shall be available in all proposed fallback modes of communication. Both DES and AES encryption algorithms shall be supported by the proposed system. The Supplier shall state the number of encryption algorithms available in its system and the encryption algorithm capacity of all proposed radio units. Multiple keys must be provided in the fixed equipment and the subscriber units. The system shall be capable of re-keying the encryption algorithm for all properly equipped subscriber radios over-the-air. The Supplier shall fully discuss the encryption scheme in the proposal response.

The system shall also support Over-the-Air-Rekeying [OTAR] of mobile and portable radios using Project-25 compliant OTAR. The system shall include an optional Project-25 compliant Key Management Facility [KMF] for management and wireless distribution of AES/DES keys.

One OTAR workstation to be provided at the Dispatch Center.

Two hand held key loaders shall be provided.

5.12 Over-the-Air Programming – OTAP [option]

Supplier's proposal must use the P25 data capability to support radio configuration changes using the P25 data channel as a wireless transport to send configuration changes to the radio or to read the current configuration of a radio in operation.

Over the air programming can either be done by the trunked RF infrastructure or by WIFI connections on a per individual programming or in batches. Radio programming may also be done at a pre-scheduled time to be set up via the radio programming software.

Over the air programming transactions will not interfere with voice calls of any kind on the system. Voice calls on the system will have priority access over OTAP transactions or any other data transactions (GPS, text messaging, network management functions, etc.).

Once the radio has received programming information over the radio network, it will provide an acknowledgement to the system administrator via the radio programming application.

The Supplier shall describe the system's capability for OTAP, including any limitations that programming subscribers over-the- air has over traditional methods. The Supplier shall describe the process by which the reprogramming takes place and the timeframe required to reprogram an individual radio and a group of 500 radios.

5.13 GPS Location [CAD Integration optional]

LA911 is interested in the possibility of having Global Positioning System [GPS] location capability for their subscribers supported by a new radio infrastructure.

Supplier must support GPS location reporting from all mobile and portable radios proposed. GPS location hardware will be integral to both mobile and portable radios. Radios that require GPS hardware outside of the radio chassis [external to mobile or portable radio housing] are not acceptable.

GPS location will be displayed for selected mobile and portable radios on LA911's GIS based mapping solution. Supplier will provide an application programmer interface document detailing how LA911's mapping solution Supplier can accept and display units at LA911 CAD [IMC] workstation positions.

5.14 Smartphone Interface [option]

The proposed P25 system shall incorporate a PTT-over-Cellular [PoC] function whereby the system's radio traffic can be monitored, on a user-selected talkgroup basis, by use of a smartphone. It is also desired that this application provide limited "talkback" from the smartphone to the P25 system.

The interface shall provide secure and reliable voice PoC service that operates over Local / Wide Area Networks, commercial 4G/3G networks and Android/iOS devices.

5.15 Network Management System [NMS]

The intent of this section is to describe a fully integrated System Manager/Information Management System and Local Alarm and Control System. Both functionalities will be principal tools to assist the LA911 in the provisioning, maintaining the performance, availability, and the integrity of the proposed equipment, including the transmission network, multiplex equipment, power equipment, and various other system components and housekeeping functions.

The radio system is comprised of subsystems, such as 800MHz radio, IP transport links, shelters, emergency generators, and towers. Each of these subsystems needs to be remotely monitored [in real-time] and controlled for management and maintenance purposes.

The NMS shall provide a complete alert call management system for all sites communications sites. When an alarm occurs, the NMS will transmit an alert call message to appropriate LA911 personnel via email or SMS. The Supplier shall identify and discuss in their proposal the proposed equipment and software resources needed to accomplish this function. The number and types of end points to be alarmed will be discussed at the Detailed Design Review meeting.

5.15.1 Trunked System NMS

The system shall incorporate a graphical user interface (GUI) system manager/information management system to set selected parameters and allow the supervisory personnel to control and analyze system operation. It shall provide to a single workstation, alarm conditions of board level failures of all trunking and network elements. Access to the management system shall be controlled through the use of an encrypted password.

The NMS workstation shall access to the system via the Trunked system LAN network.

LA911 desires access to the radio system management and diagnostic functions for administrative and maintenance purposes from existing networked workstations through the existing LAN. Proposals shall describe how the s propose to achieve this requirement and if there are any limitations to the access of these functions.

Required system manager capabilities as a minimum shall include:

System Configuration - shall be able to control all of the programmable features of the trunking controller and radio infrastructure.

Subscriber Management - shall allow an operator to view, set, or modify the talkgroup IDs, and the unique ID permission.

Manager Partitioning - System subscriber management functions shall be capable of user (agency) partitioning. Manager partitioning shall allow a user to view, set or modify subscriber information pertaining to a particular agency while restricting access to other agencies. The highest level manager shall be capable of viewing all subscriber information. Partitioning shall allow access to as well as prohibit users from different sub-systems, programming and system management areas, and subscriber ID ranges (talkgroups and individual ID ranges)

Diagnostic Management - shall allow an operator to view current status and status history of the system.

It shall also allow for diagnostics to be performed on network devices (i.e. site controllers, base stations, comparators, etc.)

Sending and receiving of status messages to and from subscriber units. Selective radio status information regarding radio's operating status (i.e. on/off, inhibited), last talkgroup affiliation and last site registration.

Selective inhibit/uninhibited of control stations, mobile and handheld radios and trunked repeaters. Field equipment shall be equipped to respond to the system manager commands.

Activity reporting by unit, talkgroup, department (if available), and system wide.

User database maintenance with automatic sharing of data and updates between the console electronics and the trunking system.

Activity monitor to display the status and activity of all RF channels of the active Prime Site controller.

Capability of automatically updating the backup site controller when data base changes are made.

One (1) workstation shall be provided to be located at LA911

5.15.2 Site Monitoring and Control System Requirements

The system shall provide the capability of automatically monitoring in real-time the status of various infrastructure components. In addition, remote control functions of site elements are also required.

System Servers: The server/workstation shall have color graphics capability, printer and appropriate application software program. All alarm, control, and status points shall be displayed at this terminal. This unit will also collect and distribute alarm and control data from all the RTU's in the system and relay the information to the CMC.

Remote Terminal Unit [RTU]: The RTU units shall monitor status inputs and control outputs at the sites. The status inputs and control outputs must be capable of interfacing with wet and dry contact relay closures and openings as well as logic and TTL signals. The modular design of the RTU provides for flexible system expansion to handle the anticipated future growth of the network. The system shall be configured for sixteen [8] monitoring points [expandable] and four [4] control points.

Monitoring and Control Points: Monitoring points: Transport links, IP/Ethernet equipment, RF transmission line sensors, door entry, smoke/fire detection, loss of commercial power, generator on-line, high/low temperature, UPS systems, tower lights [if applicable], tower top amplifier [if applicable], receiver multicoupler, site frequency standard, generator condition.

5.16 P25 RF Sub-System

This section describes the RF portion of the proposed trunked network, including transmitter simulcast and receiver voting functions.

5.16.1 FCC License Information

There is no licensing requirement for the proposed radio system, as LA911 will be responsible for this activity. Licensed call signs applicable to this project include WRCM396.

The Contractor is responsible to ensure that license technical requirements are met in their system design.

5.16.2 Structural Analysis

The contractor shall perform tower structural analysis for any tower where new radio equipment is proposed to be mounted. For failed analysis and proposed enhancements, no actions shall be taken without prior approval from LA911.

5.16.3 RF Repeaters

The repeater equipment shall be rated for and capable of continuous duty operations.

The physical and electrical architecture of the repeaters shall be such that addition of control circuitry and/or functions at future dates shall not require addition and/or replacement of circuit card shelves and/or chassis assemblies.

To the greatest extent feasible, all equipment assemblies and sub-assemblies shall be shielded to minimize electromagnetic interference that may be caused to/by electrical equipment co-located and/or adjacent to the repeater.

Repeaters shall be housed in an EIA standard 19" rack. For each site, the Supplier shall ensure that maximum use of rack space is utilized in order to keep the total number of racks at a minimum.

5.16.4 Simulcast Transmitter

Each repeater station shall be of modular construction, and designed and constructed as a compact, highly reliable unit. All repeater station equipment necessary for remote control operation shall be in a rack-mounted unit.

The simulcast transmitter shall be capable of interfacing with an external high-stability frequency reference source. When simulcasting, the frequency difference between multiple co-channel transmitters shall not exceed 1-Hz.

Precision Frequency Source

A precision frequency source shall be provided at each simulcast site to stabilize frequency synthesizers in the transmitter stations and to provide critical synchronization of simulcast transmission equipment.

The primary precision frequency source shall be an "off-the-air" GPS frequency locked stable source. Automated timing system shall allow for initial simulcast launch settings for each transmitter site. The system shall automatically readjust timing to maintain proper simulcast timing in the event a transport path reroutes and changes the transport delay.

OPTION: A secondary high stability oscillator frequency stable source shall be quoted. The redundant frequency source shall be capable of maintaining the proper frequency stability and synchronization of the system upon failure/loss of the primary GPS reference signal.

The Proposer shall describe in detail the operation of the proposed frequency source and its redundancy capabilities, and justify the technical suitability of the source to meet simulcast system requirements during normal, abnormal, or loss of GPS reference signal.

Amplitude and Phase Delay Equalization

Where required, analog audio amplitudes of each transmitter shall be within 0.25 dB of each other. Digital audio shall be less than 0.1 kHz deviation.

Amplitude and phase delay equalization equipment shall be provided to minimize simulcast overlap distortion. Equipment shall be provided for each transmit channel, and shall have sufficient adjustment range to provide "over" and "under" adjustment of at least ten percent of the range. The equipment may be an integral part of IP circuit equipment, or separate stand-alone equipment mounted in equipment racks. The equipment must be installed in a way that affords ready access for servicing and adjustment. Amplitude and phase delay equalization for all remote RF sites shall be capable of adjustment from one central location (prime site) without manual intervention at the remote sites, or capable of automatic self-adjustment if feasible.

5.16.5 Voter-Comparator System

The receiver voting equipment is to be configured as part of the wide area radio communications system. Simulcast radio channels shall be supplied with a complete and independently functioning receiver voting system. It shall serve as the terminating and comparison point of the multiple audio circuits connecting the receivers used in the system.

The receiver voting system shall be designed and interconnected so that the highest quality audio signal being received is constantly being selected, and the weak and noisy signals by comparison are automatically rejected. The process shall be

continuous and selective, and provide for automatic switchover without interruption of speech to the best quality audio signals during a transmission, as changes of condition or location occur.

The voting comparator shall monitor the integrity of the incoming receive audio circuits and disable any circuit upon failure. Circuit failures shall be reported via the network monitoring system to be provided.

5.16.6 Antenna Systems

The 800 MHz antenna system design shall be specified by the Supplier to provide for balanced 'TALKOUT' & 'TALKBACK' communications only. Separate antennas shall be used for transmit and receive.

The Suppliers have the option to select any antenna or configuration to reduce the potential for intermodulation or receiver desensitization, and to provide the required coverage within the restraints of the FCC license.

The antenna systems shall be provided with all necessary lightning and power surge protection devices. Supplier shall state the manufacturer and model number of the antenna(s) being proposed at each site.

The Supplier is encouraged to utilize directional and/or downtilt antennas to maximize coverage performance in their coverage design.

5.16.7 Transmission Line & Accessories

The successful Supplier shall supply high quality transmission lines for all RF applications. Supplier shall state the size and type of transmission line being proposed at each site. RF sensors shall also be provided for each transmission line provided and monitored by the alarm system.

RF connectors provided shall be fully compatible with directly associated equipment or jumpers in the system. Connectors must be of non-ferrous construction. No splices or adapters shall be used under any circumstance. However, it is permissible to utilize different connectors on opposite ends of a cable to avoid the use of adapters. When transforming from one diameter cable to another, it is acceptable to use flange reducers, so long as the cable V.S.W.R. specification is not changed.

5.16.8 Transmitter Combiner

The Supplier shall propose for all main radio sites a transmitter combiner. The Supplier shall state the manufacturer and model number of the transmitter combiner at each site.

5.16.9 Receiver Multicoupler and Pre-Amplifier

The Supplier shall propose for all main radio sites a receiver Multicoupler and Tower-top-amplifier. The Supplier shall state the manufacturer and model number of the receiver multicoupler system being proposed at each site.

The Supplier shall propose equipment that utilizes low noise tower top mounted amplifiers, if needed, to provide for a balanced system. Redundant amplifiers and window filters shall be used in the tower-mounted assembly. The Supplier shall state the manufacturer and model number of the tower top amplifier system being proposed at each site.

Automatic switchover to the standby amplifier shall be provided, and the means to accomplish the switchover shall be described in the proposal. Indication of primary amplifier failure shall be provided via the site alarm system(s). Manual switchover shall also be provided at the control panel, with indication of the amplifier in use.

5.16.10 VHF Interoperability Conventional Radio

LA911 requires that it continue to communicate on certain interoperability conventional channels between various LA911 radio sites and the Dispatch Console.

The Proposer shall provide the following VHF repeaters and voting receivers as follows:

Auburn Sub-System: TX at Goff Hill; RX at Gracelawn and Shredder

Lewiston Sub-System: TX at Webber; RX at Montello and Shredder

5.16.11 Physical and Functional Interface Requirements

The Contractor is responsible for the physical interface [connectors, terminal strips, punchblocks, etc.] for network, audio and control between the new equipment, proposed simulcast repeaters, and the communications console.

The successful contractor shall be responsible for the functional interface between the equipment and the proposed simulcast repeaters. It is the Contractor's responsibility to confirm interface compatibility between equipment types.

The functional interface is expected to include, at a minimum, the following:

- Provisioning of 800 MHz Radio equipment
- Provisioning of IP/Ethernet/LAN equipment
- Adjustments of the input signal level to/from the voting/audio distribution network
- Adjustments of the output signal level from the repeater/base stations
- Precise modulation level adjustment for simulcast
- Adjustments of the input/output levels and to /from the console
- Adjustment of simulcast audio launch delays/timing

5.17 Primary and Backup Power

All equipment will operate on with -48vdc backup power.

Electrical panels at the transmitter sites have capacity to add additional circuit breakers for the new equipment. However, it is the Proposer's responsibility to confirm capacity and requirements during the Site Visits. Each electronic equipment shall have a dedicated circuit and breaker. This may be accomplished by using/installing new breakers in the panel, or providing a rack mounted power/breaker distribution panel with surge protection, fed by two [2] separate circuits.
The Contractor shall provide Battery - Rectifier/Charger power system for all equipment for each site. The Proposer shall submit in their proposal the calculations in determining battery loads, including RF equipment duty cycles.

Each installation shall be equipped with a source of backup power that will provide the Backhaul Radio with operating power for a period of not less than 4-hours at full load. The backup power system shall be enclosed in an environmental cabinet of modular design that shall comply with the same requirement as the radio equipment.

- -48v DC Battery
- Charger/Rectifier shall include low voltage battery disconnect/low voltage load disconnect features
- Must support SNMP management
- Major and Minor alarm contacts.

The backup power system shall be activated upon loss of commercial power and shall be recharged by the on-site generator when active; the charger system should always float the batteries and equalize per battery requirements.

Note that the Webber and Goff Hill sites currently have Eltec Flat-Pack-2 rectifier systems. The proposer shall modify/upgrade this equipment as needed.

5.17.1 Montello Emergency Power Generator (OPTION)

Emergency Power System

The Montello site requires a 25 kW emergency power generator in a weatherproof enclosure, and mounted outside on a suitable concrete foundation pad. The pad shall be at least 6 inches above finished grade and adjacent to the equipment shelter.

In order to preserve parts and service efficiencies, LA911 prefers a Generac generator, as this is what is located at the other LA911 transmitter sites.

Emergency power shall consist of a generator, automatic transfer switch, to be mounted inside the equipment shelter, and all associated equipment and accessories.

Liquid Propane Gas [LPG] Tank

The Vendor shall furnish and install the LPG tank, foundation, and all necessary piping and wiring.
The Liquid Propane Gas storage tank shall be installed above ground and shall be sized to provide one hundred twenty [120] hours operation at full rated load.

The Vendor shall install the LPG tank a minimum of ten [10'] feet from any external source of ignition or mechanical ventilation system. The location of the LPG tank must meet all local, State, and National Fire Protection Association [NFPA] 58 standards.

5.17.2 Electromagnetic Interference

Shielding and filtering shall be provided to prevent interference from, or to, other radio frequency equipment installed near or in the vicinity of the proposed equipment. The equipment shall meet or exceed spurious frequency emissions, conducted or radiated, as outlined in Part 15 of the FCC Rules and Regulations, Subpart J, Class B Computing Devices. Equipment shall be operationally compatible with the following types of equipment located at the site:

- IP/Ethernet equipment
- Ethernet switches & routers
- RF Transmitters & Receivers
- DC Power System

6 System Coverage Performance Requirements

It is the intent of LA911 to acquire and install an 8-channel 800 MHz Simulcast Trunked Radio System in support of LA911's public safety and public service agencies. The system shall guarantee portable in-building radio coverage reliability within the jurisdictional boundaries of Lewiston and Auburn.

If the system supplied fails to meet the radio coverage reliability specified herein, any and all additions, changes, modifications, improvements, enhancements, etc., to the configuration of the 800 MHz radio infrastructure in order to meet the stated radio coverage requirement, shall be the responsibility of the Supplier at their expense.

6.1 Radio Coverage Design

The coverage design shall be evaluated on the success in providing coverage in as many buildings as possible. It is LA911's desire to procure a new radio system infrastructure that has been designed efficiently and cost-effectively to provide high level in-building coverage.

Coverage design shall be in-Street coverage for an on-hip Portable. The Supplier is required to discuss in their proposal the level of expected coverage for 8 dB buildings, as well as 20 dB buildings.

Coverage design and performance testing shall comply with the most current version of TIA/EIA-TSB-88, although this RFP may specify minor variations to this standard.

The proposed P25 system shall provide in-building coverage to a minimum audio quality of DAQ 3.4 as defined in TSB-88 throughout 95% LA911's coverage area.

References to coverage reliability in this document refer to area reliability. For example, 95% coverage is defined as the total service area of LA911 segmented into test tiles, a minimum of 95% of the test tiles will yield a DAQ of at least a 3.4 per TSB-88.

LA911 reserves the right to have the Supplier's revise their coverage predictions as required to determine the effectiveness of their design and to review alternative site parameters.

The radio coverage design shall take into account the current noise floor environment as well as predictable system degradations for the future.

The portable handheld radio configuration for coverage design is a portable radio with a "belt clip" worn at the hip level using a standard lapel speaker-microphone.

6.2 RF Coverage Method

Suppliers shall provide radio system coverage predictions through the use of a radio wave propagation model that has been developed from theoretical and empirical data, and shall take into account terrain irregularity, foliage, urban clutter, building penetration losses, noise, and long and short-term signal variations.

Suppliers shall provide a table of system parameters used listing all values of system gains, system losses, and signal strength assumptions, as well as site data.

Building	Predicted Signal Level	Maximum Building Loss	+/- Signal Margin
Building-1	xx dBm	20 dB	xx dBm
Building-2	xx dBm	20 dB	xx dBm

6.3 Defined Coverage Area

The defined coverage area is the combined borders of Lewiston and Auburn.

For each coverage map provided, coverage prediction shall not stop at these borders. An understanding of the extent of coverage outside this boundary is required for mutual aid purposes. Note that the radio coverage that extends outside of the defined boundaries will not be included in the Radio Coverage Acceptance testing.

Note that based on the transmitter sites provided, the Lewiston-Auburn borders may not meet the 95% reliability specification. Coverage locations where coverage does not meet the design coverage criteria should be clearly marked. The contractor shall guarantee coverage within their coverage "painted area" area only while providing the percentage of coverage within the two city borders.

6.4 Current FCC License Parameters

LA911 FCC authorization allows an ERP of 100 watts at each of the existing transmitter sites.

Suppliers have the option to select higher [or lower] ERPs should their coverage design necessitate changes in ERP levels.

Furthermore, any antenna configuration [omni, downtilt, directional, etc.] is encouraged to provide the required coverage can also be employed.

Suppliers are required to fully understand all of the current issues involving the NPSPAC Regional Planning Committees requirements as related to the 40 dBμ contour requirements along the border of LA911. Regional frequency plans that contain rules effecting RF coverage in the areas of frequency allocation, channel spacing, channel bandwidth, etc. shall be incorporated as part of the RF coverage predictions.

If the supplier proposes higher ERP levels to achieve their coverage objectives, they will be required to modify FCC licenses and provide 40/25/5 dBu contours in their proposals. This is true if additional sites are proposed. These contours shall be superimposed on current site contours to determine if they are within or outside the contour footprint of the existing sites.

6.5 Critical Buildings

In-building portable radio coverage is necessary for the buildings found in Appendix-B - Critical Buildings List. These are defined as "Critical" buildings. Proposers are expected to evaluate each building to determine whether the building is provided with the required design coverage reliability solely by the radio infrastructure.

Proposers shall submit a predictive performance analysis table in their proposal to estimate the level of coverage that may be present in each of these buildings. Statistical tile analysis shall determine signal levels in and around the proposed building.

The proposers will be evaluated on their review and analysis on their "Critical" building proposal response. The evaluation table should be similar to the follow format:

Moreover, based on the building coverage prediction, and the type of building, the Proposer shall evaluate and recommend the most cost effective solution to provide coverage inside the critical building. Building test will be conducted by the contractor per Section-12.4.

The Radio Sites

A list of existing radio system sites is provided below. These are referred to as "preferential" sites. "Preferential" is defined as an existing transmitter site that should be considered in the design to minimize costs.

The Supplier shall note that re-use of the existing sites is preferable and should be considered the initial option to control system costs and optimize the timeframe to transition to the new system.

***Site	Function	Emergency Power	Latitude	Longitude
Goff Hill	Prime Site & RF repeater simulcast and voting site	25 kW propane generator	44 05 38.5	70 14 48.6
Gracelawn	RF repeater simulcast and voting site	45 kW propane generator	44 07 36.7	70 14 22
Montello	RF repeater simulcast and voting site	To be provided under this procurement (option 5.17.1)	44 06 57.3	70 10 50.6
Webber	RF repeater simulcast and voting site	25 kW propane generator	44 05 21.8	70 11 28.7
Shredder	RF repeater simulcast and voting site	25 kW propane generator	44 03 08.3	70 10 40.4
LA 9-1-1	Dispatch Console	Generator & 30 kV UPS	44 04 56.4	70 14 52.2

6.6 RF Coverage Predictions Submittals

System/Equipment Parameters Table: Suppliers shall provide a complete listing of all site, component, and system parameters used to calculate and generate the predicted RF coverage. Suppliers shall also state the RF coverage prediction model utilized. If multiple models are used to generate a composite prediction, then a detailed explanation shall also be included.

Prediction Maps: Suppliers shall provide prediction maps indicating a single reliability of 95% DAQ-3.4 RF coverage. Prediction maps shall indicate LA911 borders including adjacent cities, RF base site locations, and areas of non-coverage.

The prediction maps shall also indicate the level of coverage anticipated outside the jurisdictional boundaries of the LA911.

LA911 desires a graphical representation of the areas that fall below 95% RF coverage to be indicated on the coverage prediction maps. The areas that are above 95% of RF coverage shall not be "marked" on the coverage prediction maps.

The following coverage maps shall be provided in the proposal. All maps shall depict worst-case scenario [talkout versus talkback].

Map-1: Mobile coverage for P25 Phase-II

Map-2: Mobile coverage for P25 Phase-II with receive diversity

Map-3: Portable In-Street coverage for P25 Phase-II

Map-4: Portable In-Street coverage for P25 Phase-II with receive diversity

Map-5: Portable inside 8 dB Building for P25 Phase-II: marked as green

Portable inside 20 dB Building for P25 Phase-II: marked as yellow

Map-6: Portable inside 8 dB Building for P25 Phase-II with receive diversity: marked as green

Portable inside 20 dB Building for P25 Phase-II with receive diversity: marked as yellow

The coverage maps provided shall also display time-delay interference [TDI] that may occur if the TDI falls within the proposed coverage footprint. Predicted areas of TDI shall be clearly shown on the coverage maps in red. A separate TDI map shall be provided that shows areas with potential TDI in red.

7 Communications Dispatch Console Sub-System

The Dispatch Console shall be expandable to easily accommodate LA911 growth and expansion. This includes the number of sites, the number of external radio system interfaces, and the number of operator positions. A single point of failure shall not inhibit or interrupt console operations.

As an option, LA911 desires a system that incorporates primary and backup servers at two geographically separated locations to help minimize the chance of a server failure forcing the system into a failure mode. The locations include LA911 and the Androscoggin Sheriff's Department Backup. The Proposer shall describe their method of providing redundancy in their Proposal.

No loss of system functionality shall be suffered due to geographic separation of components.

The new system shall be developed, installed, and tested in a manner that provides for continued, uninterrupted full-featured communications of the current systems during system cutover. The new system shall be installed while the current systems are still in place and operating. The Contractor shall carefully plan and develop a detailed design and system cutover plan to ensure the continuous operation of both systems throughout system cutover.

Following the installation period, a training period shall follow, where management, telecommunicators and technical support staff are to become familiar with the new system's operations prior to cutover.

7.1 Console Locations

Eight [8] console positions to be installed at LA911.

As an option [price separately]:

1. Two [2] standard remote console positions at the Androscoggin Sheriff's Department
2. Two [2] laptops to be utilized as remote console positions at the Androscoggin Sheriff's Department

7.2 Console Architecture

The new system shall be Ethernet/IP based and shall be capable of full-featured support of LA911 operations, the following primary functions and services shall be provided:

1. Operate and control a five site, P25 800 MHz trunked system.
2. Radio Dispatch on LA911 talk groups and conventional channels from new consoles at the existing 9-1-1 Center as well as the remote operating position at the backup facility located at the Sheriff's Department.
3. Existing VHF conventional analog stations on the system; multiple channel base stations and TAC channels; the Supplier shall provide the required gateway interfaces to accommodate these units.

7.3 System Equipment and Software

The dispatch console shall be comprised of the following components: Server/CPU and system software [server]; audio processor for analog inputs/outputs; console operating positions - local and remote; and RF station gateways.

All system elements shall be fully configurable via a password-protected administrator software application over a network connection, whether located on the local network or over a VPN.

The system shall be capable of deploying configuration changes to the Console Positions over the network that takes effect immediately without restarting system elements. Solutions that require each system element to be separately administered may not acceptable due to maintainability issues.

7.4 Console Server/CPU

The system shall be provided with Server/CPU call processor [redundant as an option] that interfaces to all system RF stations and consoles using IP. This equipment shall be server grade with redundant power supplies and redundant NICs

The Server shall communicate and arbitrate control to all shared system resources, including base stations, VoIP telephone, and radio remote controller without incurring performance penalties.

Server administration shall be protected by user authentication. All updates and modifications shall take effect immediately after editing. Rebooting the gateway and/or console positions to enable a configuration change is unacceptable.

The Server shall be deployed in a redundant configuration with automatic failover capability to ensure continuous uptime. Failover capability shall provide a highly resilient system design that can continue to operate in numerous disaster or failure scenarios. Such redundant capability shall ensure that all RF stations continue to be available for uninterrupted control from all console positions.

7.4.1 Server Requirements

- Redundant power supplies
- Redundant NICs
- Solid State Drives
- RAID 10 HD configuration
- RAID with SD card
- 8GB RAM - minimum
- iDRAC - Enterprise Remote System Management
- Active Directory Domain integration

7.5 Dispatch Console Positions

Each console position shall physically consist of a workstation, a dedicated processor, audio peripherals, monitor, footswitch, dual headset jacks and input device.

As an option, the console position's workstation [desktop or small form factor] shall be capable of remote installation, rack-mounted in the equipment room with all necessary cabling and interface/extension equipment required for remote operation.

The monitor shall display a graphical representation of RF stations, menus, controls, and system resource icons. Control of the user interface shall be via any workstation compatible pointing device.

Console software shall operate under a 64-bit operating system.

The console position equipment shall connect to the system gateway via 1000BASE-T Ethernet to access RF stations or other consoles.

The console graphical user interface shall be configurable by administrator software to include system control buttons, audio level controls, and RF resources. All aspects of the console presentation and operation parameters shall be configured from the administrator software and downloaded to the console position.

LA911 will provide the contractor with 23.5" flat screen, touch screen monitors supporting 16:9 format displays.

A standard PC workstation shall be provided with each console position. The provided workstation shall contain a dual NIC interface to support redundant network connections for enhance reliability. Contractor shall state whether the console PC hardware may be optionally supplied by LA911.

At each operator position, the contractor shall provide position headset arbitration so that all contractor provided functionality audio are present in a single headset.

The console shall support Plantronics wireless optional wireless headset with noise cancelling: Plantronics HW251N corded headset with Plantronics SHS1890-15 PTT headset amplifier [6-wire, with PJ-7 or WE-425 connector], or approved equivalent

The console shall be able to provide cross muting function, including:

1. Console audio muting of nearby consoles speakers [or headset] when transmitting.

2. Channel audio muting of nearby consoles select or unselect speakers [or headset] when transmitting on a specific channel.
3. Console audio cross-muting between the Contractor-provided consoles and existing LA911 consoles.

Each console position shall be capable of enabling user authentication to provide free seating of console operators. The free seating feature shall allow console operators to log in at any console and receive their unique configuration.

Each console position shall be configurable to display and/or access multiple unique user screens. These screens shall present the console operator with the RF stations, radio controls, and informational resources in the form of "electronic push buttons" [button] labeled with names and status colors.

Display and/or access items include:

1. Logging & Instant recall Recorder [IRR] recording functions. IRR must be selective based upon the resource and not a position recording
2. Patch function.

Each screen shall be administrator configurable to display any combination of RF stations and/or controls, screen change shortcut [button], pop-up windows, call queues, activity history or a variety of other functions at any location on a screen.

Button size, colors, text, and fonts shall be programmable on a per object basis. Background highlights, images and selectable colors shall be available to accent application workspace groupings.

RF station graphic shall display the authorized RF stations available to the operator at a particular console.

RF station status shall be shown in a separate text field for select, unselect, patch, monitor, hold, busy and mute.

A call on a resource shall display flashing on that resource button for the duration of the call. The RF stations button color shall be used to identify RF stations status condition so that overall console status can be determined at a glance.

There shall be different RF stations status colors to identify the following conditions: select, unselect, patch, monitor, busy and mute.

Each RF station shall have an individual volume setting for the Select state and Unselect state. This volume level shall be retained when toggling the RF stations between different states and have an administrator configurable minimum level to prevent muting entirely. The volume level shall only affect a single console position.

A location configurable RF station receive audio indicator window shall be present to aid in visual identification of active audio on a specific RF stations. The RF station's activity window background, normally will be one color; and another color when Receive Audio is present; and shall be a third color during active transmit. The system shall allow configurable icons to be added to RF station buttons enabling visual call indication to associate the call with the corresponding RF station.

The system shall support the display of programmable 12/24 hour clocks, a master PTT status bar, and VU meter.

Contractor shall synchronize the time of day clock to an external time source using industry standard Network Time Protocol method to be provided in this bid.

All resources shall have individually settable audio level adjustments for select and unselect conditions.

Console audio level presented to the console operator headset shall have memory such that when returned to a given state [select or unselect] the audio level returns to the level last used when in that state.

The console shall be equipped for Project-25 voice and data operations.

The console shall support DES/AES encryption.

The console position audio processor shall provide operator audio, all peripheral interfacing for headsets, desk microphone, and speaker audio. The processor shall be configurable to support interfaces for a select and unselect speaker, two microphone devices (headset or desk microphones).

Audio peripherals shall be connected to the audio processor using industry standard USB connectors. Additionally, USB connected relays shall be available as an option to provide workstation state indications to external display devices.

The system shall support the following I/O controls at a minimum: eight [8] I/O to be shared by all operators at that facility and two [2] individual I/Os for each position.

7.6 Supervisor Position

The system shall provide a console monitor capability designated as supervisor console.

When configured, this function shall allow the supervisor's console to activate the function and select one or more other consoles to monitor.

While activated, the monitoring console shall hear all conversations in the monitored console's selected RF stations.

7.7 Remote Operating Positions [option]

The dispatch console system shall be capable of remote operation. Remote operation will consist of a PC, laptop or desktop, loaded with the appropriate contractor supplied software and connected to the radio infrastructure network to operate as a fully functional operator position.

All of the functionality provided at the operator positions at the communications center shall be functional at the remote location. The remote console position must be functional whether connected to the radio infrastructure network directly, or VPN connection over LA911's network. The remote console connectivity must be properly firewalled to protect the integrity of the network and radio infrastructure networks.

As an option, the existing Auburn Police Department Motorola MIPS 5000 console shall be replaced with a remote ops position.

7.8 Speakers and Headsets

Speakers: The console speakers shall be capable of providing audio and power from the audio processor. Each speaker shall have an individual volume control. The speaker shall be configurable so the volume control cannot fully mute the speaker output. Each speaker shall feature a multi-colored LED to indicate power and receive audio activity. Each position shall include select and unselect speakers and two (2) additional speakers programmed to receive dedicated audio (to be determined). Each position shall have the capability to add four (4) additional speakers.

Headset Jack Box: The headset jack box shall be designed to mount in proximity and accommodate headsets devices with an industry standard tip/ring/sleeve plug. The jack box shall be equipped with a single Ethernet patch cable providing audio and power from the audio processor. The jack box shall provide an industry standard PJ 327 dual tip/ring/sleeve jack supporting 4W [PTT] operation. The jack box shall provide an input for a hanger/hook switch for use with handsets. The headset shall be capable of interfacing with other audio sources, without operator action. Two (2) jacks shall be provided at each position to allow for training purposes.

The headset shall be integrated with the telephone system.

7.9 Alert Paging Function

The console electronics shall be equipped with a processor based signaling encoder that will generate all formats and codes associated with the paging and signaling requirements that follow.

The encoder shall broadcast the chosen signaling format(s) and code(s) on the currently selected radio channels and/or on the selected radio channels defined by pre-programmed buttons. It shall also allow the simultaneous selection of multiple signaling formats and codes and broadcast them automatically using a 'first-in, first-out' stacking technique.

The selection and entry of the paging and signaling functions shall be from the PC monitor screen at each operator position. The encoder shall provide both a visual and audible indication of operation and proper signaling.

7.9.1 Paging Formats

The console shall be capable of generating the existing LA911 alert tone paging formats.

The console electronics shall be equipped to provide the following:

- Quick Call I Paging
- Quick Call II Paging
- Dual Tone Multi-Function (DTMF) Signaling
- Digital Dial (1500 Hz Interrupted) Signaling

7.10 Station Alerting

The Fire Department requires a station alerting function that provides an alert tone, announces a voice page, and can provide relay closure for local activation of station lighting etc.

The unit shall be capable of transmitting an alert warning tone prior to the voice announcement; for example a steady, hi-lo, or warble tone.

The station alert unit shall be capable of decoding single tone, two tone sequential, DTMF, or FSK tones.
When the alert receiver decodes proper the activation code, the unit shall sound an alert warning tone; enable the unit to receive a voice message over the speaker; and then automatically reset upon completion of the voice announcement to await the next activation code. The length of the alert warning tone, automatic channel monitor timing, and reset functions shall be programmable.

The alerting unit shall have a 600-ohm audio output for an external PA system.

The unit shall have a local antenna, as well as an external antenna receptacle for connection to an external antenna.

The unit shall have battery back up in the event of AC power failure.

7.11 Subscriber ID and Emergency Function

Unit Identification - The console shall be capable of decoding [MDC1200] signaling and provide a real-time display of push-to-talk subscriber unit identification at the dispatch positions.

Emergency Alarm & Call - A display and audible alert to the dispatcher position upon activation of an emergency switch on a subscriber radio shall be provided. The display shall identify the unit number of the radio initiating the emergency alarm.

7.12 Instant Recall Recording [IRR]

The recording equipment shall provide Instant Recall Function at each dispatch position. The function shall provide continuous recording of the telecommunicator activity, including both telephone/911 audio and selected radio audio. The unit shall provide simultaneous record and playback capability, time stamping of messages, and a minimum of 20 minutes of recording time.

The IRR shall allow the operator to quickly replay recent audio on demand.

7.13 Logging Recorder Interface

The outputs shall supply audio from all the telephone, conventional radio channels and talkgroups controlled by the console to the logging recorder. Both transmit and receive audio shall be provided.

For conventional radios, the outputs shall filter guard and function tones associated with tone remote controlled base stations.

These audio sources shall be available in either traditional two-wire, 600-ohm analog output on the rear of the console or in standard streaming Real Time Protocol (RTP) format. For IP recording, the console shall transcode the IP audio into a user-selectable CODEC format.

7.14 Intercom

Intercom to and from another operating position [local and remote] shall be via an IP connection and initiated by touching/clicking a screen control corresponding to the called party.

The called party's console shall provide clear indication of a received intercom call.

When the called party desires to respond, the receiving operator shall have a straightforward [ex. Single-touch] method to answer the intercom call, and the audio shall be routed to the select speaker.

The microphone path shall be configurable as full duplex, or requiring PTT.

There shall be a one-way "announcement" mode that allows a console to broadcast a message to one, a group of, or all consoles.

The intercom audio shall be capable of being patched to an ongoing conversation.

7.15 CAD Integration

The provided solution shall offer an API at the console position level allowing third-party applications to control the console resources. The API shall support simultaneous use of both the standard console GUI and the third party CAD application.

7.16 Dispatch Console Controls

LA911, through the use of a centralized administration tool may incorporate any of these parameters into the console screen design according to their functional requirements. The following configurable controls and capabilities shall be available in the system.

Operator screen shall have the capacity to display any combination of RF stations or controls, at any location on a screen. Tabbed modules shall be definable allowing easy access to RF stations and controls when required. All tabbed backgrounds and the tabs themselves shall be administratively configurable for color, text, font, and size and the addition of icons when required.

Action Buttons [buttons] when placed on the operator screen shall provide a navigation feature enabling the dispatcher to switch screens or invoke a "pop-up" screen with a single button selection. These Buttons shall be configurable and shall contain the text necessary to identify the action to be taken.

Each console position shall be capable of providing an activity history display. Activity history shall display the operator console's receive audio activity to the dispatcher on a per-RF stations / per-transmission basis.
Activity History filters shall be included enabling an operator to segregate emergency calls from regular calls.

The activity history display shall provide a scroll function and allow the operator to search history to view call activity.

The activity history retention period shall be configurable from one minute to twenty-four [24] hours.
Required button and functions are listed below in alphabetical order followed by a brief description of the associated operation.

ALERT TONE button shall provide the control for generation of programmable alert tones. Each shall be programmable for frequency, duration, and level. When touched/clicked, the tone will be applied to all selected RF stations and will be displayed on the VU bar graph.

ALL MUTE button shall provide a timed mute function on all monitored RF stations. Mute time shall be owner configurable from 0 to 600 seconds. When active, the ALL MUTE function button shall be flashed to alert the workstation operator of a mute condition. To cancel an ALL MUTE command, the operator shall simply touch the function button again.

BROWSER CONTROL button, when directed to a specific IP address, website or local document, such as online help manuals, streaming media, weather alerts, etc., shall invoke a screen within the operator's display providing the pre-configured content. Configuration of the URL and/or content shall not be accessible to the dispatcher and will be administered by authorized personnel only. The operator shall have the ability to close browser screens when not in use.

CROSSPATCH button to provide cross connection of audio between desire channels. Operation of crosspatch shall not inhibit the dispatcher's ability to operate on other channels. The controls shall provide a visual indication of crosspatch activity and inactivity. Two (2) separate, distinct and simultaneous crosspatches shall be possible. Each crosspatch shall be able to accommodate any number of desired channels.

CTCSS button shall disable CTCSS allowing the dispatcher to listen in on a pre-configured CTCSS enabled radio RF stations without transmitting. This button shall function as a toggle enabling and disabling the CTCSS function when selected.

HEADSET MONITOR button shall temporarily override the select speaker mute function, which is automatically enabled when a headset is inserted into the console jack box. Automatic select speaker muting shall also be permanently disabled on a per console basis by editing the system database.

INPUT ALERT/ALARM Buttons shall represent an external input to the system. When the input is activated, the button shall provide a visual indication, and also an optional audible indication, of the activation. The indication shall be configurable to require touching/clicking the button to acknowledge, to acknowledge on de-activation of the input, or to automatically acknowledge after a settable period of time. Each alert/alarm shall be configurable to be logged and to create an SNMP trap on the network. The user or console that acknowledges the Alert shall be logged.

INSTANT TRANSMIT button shall provide the workstation operator with an integrated instant transmit function for an associated radio RF stations.

RF STATIONS button shall provide access to the circuits assigned to the console for the current shift in the form of "electronic push buttons." Each shall be labeled with names and status colors. The first two lines of text on an RF stations button shall identify the associated RF stations. The last line shall show the RF stations status. Each button shall be owner programmable to display visual call alerts, audible call alerts, and the default RF stations monitor status on a per console basis.

MULTI-SELECT button shall allow functions to be performed on a preset group of RF stations. Touching/clicking the RF stations group button will place all the RF stations in multi-select and allow PTT on the entire group. Likewise, the entire group may be placed in unselect or patch, or reverted to default state with a single touch of the proper function button.

MUTE FUNCTION button shall control the individual audio level of a given radio RF stations. If the RF station is presently in a monitor condition, receive audio shall be presented to the workstation via the workstation unselect speaker. Touching/clicking the mute function button and then touching/clicking the RF station button shall change the RF station to a mute condition. Likewise, if the RF station is in the mute condition, repeating the action shall reverse the process and place the radio RF stations in a monitor condition.

PUSH-TO-TALK - PTT [On-Screen] button shall automatically invoke a PTT transmit action on the Select or Simul-select RF stations.

PTT INDICATOR shall display the PTT status of that specific console when the respective console is transmitting.

PTT FOOTSWITCH a rugged PTT footswitch with a non-skid weighted base shall be provided. The cable shall not require a proprietary connector to connect to the console position. When activated, the footswitch shall initiate a general PTT function on the selected RF stations.

REPEAT ENABLE/DISABLE button shall turn RF station in-cabinet repeat and the external [function tone] repeat on and off. When enabled, in-cabinet repeat shall take inbound receive audio and send it back out as transmit audio, along with PTT, to the associated transmitter.

SUPERVISORY TAKEOVER button shall allow the console to take control of an RF station that is being used at another console. Only the console that initiated the takeover shall be able to transmit on the RF station. Other consoles shall be able to have the RF station in select or unselect to monitor the audio activity. When the takeover console de-selects the RF station, its operation at other consoles shall return to normal.

SYSTEM CLOCK button/module shall be placed on the screen and be configurable for 12/24 hour display formats.

TEST TONE button shall cause a 1000 Hz tone to be generated and inserted into the transmit audio path. Tone level shall be indicated on the console VU bar graph.

VOLUME CONTROL button/module shall allow the operator to adjust a selected RF station's Select and Unselect audio levels. The Volume display shall indicate the name of the selected RF stations for clarity.

VOTING DISPLAY [future] showing voted receiver, disabled receiver, failed receiver, and selected transmitter. The operator screen shall support the display of a VU bar graph that depicts the measured audio amplitude of outbound audio from the dispatcher's console position. This module shall be configurable for size and may be located anywhere on the operator's screen.

7.17 System Reports

The console shall be equipped to produce usage activity information reports on demand. At a minimum, hourly, daily, weekly and monthly reports shall be possible. The reports shall include, at a minimum, the following, each event time and date stamped:

- Number of transmissions per position
- Number of transmissions per channel
- Total transmission time per position
- Total transmission time per channel
- Total receive time per position
- Total receive time per channel
- Captured activity data shall be able to be reviewed by operator position, channel, time, type of event, etc.

7.18 Power Requirements

It is the intent of LA911 to utilize the existing 30 kva UPS for the 9-1-1 center. Note that the console positions are on this UPS.

The Contractor shall clearly define and provide power loads calculation, and circuit requirements for their equipment.

The contractor shall finalize the number of and type of electrical circuits needed for their equipment and identify if new circuit breaker, conduit, and receptacles are required for their equipment.

The sites have adequate grounding systems; however, it is the contractor's responsibility to provide and install proper grounding, lightning protection, and surge suppression of all equipment that are installed as part of this contract.

All equipment and cabling provided shall be grounded per Motorola R-56 standard or Harris Site Grounding Protection Guidelines: AE/LZT – 123 4618/1

7.19 Dispatch Console Furniture

LA911 is in the process of replacing existing console furniture. The Contractor shall coordinate with LA911 with regard to the installation of the new console workstations into the new furniture while maintaining system operations on the existing console system. Contractor shall provide detailed implementation plan at DDR.

7.20 Console Transition Plan

The Supplier shall provide a detailed transition plan for the communications center installation. This plan shall include the fact that the new radio console will be installed in the same location as the existing radio console and furniture. Therefore, the Supplier must minimize the impact to on-going operations in the communications center.

The Supplier's proposal shall describe a high level transition plan to ensure simultaneous console operations. The final plan will be discussed at the Detailed Design Review meeting.

7.21 Talkgroup and Conventional Development Channel Plan

The Contractor shall be responsible for the development of the radio and console talkgroup structure for LA911 P25 system.

The Contractor shall assign a technical resource thoroughly familiar with the development of trunked system talk groups and radio programming templates who will work with LA911 Operations Manager to develop required talk groups and radio templates.

The Contractor will be responsible for programming all radio equipment that is provided as part of the P25 system infrastructure, including "backup radios" at the 911 dispatch center

8 LOGGING RECORDER [option]

LA911 requires new logging recorders for telephone and radio function as specified in this section. LA911 currently utilizes one Acorn logging recorder. Audio end points shall include over-the-air recording of the trunked system to obtain subscriber IDs; seven digit POTS lines; and, 9-1-1 lines.

8.1.1 Proposed Logging Recorder Network

The new logging recorder system shall be of a client/server architecture that facilitates the access, playback, and transfer of various digital/analog audio files across a TCP/IP-over-Ethernet network.

The recorder shall be fully redundant, inclusive of alarms should the primary recorder fail or is not recording.

The network shall be capable of recording up to 80 audio end points.

Recording retention shall be 180 days, minimum.

All trunked system IDs generated by handheld portables and working through a VR unit shall be recorded.

All calls, telephone, conventional radio, talkgroups, and text messages shall be time stamped and synced with the CAD call.

All of the new lookup/playback workstations shall be networked.

The proposed logging recorder system shall provide the necessary radio and telephone interfaces to concatenate comprehensive call processing data (both radio and telephone) with the specific audio calls. Time synchronization of the logging recorder system with the master system clock and the telephone system is required so that all call sequences can reliably and accurately be re-constructed. The logging recorder system shall be equipped to receive real-time call processing data from the radio communications system and the 911 telephone system for advanced call lookup/playback functionality based on lookup criteria such as: talkgroup, channel, time, date, call length, radio/console unit ID, radio/console alias, specific call type, assigned network resources, annotations, ANI/ALI information, etc.

LA911 strongly encourages a design in which the logging recorder subsystem applications co-exist and reside on the same client workstations as the NMS subsystem (when applicable) workstations to minimize the total number of client workstations. The logging recorder subsystem shall also be designed to facilitate a number of LA911 intranet client workstations to access the archived audio through a properly provisioned firewall or security appliance.

Logging recorder audio demarcations from the radio and telephone networks shall be made in the 911 equipment room via wall-mounted or rack-mounted punchblocks. The Supplier shall provide all necessary logging recorder cabling and connectors to/from the demarcation punchblocks. The Supplier shall provide all necessary radio communications system cabling and connectors to/from the demarcation punchblocks. LA911 will provide all necessary telephone cabling to/from the demarcation punchblocks. The Supplier shall provide all surge suppression, grounding leads, and connectors/lugs of sufficient gauge to properly bond all logging recorder equipment to the single point grounding system.

The channels to be recorded will be provided at the pre-bid conference. Please note that the talkgroup plan and recording scheme is preliminary and may be modified during the Detailed Design Review. A 20% future capacity capability shall be included over the proposed channels to be recorded.

The logging recorder outputs shall include descriptive metadata. The metadata shall include information about the call such as Console ID, and User Login Name, etc. Depending on the endpoint type other data should present such as Radio Unit ID, etc. The console Supplier shall describe the metadata available and identify recorders that are certified for using the metadata.

Moreover, should LA911 select P25 text messaging, all text messaging and metadata shall be recorded.

8.1.2 Logging Recorder Workstations

LA911 will provide PC logging recorder client playback workstations on the LA911 network. One playback workstation is required for the Supervisor Dispatch Console Position. Client software with complete administrative rights and applications for management of the logging recorder subsystem shall be provided.

8.1.3 Logging Recorder Features

The following list represents the minimum functionality, performance, and quality requirements that shall be included in the logging recorder system. The list is not necessarily totally inclusive of all requirements since the Supplier may offer additional functionality in its standard logging recorder offering. The following section briefly defines the required functionality, performance, and quality of the specific requirements in this list:
High quality, reliability, and availability to meet 24/7/365 continuous duty public safety dispatch standards (e.g. redundant power supplies, redundant processors, etc.)

- Conform to local PSTN requirements as necessary
- State-of-the-art design with distributed processing and multi-tasking capability
- Redundant and fault-tolerant configuration/network server(s) with mirrored databases
- Capability for any combination of client workstations to access the logging recorder simultaneously for real-time monitoring or historical playback
- Access workstations capable of running Microsoft Windows-based operating system and archiving to flash drive
- Multiple search and playback techniques: console position, subscriber/console unit ID and/or alias, emergency call, talkgroup, multigroup/announcement group, individual call, telephone interconnect call, encrypted call (as required), time/date, call length, channel resource, site resource, ANI/ALI data, annotations, etc.
- Capability to package a group of independent, specific calls into a consolidated call sequence for documenting/describing a situation or event
- Capability to activate data compression to maximize data storage
- Redundant internal/mirrored hard drives or suitable automatic backup scheme to prevent loss of data
- System notification to user and network administrator that storage threshold close to being exceeded to prompt permanent archiving
- FIFO overwrite when storage threshold exceeded
- VOX-activation and/or ability to set audio level threshold for recorder activation to tailor recording style per channel/track
- Redundant 120 VAC/60 Hz power supplies for all common and core equipment
- Synchronized to master system clock
- Capable of logging any combination of system talkgroups and conventional resources per the ultimate system fleetmap
- Capability to annotate specific calls and/or call sequences using free text
- Capability to lookup call annotations for specific calls and/or call sequences
- Capability to add audible time/date stamping using a pre-recorded voice watermark
- User-friendly, field-reconfigurable independent GUI interface(s) for each lookup/playback position
- Password-protectable lookup/playback positions with comprehensive event log to note specific authorized user time/date usage
- Full interoperability between IP-based, digital trunked, and conventional subsystems.

8.1.4 Logging Recorder Management

The logging recorder subsystem shall support multiple levels of access that are protected in a manner allowing users to control, monitor and use software applications that have been partitioned and provisioned for specific use by the end-user. The Supplier shall provide a detailed description of this capability by defining the levels of partitioning and security,

total number of end-users, the total number of simultaneous users with independent views, and the method used to achieve this requirement.

End-users shall be located at different locations such as dispatch centers, offices, maintenance facilities, and other remote sites. Therefore, this user partitioning feature must be provided to remote locations in order to allow restricted access to the overall radio network. User functionality and passwords must be configurable through a network administrator/superuser (root level) login. Superuser (root level) login and password must be re-configurable in the event of a network security breach. The logging recorder subsystem shall provide the administrative functionality to disable in real-time specific client workstation(s) and user login(s) as necessary in the event of malicious or unwanted activity.

9 SUBSCRIBER RADIO EQUIPMENT

Subscriber radio is defined as a mobile radio, portable hand-held, control stations, and vehicular repeater radios.

9.1 Proposed Subscriber Equipment

LA911 requires the Supplier to provide various types of radio subscriber equipment for the different agencies and participants. LA911 intends to procure radio subscriber units that shall require a variety of different features and options depending on the various user departments and their respective operational needs.

Subscriber units shall support all analog and digital communications within this system and compatible systems operating in both the VHF and 800 MHz frequency bands.

Subscriber radios available shall be categorized as Public Safety in both mobile and portable radio families. The Supplier shall thoroughly describe the features and functionality provided by each of the subscriber tiers.

9.2 Regulatory Compliance

All proposed subscriber equipment shall be type accepted under Part-90 of the FCC Rules & Regulations. The Supplier shall define the Type Acceptance designation and FCC Emission Designators for all proposed radio subscriber equipment.

9.3 General Subscriber Requirements

All subscribers shall have the following capabilities:

a) Subscribers provided shall be equipped primarily as a P25 Phase-I and Phase-II radio.

b) The subscriber units shall provide FM analog communications within this system when involved in a call from an analog unit on conventional mutual aid repeater and/or simplex channels.

c) Subscriber radios shall consist of an integral radio set, capable of frequency synthesis of multiple RF channels, with automatic channel switching under the control of external channel and/or internal channel switching logic. Additionally, the radio shall include such other items as are necessary for a complete, highly reliable, two-way analog and P25 digital radio suitable for communications in a multi-channel/mode trunked and conventional system.

d) The unit shall perform a self-diagnostic test each time it is turned on. This test shall be automatic and shall include all radio operating parameters. At the conclusion of a successful test, no operator intervention shall be required. A test that is not successful shall notify the operator.

e) The unit's operating frequencies, features, functions and other operating parameters shall be field tailorable via PC based programmers.

f) Subscriber units shall be equipped to concurrently priority scan both conventional channels [8 minimum] and trunked talkgroups [8 minimum] in both the clear and encrypted voice. Channel or trunked mode scanning shall be completed in the minimum time necessary to reliably deliver audio traffic to the radio subscriber. The Supplier shall provide the maximum scan time required between trunking and conventional reception. The scan shall be a selectable priority, which means that the transmitter channel or talkgroup selected by the user is configurable to be the priority channel or talkgroup.

9.4 Subscriber Characteristics

a) To the greatest extent possible, all equipment assemblies and sub-assemblies shall be shielded to minimize electromagnetic interference that may be caused to/by electrical equipment co-located and/or adjacent to this equipment.

b) The equipment shall meet or exceed all the requirements of MIL-STD 810C, D and E standards for shock, vibration, salt, fog, dust and rain.

c) Unit identification modes shall include: Unit ID upon Push-To-Talk, Emergency Unit ID, Selective Alert, and Alphanumeric Text Messaging [optional].

d) All subscribers shall be programmable for a variable duration transmit time-out-timer for continuous activity to prevent stuck microphone, dead key or abusive key-up scenarios.

e) All radios shall be equipped with a button or switch that activates a programmable "Home" mode or preferred channel with a single key, button press, or switch change.

f) Subscriber radios shall be equipped with a button or switch that activates the emergency mode.

g) All proposed subscriber radios and associated accessories shall be equipped to operate consistently and reliably according to manufacturer and system specifications in environmental conditions ranging from -30 degrees Celsius to +60 degrees Celsius at a 90% non-condensing humidity level.

h) All subscriber radios with display capabilities shall utilize a hardened LCD display capable of withstanding non-abusive vibration and direct impact encountered in the normal daily radio use without being rendered inoperable. The LCD displays shall provide configurable contrast levels to enable proper usage in direct sunlight and low-light operating conditions. All display radios shall provide user-enabled backlighting for nighttime and low-light usage.

i) The LCD display shall provide contrast adjustment and its brightness shall be user adjustable. The LCD display shall be equipped for dimming and complete turn-off for surveillance and covert operations.

j) GPS capability (optional). Provide details regarding how the GPS data can be displayed on LA911's CAD mapping system.

k) Transmit Time-Out Timer to warn the user of excessive transmission length. Time out timer should automatically disable the radio's transmitter after a pre-determined period; thereby eliminating talk group/channel interference caused by either a defective speaker/microphone or PTT button.

l) `Protected Emergency button to allow easy access when needed but incorporating an ergonomic design whereby the emergency function could not be accidentally activated. The Emergency button shall be capable of being programmed for activation delay and the radio shall have an "open/hot microphone" feature associated with the operation of the Emergency button.

m) All radios shall be equipped to provide configurable button, switch, and menu layouts to customize the radio operational characteristics for the various users and agencies. All buttons, switches, and menu items that are labeled or inscribed shall match the programmable functionality so as not to confuse the radio operators.

n) All subscriber radios shall be equipped to provide multiple configurable folders or zones of talkgroups and channels to uniquely organize the available modes programmed into each radio. Each folder or zone shall be accessible through any defined combination of button, switch, or menu item setting. Trunking and conventional channels shall be capable of being interleaved within a programmable zone or folder.

o) Subscribers shall be equipped with a data port. This data port shall allow for connection of test equipment, radio programming devices, etc.

p) Radios shall have Wi-Fi capability to reprogram subscribers utilizing Wi-Fi 802.11n for firmware and code plug changes. Radio communications shall not be inhibited while the update is downloaded.

9.5 Operational Characteristics

All proposed subscriber radios shall be equipped to operate within the 136-174 and 764-869 MHz frequency band per FCC and P25 channel spacing requirements.

Digital and analog modulation shall be for both 12.5 kHz and 20/25 kHz channel spacing as required.

The radios shall be capable of migrating to 6.25 kHz or equivalent operation that shall be defined by the Supplier.

9.6 Hand Held Portable Radio

9.6.1 General Description

Portable radios shall be comprised of a handheld transceiver, associated accessories, antenna and user functions and controls.

The units shall be of current production and shall be capable of withstanding the harsh environment associated with use in emergency services personnel. Portable housing shall be of high impact polycarbonate or other high impact material.

Separate top-mounted rotary control knobs for volume and talkgroup/channel selection for public safety-type radios. A "single-control" type of radio is not acceptable for public safety use, but would be considered for public service use.

Incorporate electronic, alphanumeric (minimum eight-character) display to provide visual indication of system availability, system ("mode" or "zone"), channel/talk group selected, incoming user ID/Emergency ID, call alerts, and operational status such as scan, transmit or low battery.

Carrying case options should include leather carrying cases with a belt loop or "D- ring" swivel mount, as well as chemical-resistant cases (nylon or similar plastic material) for use by hazardous material groups. Additionally, battery-mounted belt clips shall be included with all portable radios, if available.

Optional surveillance accessories such as miniature microphones, earpieces and remote microphones and headset/speaker microphones shall be available.

9.6.2 Desired Quantities

The number of units to be supplied: see Pricing Sheet

For each portable, including spares, shall be equipped with:

1. Battery plus a spare
2. Single unit charger.
3. Flexible ½ wavelength antenna whip, plus a spare
4. Remote speaker microphone
5. Swivel leather carrying case with hold down strap [option]

9.6.3 Portable Power Supply

The equipment shall operate from a negative ground internal rechargeable battery power source.

Incorporate heavy-duty construction, enclosures and controls to meet the IP67 standard for water (protected against the effect of immersion in water to 1 meter), shock, vibration, dust, humidity, and high/ low temperature performance.

Portable subscriber radios shall be equipped to provide a minimum of 12 hours operations having a duty cycle of 10% transmit/10% receive/80% Idle) operational behavior model. The battery shall be appropriately sized for this operation.

All portables shall be equipped to operate in a tri-chemistry, ruggedized, pocket-style 120VAC multiple unit charger that can simultaneously charge/condition a minimum of six portable batteries of any chemistry type. The proposed multi-unit charger shall be compatible with every proposed portable radio type, and different multi-unit chargers shall not be required based upon the radio or battery type.

All portable subscriber radios shall be equipped to provide an audible and visual battery status indication to warn of battery depletion and need to charge.

A quantity of [identified in pricing sheet] battery exercise/testers for standard units shall be supplied. Testers shall, at a minimum, perform analysis, conditioning and cycle testing of batteries.

9.6.4 Portable Operational Characteristic

All portable subscribers shall have the following characteristics:

1. Programmable for a variable RF Output Power between 1-3 Watts across the entire frequency operating range.

2. Shall be equipped with a noise-cancelling remote speaker microphones that provides an emergency button, volume control, rotary channel selector knob, and audio earpiece jack.
3. Portable speaker audio output operating in a vehicular adapter shall be 5 Watts, minimum.
4. Handheld radios, not operating in a vehicular charger or adapter, should have greater than 500 milliWatts of audio output.

9.6.5 Portable Radio Features

1. The LCD display shall be top or front-mounted.
2. All portables shall be equipped with a top-mounted rotary volume control knob.
3. All portables shall be equipped with a primary, top-mounted trunked talkgroup or conventional channel selector knob.
4. All portables shall be capable of interfacing to the following accessories as required by LA911: man-down emergency activation switch, public safety speaker microphone (i.e., elevated antenna at shoulder height), multiple unit charger/conditioner, surveillance headsets/earpieces, Bluetooth accessories, RF adapter switch for vehicular mobile adapter assemblies, GPS-speaker microphones, bone microphones, and temple transducers.
5. An accessory receptacle shall be provided for the connection of external devices such as remote speaker/microphone units, vehicular adapters, etc.
6. Available multi-unit rapid charger (6 portable radios) – AC and/or DC operation capability.
7. Available "hard wired" and "travel type" single-unit 12VDC rapid chargers for vehicular operation.
8. Specialized accessories such as ear buds, tactical headsets, intercom adaptors, "stealth" microphones and headsets, etc., shall be available

Police Portables

1. The portable radio shall support multi-key digital voice encryption, using federally approved AES/DES coding, to provide enhanced security during transmission and reception of sensitive communications.
2. Subscriber radios shall be equipped to mute all radio tones and/or audio when operating in covert or sensitive tactical situations (e.g., surveillance, SWAT, etc.).

Fire Portables

1. Fire service shall have "ruggedized" cases that can be gripped by a gloved hand. Controls shall be large enough to operate with gloved hands. The EMERGENCY button shall be of sufficient diameter to be operated by a gloved hand.
2. Fire portables batteries and accessories proposed must be approved by Factory Mutual as intrinsically safe for the following hazardous environments: Class I and II Division I, groups C, D, E, F and G and non-incentive for Class I, Division 2, Groups A, B, C and D.
3. Speaker microphones shall be waterproof and be equipped with an earphone jack. Speaker microphones shall have an optional "fire rated" cable for use by fire services.

9.6.6 Portable Accessories

Portable radio accessories are listed in the pricing sheet. Suppliers are to provide Unit Cost for each item. The final quantity of accessories will be finalized at the Detailed Design Review meeting.

9.7 Mobile Radio

Mobile equipment shall be comprised of a transceiver, associated accessories, antenna and user functions and controls.

The units shall be of current production and shall be capable of withstanding the harsh environment associated with use in emergency service vehicles.

9.7.1 Desired Quantities

The number of units to be supplied: see Pricing Sheet

For each mobile, including spares, shall be equipped with:

1. Plug-in type palm microphone with coiled cord
2. Plug-in type external speaker
3. Permanent antenna mount assembly
4. Low profile roof/trunk mount antenna
5. Low loss coaxial cable

9.7.2 Power Supply

The equipment shall operate from an external negative ground primary power source supplying a nominal 13.8 VDC.

All power circuits shall provide for reverse polarity protection.

9.7.3 Mobile Operational Characteristic

All mobile units shall have the following characteristics:

1. Programmable for a variable RF Output Power between 5-30 Watts across the entire frequency operating range.
2. Mobile external speaker audio output shall be 10 Watts, minimum.
3. Trunk mounted transceiver housings shall be equipped with a base plate. The base plate shall allow for the removal of the transceiver from its mounted location for replacement or servicing. Removal of the transceiver from the base plate shall not expose its internal circuitry.
4. Mobiles shall be equipped to operate powered on or in a switched mode, powered down with an ignition sense, as required on an individual basis by LA911.

9.7.4 Mobile Radio Features

1. All mobiles shall be capable of interfacing to the following accessories and ancillary assemblies as required by LA911: horn and lights activation relays, siren/PA control head, status/message control head, external emergency switch or button, motorcycle assembly, dual control head-single radio, multi-band radio-single control head, handheld control head/keypad microphone, and mobile-in-a-tray control station.
2. Incorporate electronic, alphanumeric displays (minimum of eight characters) to provide visual indication of system availability, channel/talk group selection, incoming user ID, call alerts and operational status such as system availability, scan, and channel occupancy.
3. On dual control head units, each control head shall be equipped with a switch to takeover control of the unit. Transmit and receive audio shall, at all times, be available from both front and rear positions regardless of the position of the takeover control switch.

Police Mobile

1. The mobile radio shall support multi-key digital voice encryption, using federally approved AES/DES coding, to provide enhanced security during transmission and reception of sensitive communications.

Fire Mobile

1. Radios shall be compatible with the installation of common fire/emergency services apparatus headset intercom systems, such as David Clark, Firecom, etc. The Supplier shall completely integrate and wire all new subscriber radios with the various headset interfaces in use or intended for use as required to fully complete a vehicle installation.
2. Mobile radios will be capable of being interfaced to internal intercom systems in Fire vehicles. The proposal shall provide details and cost for replacement in-vehicle intercom systems.

9.8 RF Control Stations

It is the intent of this section to describe state-of-the-art control station radio equipment. The equipment shall be comprised of a transceiver, associated accessories, antenna system and user functions and controls.

The control stations shall have the same operational characteristics and features of a mobile radio [Section-6.4].

An external protected/isolated and impedance-matched received-audio connection may be required for Police or Fire Station public address or station alerting configurations. The installation Contractor shall provide any and all external audio interface materials to accommodate this requirement and will assist with connection and testing.

9.8.1 Desired Quantities

The Supplier shall provide five [5] control stations for dispatch position backup. Stations are to be installed in the equipment room with appropriate handset remote controller at the console position.

9.8.2 Power Supply

The equipment shall operate from an external source supplying a nominal 120 VAC at 60 Hz power.

Power losses, restorals, surges, sags and/or brownouts shall not alter the system software and/or operating parameters. Other than total power loss or lethal surges, the control station shall remain fully operational within the specifications of its design while experiencing any of these occurrences.

Control stations shall be equipped with battery/UPS backup for four [4] hours.

9.8.3 Power Surge & Lightning Protection

All equipment shall be equipped with an external surge protector with ground conductor.

All antenna feedlines shall be equipped with an external lightning arrestor with ground conductor.

9.8.4 Station Control

For each console position, access and control of each Control Station shall be by remote desktop controller equipped with an internal speaker as well as a handset or desktop microphone for transmit and receive audio. The dispatcher shall be able to operate the desktop controller to select trunked and conventional channels, mute, volume control, etc.

The controller shall also have a receptacle for headset operation.

9.8.5 Antennas

Each unit shall be equipped with appropriate antenna providing 99% system access availability. The Supplier shall use antenna-combining techniques to minimize the number of antennas installed.

A control station combiner may be utilized to reduce the number of antennas; however, antenna and control station shall not degrade the performance of any co-located radio over the operating bandwidth of the system.

No antennas shall be installed inside the equipment room.

9.9 Vehicular Repeaters [option]

As a system option, the Fire Department is considering deployment of vehicular repeaters to be used to relay Fireground analog simplex communications to the dispatch center for monitoring and recording using a selected "Fireground" P25 system talkgroup.

The dispatch center shall have the ability to communicate with the analog simplex Fireground personnel through the vehicular repeater. This feature could be used by dispatch to relay evacuation orders, or to provide notification of a received EMERGENCY call. Since the Fireground simplex communications is being relayed to the P25 system via a talkgroup, it would also be accessible to specified Fire Department command staff.

The proposal shall include information and pricing for a suitable 700/800 MHz vehicular repeater model that could fulfill this requirement.

The Contractor will be responsible for FCC licensing, programming, and installation of the vehicular repeaters and mobile radio. Operation of the vehicular repeaters will be demonstrated to the Fire Department and the repeaters will not be accepted until acceptable operation is acknowledged by LA911.

10 INSTALLATION REQUIREMENTS

The Contractor shall perform a pre-installation visit to survey the locations for all equipment to be installed. If conditions not under the control of the Contractor require a change in the items and/or services proposed, a revised proposal shall

be supplied to LA911's Project Representative. No equipment shall be delivered or work started until approval has been received from LA911's Project Representative. Installation shall include all necessary wire/cables.

All existing radio communications systems shall remain fully operational during installation of the new equipment and until LA911 final acceptance. Because existing systems support public safety operations, interruptions in service due to Contractor or contractor activities are not acceptable. If interruptions in service are deemed necessary by the Contractor to be unavoidable, then written notification detailing the nature and duration of such interruptions shall be provided to LA911 for review and approval.

All installation work performed shall be in accordance with laws and regulations of the U.S. Dept. of Labor, the Commonwealth of Massachusetts, and LA911 policies. Technicians shall have a valid Federal Communications Commission General Radiotelephone Operators License or its approved equivalent to work on the radio system.

10.1 General Requirements

The Contractor will be required to begin installation according to the approved schedule for material delivery to the installing contractor location. The installation Contractor shall be prepared at this time. The Contractor shall ensure that all material and components are delivered to the proposed sites and according to the approved schedule.

The Contractor is responsible, and shall provide all the hardware and supplies necessary for the proper and complete installation of the radio and microwave equipment, this includes bolts, clamps, wire wraps and other hardware, as required. As well as equipment, and their safe transportation and delivery to the communications sites.

Provisioning, optimization, troubleshooting, and adjustment of each subsystem shall be the Contractors responsibility. Any equipment or parts required to provide a complete and operational system, and not specifically mentioned herein, shall be provided by the Contractor without any claim for additional and.

It shall be understood that the proposed contract and agreement contemplates and requires a 'turnkey' construction and installation of a completely operational communications system that meets the standards LA911.

Notwithstanding the details presented in these specifications, it is the responsibility of the Contractor's Project Manager to verify the correctness of the material lists and suitability of devices proposed to meet the intent of the specifications. The Contractor shall be responsible for providing or arranging for all parts necessary for the equipment and its installation up to and including final system acceptance.

The Contractor shall disconnect legacy equipment after the network has been accepted after LA911 has authorized the Contractor in writing to do so. The Contractor shall remove all legacy equipment, and ensure that the area is clean. All equipment shall be transported to a location within the region for disposal by LA911.

10.2 Personnel Safety

The Contractor shall be required to provide a Certificate of Insurance indicating the coverage limits as outlined by LA911. The Contractor shall bear responsibility for the safety of its workers and all others during the installation phase.

All employees of the Contractor who work for LA911 shall be instructed in and be familiar with safety rules and regulations applicable to the nature of the work being performed under this contract. The Contractor shall have sole responsibility to see that its employees are so informed and that they follow requisite safety practices.

All applicable OSHA rules and requirements shall be rigorously complied with, as well as applicable FCC and FAA requirements including RF exposure guidelines. For antenna installations, under no circumstances shall an individual be allowed to work alone. It is crucial and imperative that all current OSHA fall protection rules are followed. This includes but is not limited to "full body harness" and 100% "TIE OFF". Contractor employees found not following all OSHA rules and directives will be ordered from the job site by LA911.

10.3 RF Base/Repeater Stations

For RF equipment installed at fixed sites, upon completion of staging the equipment, the contractor shall deliver and, install the equipment at the sites.

Equipment and physical facilities shall be installed in a neat and professional manner, employing the highest standard of workmanship and in compliance with applicable standards.

All sites shall be left in a neat, presentable condition throughout the installation phase of the project. All rubbish, temporary structures, and equipment generated or used by the contractor shall be removed after completion of the work, and prior to acceptance.
Racks shall be designed and installed to provide easy access to equipment controls and connection points. Racks shall meet the requirements of EIA-310-D.

All equipment racks shall be securely mounted to the floor. If necessary, racks shall be bolted together or braced from the ceiling to prevent swaying or being dislodged. Racks shall be isolated from floors and ceilings using suitable insulators, insulating plates, washers and sleeves.

Equipment racks shall be placed to allow a minimum of 30 inches access front and back, unless all connection and maintenance points are in the front. Under no conditions shall an equipment rack need to be moved for maintenance after installation.

10.3.1 Antenna and Transmission Line

The Contractor is responsible for providing and delivering the antennas, hardware, and transmission lines to the sites. Antennas shall be installed in the positions that orient the antenna in the azimuth benefiting coverage.

All antennas to be provided shall be PIM rated.

The Contractor shall determine the correct transmission line lengths for each site and provide cable entry ports with appropriate boots and cushions. All cables must be secured with stainless steel clamps and hardware and put in troughs; the Contractor shall provide these as part of this procurement.
All exposed antenna hardware; such as, mounting brackets, must be fabricated from stainless steel. Antenna mounts shall be galvanized steel.

Each transmit or receive transmission line shall be protected by the appropriate coaxial surge/lightning protectors between the transmitter combiner output and the antenna. Lightning arrestors shall be grounded to the bulkhead panel or master ground bar.

For all transmission lines, line sweeps, Return Loss, VSWR, Cable Loss shall be measured for each transmission line and waveguide run and recorded. The recorded output shall calibrated showing VSWR, isolation and attenuation versus frequency. These shall be submitted to LA911 for approval at final system acceptance.

Care must be exercised in the installation of all connectors. In addition, any connectors/connections used outdoors must be protected from corrosion and be fully weatherproof. Weatherproofing should consist of a layer of Butyl rubber tape covered with vinyl tape, or shrink-wrap tubing.

10.3.2 Simulcast Alignment

Parameters for simulcast alignment shall be determined by the contractor in order to meet coverage requirements.

Simulcast system alignment procedures shall be straightforward and logical. After the system is initially aligned and accepted, there shall be procedures and alignment test facilities in place to allow routine verification of system alignment and equalization. There shall further be procedures and alignment equipment and facilities in place to allow realignment and re equalization of the system under extraordinary situations such as replacement or repair of system components.

Routine verification of system alignment shall be possible using a single maintenance technician, preferably at a single location. Vendors shall describe equipment capabilities in their response.

A simulcast system shall be designed so that, once aligned, it shall remain aligned and shall not need routine realignment.

10.4 GPS Receivers

GPS antennas shall be installed outside the shelter in an elevated an unobstructed location.
The proposed GPS receivers used in the simulcast system shall have the antenna line equipped with a gas tube surge arrestor Polyphaser IS-MR50LNZ+6 or +15, or equivalent.

10.5 Transmission Line Grounding and Lightning Protection

Where shelters use a single point ground system, RF and ancillary equipment supplied shall be grounded to the single point ground system. All grounding interconnections shall be made by using #2 AWG solid copper wires.

The ground points shall be made by using copper ground straps from the same manufacturer as that supplying the transmission line and in accordance with the manufacturer's installation practices. No grounding to tower cross braces is allowed only direct conductor to ground. Braided ground straps are not acceptable.

Cuts made in the outer jacket of the transmission line to install the ground straps shall be thoroughly sealed with a water-resistant tape (no vinyl tape) or compound. Ground connections to galvanized tower legs shall be made with transition clamps thereby reducing the oxidation effect of dissimilar metals.

Each transmit or receive transmission line shall be protected by coaxial surge/lightning protectors, Polyphaser, or equivalent, between the transmitter combiner output and the antenna. Lightning arrestors shall be grounded to the bulkhead panel.

Each coaxial transmission line shall be grounded at a point above the bend required to exit the tower mounted cable ladder to the ice bridge leading to the radio equipment shelter or room. These grounds shall be installed in accordance with the manufacturer's specifications, and shall be sealed against entry of moisture at any location where the outer sheath of the transmission line has been cut or removed.

10.6 Installation Documentation

Documentation shall consist of equipment test data, software documentation (which describes system and equipment software and provisioning), "as-built" drawings and diagrams. Detailed equipment maintenance, setup and alignment manuals shall also be provided.

The Contractor shall provide to LA911 complete system operating instruction manuals and maintenance manuals for each type of equipment supplied.

At a minimum, this documentation shall include:

- **Equipment** - manuals published by the equipment manufacturers.
- **System diagrams** - showing "as-built" configuration (to date) for all parts of the RF systems. The Contractor shall develop detailed schematic drawings showing the various equipment components in the system, the interconnections, and the identifying circuit numbers, IP addresses, etc.
- **Cabling, conduit and terminal plans.** All interconnecting cables shall have permanent identification markings to indicate cable function, origination and destination. Cable identification (tag, label, etc.) shall be accomplished in a manner that will allow visual cable identification after complete installation. The cable identification shall be uniform and consistent throughout the system. It is essential that this information be stored in a computer database for future reference and update, if required.
- **Maintenance drawings** - Each item that is capable of replacement for maintenance purposes shall be shown in an appropriate drawing that clearly indicates its position and relationship to the communications system. Exact names, part, and identification numbers shall be shown with instructions and information for future procurement.
- **Equipment List** - Upon completion of installation and a condition for acceptance, the Contractor shall provide LA911 an updated "as-built" equipment list by site showing: location, quantity, model number, description, and serial number.

Wherever possible, the above documentation shall also be provided on Flash/Thumb Drives.

11 ACCEPTANCE TESTING AND PROOF OF PERFORMANCE

The Acceptance Testing Procedure (ATP) for all systems shall consist of a series of tests, inspections, and analyses and demonstrations that are defined in this section. The ATP shall cover all field-testing procedures and which inspections shall be made in order to show Supplier compliance to the RFP (System) Specifications and the approved Design Specifications.

LA911 representative and the Supplier's representative shall conduct these tests and inspections as defined. The results of the tests and the associated punch list of outstanding items to be completed or re-tested shall be signed by both parties and forwarded to LA911 for review and acceptance. The outstanding items shall be resolved within 7 working days and these items shall be re-tested. If the outstanding items have an effect on other previously performed tests then re-testing of those tests shall also be included. Final acceptance of each individual system shall include, but not be limited to, the list of tests and inspections contained in the following sections.

The remote site equipment of the system shall be assembled as complete sites for direct shipment to the site locations in the field. All cabling, wiring, programming and equipment configurations shall be completely integrated in their final configuration prior to shipment. Upon arrival to their final destination, the hookup of racks, external power, grounding and antennas to the site equipment shall complete the physical integration of the sites and allow them to be "on-air" ready. No additional work shall be needed to ready the site for operation. It is understood that additional optimization (level setting, power adjustment, etc.) may be required to meet the technical requirements of this specification.

11.1 Factory Staging

Supplier shall describe in detail the manner in which the entire system shall be factory staged. The LA911 Project Manager and five [5] additional representatives shall visit the Supplier's staging facility for the purpose of examining the system and participating the functional factory test. The Supplier shall include all travel costs (airfare from Portland, ME, hotel and car rental) for five [5] personnel in the cost proposal.

The equipment shall be configured and installed in a manner conducive of testing hardware and software prior to being released to the field for installation and optimization. The staging of the equipment shall include, as a minimum, the marked and precut cabling, configured software, completed configuration tables, operational network supporting all of the sub-systems mentioned in the RFP specifications, all interfaces operational and demonstrate a working system.

The Supplier shall provide staging of the offered equipment at or near the radio system Supplier's primary land mobile engineering/manufacturing facility. This shall include all new components, sub-systems, and ancillary equipment required to complete the entire system, including, routers and switches, channel banks, frequency standards/GPS receivers, voting equipment, base stations, transmitter combiners, receiver multicouplers, controllers, redundancy equipment, dispatch consoles, system management equipment, alarm systems, etc. A pair of each type (or tier) of subscriber radios purchased shall be utilized for staging.

At staging, all equipment shall be set up in its configuration, as it shall appear in the designated installation site. The system shall be tested in the staging area in such a manner as to minimize the actual installation time in the field. An example of the system as-built documentation shall be available at the time of system demonstration.

Simulation of any existing LA911 equipment required to demonstrate the system in staging shall be provided wherever possible.

As part of the Supplier's proposal, a sample-staging document defining the staging test shall be provided for LA911's review. This document shall be considered for use in the development of the final factory acceptance test document which shall cover sub-system interfaces, Supplier's responsibilities, LA911 responsibilities, staging requirements and testing, test procedures and documentation required for field release. The staging documentation shall be made available to LA911's project manager 30 working days prior to the date of the staging test.

11.2 Equipment Cabling

The Supplier shall determine cable lengths between all interconnected equipment. All cabling shall be plenum rated, where required by code.

Circuit identification shall be provided on the modular panels and the cabling.

The use of any conventional type punch blocks is acceptable. All cabling shall be terminated with appropriate connectors for ease of field installation and shall be terminated to the nearest 1-foot length. All cabling used for system interconnects shall be tested during factory staging of the system prior to shipment to the field.

All cables shall be clearly labeled with pre-printed (not hand-written) adhesive labels with "To-From" information to clarify interconnection for field installation and maintenance. Cable label information shall directly correlate to system

documentation/drawings that define or depict the interconnecting cables (i.e. cable label text shall match drawing text). A spare set of cable labels shall be provided with the site documentation package.

A description and detailed wiring diagram of each modular panel utilized shall be provided.
Offerors shall describe in detail the manner in which the entire system shall be factory staged. LA911's Project Manager shall visit the Supplier's staging facility for the purpose of examining the system and viewing a functional test. The Supplier shall develop a functional test plan and schedule this visit at the appropriate time prior to field delivery. LA911's project manager, prior to the actual test, shall approve the functional test plan. System drawings, cabling diagrams, and interconnect diagrams shall be part of the test and be available for viewing.

11.3 Hardware Testing

Each hardware component shall be inspected and tested per the ATP. A test procedure and checklist shall be used to perform these tests based upon the ATP.

11.4 Software Testing

Each software feature shall be tested per the ATP. A test procedure and checklist shall be used to perform these tests based upon the ATP.

11.5 Factory Acceptance and Shipping

At the time that all equipment and subsystems are functioning as they will at final acceptance, LA911 shall inspect the equipment as it is staged, cabled, tested and burned in. These tests shall be monitored by the Network Management System (NMS) for the purpose of testing the NMS equipment. A matrix of all the tests to be performed and descriptions of each test shall be provided 30 working days prior to the demonstration date for LA911's approval.

At the successful completion of the staging demonstration, an LA911 representative may approve the shipment of the equipment to LA911's sites for installation. If the demonstration or staging fails to meet LA911's expectations, another date shall be set to repeat the event at the Supplier's expense. No system equipment, sub-system, or components shall ship from the staging facility without LA911's approval. Shipment can also be delayed if the project schedule has changed and LA911 requests a shipping delay.

Prior to shipment from the staging facility, all software/firmware version numbers, jumper configurations, and equipment programming shall be recorded by the Supplier and recorded in the as-built documentation for verification in the field. Changes to any of the mentioned items after the demonstration and prior to Final System Acceptance in the field are not acceptable. The use of hand-written labeling on equipment firmware is not acceptable.

11.6 Field Acceptance Testing

The Acceptance Testing for all systems shall consist of a series of tests, inspections, and verifications that are defined in this section. The ATP shall cover all field testing procedures and which inspections shall be made in order to show Supplier compliance to the RFP specifications as well as define each and every required sub-system interface. LA911's representative and the Supplier's representative shall conduct these tests and inspections as defined.

The tests and inspections listed in the following paragraphs shall be performed. Final Acceptance of each individual system shall include, but not be limited to, the following list of tests and inspections. The results of the tests and the associated punch list of outstanding items to be completed or re-tested shall be signed by both parties and forwarded to LA911 for review and acceptance. The outstanding items shall be resolved within 7 working days and these items shall be re-tested. If the outstanding items have an effect on other previously performed tests then re-testing of those tests shall also be included.

11.7 DC Power Systems and Batteries

The Supplier shall complete a test of all provided features and functionality in the proposed DC power system. All alarms shall be tested by simulation of the alarm initiating device or component. The Supplier shall provide a complete commissioning and certification test plan for DC power systems as part of its proposal.

The Supplier shall complete a full load test for each DC power system to verify runtime performance guarantees.

Where applicable, load testing of the DC Power System shall be tested concurrently with the load testing of any UPS and generator power system to ensure complete compatibility between the three power sources. Testing shall demonstrate that there is no loss of LMR System features or functionality experienced during normal power switching operations or switching operations associated with any failure modes.

11.8 NMS Acceptance Testing

The NMS Acceptance Test Plan (ATP) shall cover all field testing procedures and which inspections shall be made in order to show Supplier compliance to the RFP specifications as well as define each and every required system interfaces.

The ATP shall define all field testing after installation and optimization. This ATP shall be a comprehensive plan defining all aspects of the NMS. The Supplier shall supply an ATP test plan for review by LA911's project manager within 60 days of contract award. The ATP shall be a mutually agreed upon document.

11.9 Network Testing

Upon installation of Supplier equipment to the IP links to the remote sites, the Supplier shall perform network testing to ensure it can support the proposed network operating parameters.

11.10 Ground Resistance Testing

A component of the system acceptance test plan to be completed by the Contractor will be the testing of all existing grounding systems and any grounding systems installed, or utilized, for equipment associated with this procurement. This includes grounding at all base stations, dispatch centers, control stations and microwave terminal/repeater sites associated with this RFP.

All grounding systems shall be tested using an AEMC, or equivalent, clamp-on ground resistance tester or Biddle 500V Null Megger or equal (3-terminal fall-of-potential method). The resistance to ground shall measure 5 ohms or less.

Ground tests shall be conducted in the presence of an LA911 installation representative and results shall be recorded on a form approved by LA911 Project Manager. These forms shall be included as a part of the acceptance test documentation and are a component of final acceptance of the radio communications system.

11.11 System Cutover

The Vendor is to describe in their RFQ response a cutover plan. This plan shall include a chronological chart with the tasks to be accomplished and the time for achievement of each task shown. A smooth operational transition from the existing systems to the replacement system is the goal. Key elements will be how active dispatching and fire alerting will be supported throughout implementation.

The detailed cutover plan shall include a narrative description of the sequential cutover steps and a clear delineation of which tasks is the responsibility of the Vendor and which tasks is the responsibility of LA911. Please describe any additional or temporary equipment that may be required to accomplish the transition.

12 RF COVERAGE ACCEPTANCE TEST PLAN

The purpose of this RF Coverage Acceptance Test Plan [CATP] is to verify, through in-place testing, that the delivered radio system meets the performance specifications required under this RFP. This section establishes the requirements with a generic, Supplier-independent methodology. Each Supplier shall submit the appropriate and source-peculiar details in its offering to permit both evaluation of compliance with this section and to also provide a definitive basis for a contractual specification.

Successful passing of the coverage portion of the ATP shall consist of a talkout/talkback [TO/TB] audio quality evaluation in addition to a minimum signal strength measurement. Both tests shall pass for each test location to be considered a PASS.

This CATP shall not only verify compliance with the RF coverage requirements but shall also concentrate on the identification of locations where coverage does not meet the requirements.

For each test grid:

- A Talk-out/Talk-in audio quality test [95%/DAQ-3.4] for in street coverage
- BER/Signal level measurement

12.1 Test Teams

The test teams shall consist of a Police, or Fire/EMS representative, and Supplier personnel. There shall be one test team located at the central dispatch location [or other appropriate location] and multiple test teams in the field. LA911 shall provide vehicles and drivers for testing. The driver shall only be responsible for the proper and safe operation of the vehicle and shall not participate in the audio quality testing. All navigation directions shall be the responsibility of the Supplier's representative and is expected to be provided via the automatic computerized signal measurement system.

Each member shall classify the message as a "pass" or "fail". Then the test team shall reach a consensus as to whether the test point is a "pass" or a "fail" in the event the message classification is not unanimous. When the talk-out test is conducted, the dispatch operator shall transmit the following message: "Dispatcher to Portable Team; grid number X; then transmit random test language; grid number X; how do you copy grid number X?"

When the talk-back test is conducted, the portable operator shall transmit the following message: "Portable Team to Dispatcher; grid number X; then repeat the random test language; grid number X; how do you copy grid number X"? Each team member shall then classify the message as "pass" or "fail". The speakers shall speak the test messages as clearly as possible and occasionally incorporate voice inflections characteristic of typical police and fire emergency transmissions.

The test language to be used shall be mutually agreed upon between LA911 and the Supplier prior to testing. LA911 shall provide a list of potential test messages representing commonly used dispatch language, void of acronyms, and not to exceed 10-seconds in length, for evaluation. From the potential list of messages, one hundred shall be selected as the pseudo random messages to be used for testing purposes. The phrase to be used during each test shall be determined by the speaker. The final list shall be determined prior to testing.

12.2 Coverage Test Equipment

The basis for this RF coverage design is a portable in-street design. Therefore, the Supplier shall execute the RF Coverage Test utilizing the portable radio operating configuration specified in this specification.

The Supplier shall be required to provide all test equipment associated with the coverage test including all portable, mobile and GPS equipment. The radio equipment shall be from the new LA911 inventory.

Prior to testing and at the end of each day of coverage testing, each portable radio will be bench tested to ensure that its effective radiated power and receiver sensitivity are actually degraded by the specified amount. This test process should not take more than 10 minutes per radio if organized properly. Once the radio's performance has been verified, the modified radios will be assigned to the Test Team to help determine whether the losses in a particular facility exceed the loss thresholds.

12.3 Determination Of Number And Size Of Test Tiles

The Supplier shall ascertain the statistically correct number and size of test tiles. Consistent with this section, LA911 clearly requires square or rectangular grids or tiles to be defined. Under no circumstances shall the tile be no more than ¼ mile x ¼ mile dimension.

The product of these computations shall be a test tile definition as to number and size for the Coverage Area. In all cases, consistent with TSB88 Paragraph 7.4.1, a confidence level not less than ninety-nine Percent (99%) shall be utilized.

Note that based on the transmitter sites provided, the Lewiston-Auburn borders may not meet the 95% reliability specification. Coverage locations where coverage does not meet the design coverage criteria should be clearly marked. The contractor shall guarantee coverage within their coverage "painted" area only, and also provide the percentage of coverage within the two city borders.

The coverage test shall also include all of the non-painted grids. These will not be used to calculate percent coverage but recorded for informational purposes only.

12.4 Critical Building Tests

Although not responsible for providing coverage inside of buildings, the contractor shall conduct coverage testing inside all of the critical buildings identified in Appendix-B.

The test shall consist of a DAQ voice test on the ground floor [at the four [4] corners and the center], to be repeated on each floor. Other test locations may be required by the Fire Department such as electrical and control panels. The contractor shall record the results of each test to be entered in the in-building coverage test form to be provided by LA911.

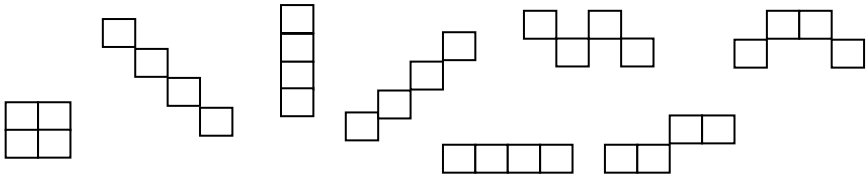
The contractor shall also record approximate signal levels at each test location, such as RSSI readings. LA911 is open to alternative methods that are relatively simple to implement.

Following this exercise the contractor shall make recommendations on improving coverage inside buildings.

12.5 Adjacent Grid Failures

If within the defined coverage area the situation occurs that there are four [4] adjacent grids in any direction that fail the coverage test, the Supplier shall offer viable solutions to meet the adjacent grid coverage requirement at no cost to LA911.

Adjacent Grid Failure Configurations



12.6 RF Signal Level Measurement Test

The signal measurements test portion of the CATP is required in order to verify that the Minimum Received Signal Level [MRSL] is present in the specified number of test tiles, thereby proving that the coverage prediction model is accurate. This test verifies the Service Area Reliability of 95%.

The test shall utilize a GIS-based, computer automated signal measurement system that will average the carrier signal over a 40-wavelength sample, one sample per test tile.

12.7 RF System Balance

Under most circumstances, an 800 MHz system that is properly designed with high-gain tower-top amplifier systems and effective receiver voting shall be talk-out limited in performance, that is, a portable that can "hear" the system shall likely be successful in accessing the system.

With this in mind, a talk-in RF signal measurements test would not be cost-effective. In order to eliminate this portion of the test, the Supplier shall provide a TO/TB signal analysis with their proposal that shall prove that all radio sites are indeed balanced. The tower-top amplifier analysis shall include a Noise Figure Calculation and Multicoupler Inter-Modulation Rejection Performance Calculation. This analysis is critical to show system design balance is feasible without sacrificing receiver sensitivity or exposing the receiver to intermodulation interference.

The Supplier shall provide a signal flow diagram that outlines the signal flow from base station transmitter to portable receiver port and portable transmitter to base station receiver port. All gains and losses along the path shall be shown. If the Supplier utilizes other signal processing that results in overall improvement in audio or signal quality, these enhancements shall also be characterized and included in the calculations.

12.8 Talk-Out and Talk-Back Audio Quality Test

Intelligibility tests shall be conducted in order to verify inbound and outbound audio quality. In the audio quality test portion of the RF Coverage Test, a particular test tile shall deliver the audio quality specified below, for the same test location in the tile under test, for both talk-in and talk-out. The specified audio quality shall meet the following criteria:

"The delivered audio quality for digital and analog units shall meet the DAQ 3.4 as per TIA Standard TSB88-A, which is defined as "Speech understandable with repetition only rarely required. Some Noise/Distortion".

"Rarely" is defined as not greater than 5% re-test. This means that a maximum of 5% of all the grids to be tested shall be allowed a repeated transmission within three feet of the original test location and shall be identified as a "pass-retry". If the message meets or exceeds this criterion, as agreed by a majority of the test team, it shall be considered "passed". If the message does not meet this criterion, as agreed by the majority of the test team, it shall be considered "failed". The Supplier may then move no more than three feet in any one direction and repeat the audio inbound or outbound test once. If this re-test meets or exceeds the original criterion, the tile shall be considered a pass and is recorded as a "retry-pass". The test team may then proceed to the next test point.

12.9 Inaccessible Test Grids

The Test Teams shall attempt to enter all grids for testing. Grids that are considered inaccessible shall be discarded from the calculations for RF coverage acceptance.

12.10 CATP Submittal

Offerors shall prepare and submit a detailed outline of the CATP with its proposal. This outline shall conform to the specifications set forth herein and shall be in sufficient detail that it may become a definitive section of the resulting contractual agreement. Subsequently, the selected Supplier shall submit for LA911's review and approval, a final CATP not less than thirty [30] days after acceptance of contract.

12.11 Schedule

Testing shall be scheduled by mutual agreement as soon as practical following commissioning of the fixed infrastructure.

Testing shall be scheduled while the trees in the coverage area are in full foliage. If coverage testing falls outside of the June 1st to October 1st timeframe, then testing will be delayed until foliage is present.

12.12 Coverage Testing as a Part of Final Acceptance Testing

RF Coverage Testing is a subset of total System acceptance testing. Once the Supplier has completed testing in accordance with the approved CATP and the CATP results are accepted by LA911, the Supplier shall have satisfied all RF System Coverage Testing required under Final Acceptance Testing so long as the requirements set forth in this section continue to be met.

12.13 Remedies For Coverage Failure

Remedies for coverage failure shall address the entire problem area and not be limited to correcting a portion of the failed area. Remedies shall not degrade areas of coverage that were previously accepted. A retest of coverage shall be conducted in those areas (previously failed or not) potentially affected by the remedy in order to verify that the composite coverage is maintained. All remedies shall meet the performance, feature-functionality and reliability requirements of the Specification. These remedies may include the following:

1. Modification of antenna or transmitter configurations, as long as those modifications comply with regulatory and zoning restrictions placed on LA911, at no additional cost to LA911.
2. Addition of complete remote simulcast sites or multi-cast sites, at no additional cost to LA911.
3. Passive repeater systems installed in the building
4. Satellite receiver systems

12.14 30-Day Performance Test

Upon completion of the RF Coverage Test, a Performance Test shall be executed that shall consist of 30 consecutive days of uninterrupted operation. Subscribers shall be equipped with the most current software and firmware for this test. During this test period, the Supplier shall keep detailed records of any failures or adjustments of the System or subscriber units. The test shall be considered a failure if any of the following events occurs; the test may be repeated at the discretion of LA911.

The System experiences a catastrophic failure that results in:

1. Failure of any APCO 16 features, functions or capabilities
2. Failure of system control equipment
3. Failure of site control equipment
4. Failure of 25% of the channel assets anywhere in the system
5. Failure of all console positions
6. The same device fails twice during the performance test
7. Failure to meet 99.995% availability

During Final Acceptance Testing and during Operational System Testing, the contractor will be required to validate System Availability.

The radio system will be monitored for proper operation. All periods of System Non-Availability will be carefully documented and the failure mechanisms identified and reported to LA911's technical staff. During the Operational System Test period, the aggregate non-availability shall not exceed 0.99995.

Hence, assuming that a 30-day Operational System Test is planned, the minimum allowable system un-availability for this test period is calculated:

- System availability factor is 0.99995

- 30-days equals 43,200 minutes [30 x 24 x 60], which is the total available minutes for this period
- Required system availability for 30-days is therefore 43,198 minutes [0.99995 x 43,200]
- Therefore, system non-availability is [43,200 minutes - 43,198 minutes] = 2.0 minutes

Consequently, system non-availability during the 30-day operational test period will be limited to the actual system malfunctions for up to 2.0 minutes.

System non-availability exceeding the stated recommendations will require either a complete restart of the designated test, or resumption of testing with a proportionate number of remaining non-available minutes. Furthermore, the LA911's decision will be based, in part, upon the source and severity of non-availability as well as the operational impact that may be suffered by users.

A non-critical failure, as defined in the warranty section of this RFP, is not restored according to the contracted response time.

12.15 System Acceptance Sequence

System acceptance shall take place in the following sequence:

1. Notification by the supplier that the system installation is complete
2. Completion of inspections by the LA911 project manager
3. Notification by the supplier that final punch list is resolved and acceptance testing can commence
4. Hardwar acceptance plan
5. Software acceptance plan
6. Interconnect testing
7. Coverage acceptance testing
8. 30-day performance test
9. Supplier provides draft system acceptance report
10. Acceptance test results approved by LA911
11. All deliverables received by LA911
12. Final acceptance executed
13. Final payment

13 WARRANTY, MAINTENANCE AND TRAINING

The Supplier shall provide manufacturer warranty and extended maintenance support during the life of the contract including all option periods exercised by LA911.

Proposers should fully disclose the end-of-life status of each piece of equipment in their Proposal. End-of-production dates should be provided, minimally, for base stations, microwave radios, network controllers, power supplies, dispatch consoles, audio switches, simulcast optimization subsystems, etc. It is the intent, to the maximum extent possible, for LA911 to avoid the purchase of any network equipment that is nearing the end of its production cycle.

13.1 General

The Supplier shall warrant for a period of three [3] years from the date of Final System Acceptance all defects or damages due to faulty materials or workmanship.

In addition, pricing for years four [4] through ten [10] for maintenance shall be submitted in the proposal.

The additional year's contract maintenance period shall begin on the date that the warranty period maintenance expires or the date that LA911 exercises the option for that year of maintenance services.

Batteries, including UPS batteries, shall have warranties greater than one-year as specified in the DC Power section of the RFP.

The Supplier shall warrant that all goods and services supplied, systems, equipment, designs and work shall be satisfactory for its intended purpose, shall conform to and perform as called for in the Contract and shall be free from all defects and faulty materials and workmanship.

Defects related to faulty workmanship, including all damages to surrounding work caused by such defects, shall be without delay, repaired to LA911's satisfaction at the Supplier's expense.

During subsequent maintenance periods the Supplier may use LA911's inventory of spare equipment or parts or a Supplier maintained depot.

Any services supplied, systems, equipment, designs, or work found to be defective within the time specified elsewhere in this section shall be repaired, remedied, or replaced, by the Supplier, free of all charges including, without limitation, transportation.

The spare warranty period shall extend either until two [2] years from the placement of each spare part into regular service or until three [3] years after system final acceptance, whichever occurs first. In the event that it is necessary to place any spare part into operation or service during the warranty period, the Supplier shall replace the spare part at no cost to LA911.

The Supplier shall provide a copy of the formal signed equipment and software warranties as part of the Maintenance and Procedures Plan Manual upon final acceptance of the system.

Failed equipment may be brought to the selected Supplier's service facilities for repair and return to LA911's spare parts inventory.

In cases where the manufacturer, Supplier, or LA911 discovers a defective product or component, the Supplier shall have sole responsibility for new replacements at no cost to LA911.

The Supplier shall be responsible for the repair of all Network [WAN] components provided by the Supplier used to connect to LA911's Network where applicable, and including, without limitation, communication and coordination of repairs that must be accomplished by LA911 or telecommunications provider.

13.2 Maintenance Service Levels and Response Times

Throughout the warranty and extended maintenance period, the Supplier shall provide the initial response to all trouble calls in order to maintain high system availability.

Normal, non-critical warranty maintenance shall be performed during normal business hours of 7:00 am-5:00 pm M-F. Some equipment and subsystems deemed critical by LA911 shall be protected by warranty and extended maintenance that provides guaranteed response and restoration times on a 365-day by 24-hour basis. The following lists identify response and maintenance performance level required for the various subsystems:

24-hour by 7-day – 30-minute phone response, 2-Hour On-Site Response, 2-Hour repair:

1. Voice Radio System Infrastructure
2. NMS System Infrastructure
3. IP/Ethernet Network
4. Dispatch Console/Logging Recorder Infrastructure
5. Tower/Shelter Subsystems

10-hour by 5-day – 4-Hour On-Site Response, 8-Hour repair:

1. Subscriber Units (Mobile, Portable, Control Stations)
2. In-Building Systems (if utilized)
3. Vehicular Repeaters (if utilized)
4. Alternative Support Systems and Specialized Equipment.

Repair time shall be measured from the time the Supplier's representative receives notification that a failure exists until the time corrective work is complete in a manner satisfactory to LA911 and the equipment is returned to normal service.

The Supplier shall provide yearly Preventative Maintenance services, which include operational tests and alignments on the system and sub-systems as required by manufacturer.

13.3 Failure to Meet Response Times

The contractor shall have qualified technicians available to meet the required response times. To help meet this requirement, the service provider's radio repair facility shall be within 60 miles of LA911.

LA911 will assess penalties for not meeting the agreed to response times as follows:

Warranty - Year-1:	LA911 will assess $1,000 for each failure to respond within the required timeframe.
Year-2 - 5:	LA911 will assess $500 for each failure to respond within the required timeframe.
> Year-6:	Penalty subject to future negotiations.

LA911 will negotiate with the selected vendor the ground rules and measurements metrics with regard to problem reporting, problem severity, and responsibilities.

Moreover, during the Warranty period, the contractor shall maintain system availability of 99.995% [on a per month basis] as described in Section-12.14.

LA911 shall assess up to $1,000 for each 5-minute increment the system is unavailable beyond the service target. Exclusions to be discussed during contract negotiations.

IMPORTANT: Should any specific equipment item [such as a specific portable radio, repeater station, station circuit board, power amplifier, etc.] fail three times during the warranty period, Contractor will replace that equipment item and warranty the replacement for one additional year from the time of replacement.

13.4 Hardware Maintenance Services

The Supplier shall be responsible for maintenance and support of all hardware from the time of installation through expiration of the warranty period and any subsequent optional extended maintenance periods exercised by LA911.

Maintenance services shall be performed in accordance with the Maintenance Plan and Procedures Manual and include all preventive maintenance services as specified.

These requirements apply during both warranty and purchased support periods.

LA911 shall have the option of purchasing directly from the appropriate Original Equipment Manufacturer [OEM] of computers and associated peripheral equipment on-call maintenance services in accordance with the various levels of service offered by such OEM.

No later than 30 days prior to the expiration of the warranty, and any subsequent maintenance period exercised by LA911 under this contract, the Supplier shall have the equipment certified as being acceptable by the OEMs maintenance services, and shall request the OEM to provide written quotation to LA911 for the provision of such services.

The Supplier shall work with LA911 and its authorized contractors to resolve problems on the communications backbone network that may affect the overall operation of the new communications system.

13.5 Software Maintenance Services

The Supplier shall be responsible for all aspects of system software maintenance and system/database administration during the warranty and extended maintenance periods agreed to in the contract.

This work shall include, without limitation, monitoring and tuning of all operating systems, network software, databases, and support of all other Supplier provided system software components.

The Supplier shall also be responsible for installation of third party software patches and revisions at no additional charge to LA911.

The Supplier shall provide software/firmware updates prior to final acceptance, during the warranty period and any exercised maintenance period.

A software-licensing fee should be included to ensure the latest software release is current at Final System Acceptance.

The Supplier shall notify LA911 when any software updates are released following system acceptance for any licensed software associated with the system. Updates should be one per year with annual software refresh included.

Bug fixes are not considered a software refresh.

The refresh under the contract must be full implementation including installation, engineering, and project management.

Software updates shall include enhancements or corrections to existing features for all supplied system components, new features implemented in existing system components, software for product migrations, where a new generation of software is developed for a designated system component, rather than an update of the older generation of software.

Software refresh must be a coordinated "system-centric" event, mitigating the risk of disparate software versions causing problems.

LA911 shall be informed of updates for all software changes provided upon its release, including documentation and solution of software problems, improvements, updates, and new releases that could be made to the system provided to LA911.

This service shall commence at the time of Final Acceptance, and shall continue through the maintenance period or five years, whichever is longer.

The Supplier shall grant to or obtain in the name of LA911 a perpetual, non-revocable, non-transferable, and non-exclusive license to use the Software and documentation related thereto for LA911 communications system provided.

Any copies of the Software and documentation that LA911 acquires pursuant to the Contract shall bear all copyright, trademark, and other proprietary notices, except as provided by law or authorized in the Contract.

The Supplier shall provide copies of software licenses, operating instructions, programming instructions, technical documentation and maintenance procedures to allow making maintenance and provisioning changes to all equipment included in the System.

13.6 Software Upgrade Agreement

Upon the initial 3-year free warranty period, the contractor shall provide access to all minor, major and security software update releases, to include any or all hardware components that need to be refreshed.

To maximize system life and performance, the Proposer shall describe in their proposal their post warranty plan for years 4 through 10.

13.7 DC Power Systems and Batteries

The Supplier is completely responsible for regular and preventative maintenance on all battery systems through the System Warranty period.

Preventative maintenance testing shall include, at a minimum, the following tests/measurements/inspections: (1) Measurement of a significant deviation (>25%) in the impedance, conductance or DC resistance of the cell as compared to the levels that were recorded at the time of commissioning. (2) A partial discharge test with the battery connected to the load in which the voltages of each cell in the string are recorded in a test that involves lowering the rectifier float voltage below the open circuit voltage and discharging the battery with the connected load current. (3) Periodic measurement and monitoring of cell temperature. (4) Measurement of cell voltage compared to midpoint voltage. (5) Complete inspection of all inter-battery buss connections.

13.8 Subscriber Equipment

The contractor shall have Depot Service for LA911 staff to send failed subscriber units in for repair. Contractor's Depot Service shall be centralized 24-hour service facility that maintains parts for all subscriber and return repaired units.

The Proposer shall describe depot level support procedure and response times.

LA911 requires that subscribers be warrantied for five [5] years, with pricing for subsequent years six [6] through [10].

A spares cache provided by the Contractor, which will be held and administered by LA911 who will manage subscriber maintenance.

When a subscriber fails, LA911 will replace it from its spares and manage both unit and system ID issues.

Failed units gathered by LA911 will then be sent to depot repair

13.9 Remote Diagnostics

It is recommended that the Supplier have the capability to remotely monitor, diagnose, repair, and restore access the new system.

The remote maintenance access must run in the background and cannot impact system operations.

Suppliers shall describe their remote maintenance access system and capabilities in their proposal.

13.10 Spare Parts Inventory

The Supplier shall determine the number of spares for each component and complete assemblies required to sustain day-to-day operation and maintenance for the warranty and the subsequent optional extended maintenance period.

The Supplier shall submit for approval a complete list of all equipment required for the work within 30 days of approval by LA911 Project Manager.

This list shall include manufacturers' complete catalog identification numbers and model designators, quantities, options, and catalog "cut sheets".

The submission shall be in sufficient detail to enable LA911 to readily identify the equipment.

The list shall include high-level assemblies and their associated component parts.

Examples of equipment assemblies include field replaceable elements of the mobile and portable radios, site controllers, central control system, and dispatcher workstations.

This list shall be submitted to LA911 prior to the start of factory acceptance testing.

The spare parts list shall clearly identify all components including: Supplier name and contact information; part/version number; reliability, refurbishment and replacement requirements; and quantity of spares for each component necessary to ensure sustained operation of LA911's system.

The Supplier shall provide all necessary spare parts, equipment assemblies, software and tools required to fully maintain and operate the system.

The Supplier shall store the system spare parts inventory at a City location or at an alternate location approved by LA911.

Use of the spare parts inventory shall be documented and equipment removed from service, whenever possible, shall be repaired and replaced into the spare parts inventory by the Supplier at no expense to LA911.

Spare mobile and portable radio antennas are required to be included in the spares list.

For subscriber accessories considered disposable, replacements will come from spare parts inventory. Examples include antennas, speaker microphones, etc.

Alternatively, the Supplier may provide replacement equipment from a spare parts depot maintained by the Supplier.

The spare parts inventory, including any test equipment and/or software, shall remain the property of LA911 at all times.

13.11 Reporting and Documentation

During the warranty period, the Supplier shall prepare and submit to LA911 monthly activity reports by the 5th day of the following month on the status of maintenance and repair problems to detect significant patterns and trends.

Reports shall include detailed information on each open and closed cases or work tickets of the previous month activity describing response, corrective action taken and time needed to coordinate, escalate, and the resources needed to resolve the failure or issue.

The report shall also provide system availability factor during the previous reporting cycle, showing 99.995% system availability as required by the contract.

The Supplier shall also provide LA911 with monthly statistical reports [graph and tabular form] of system usage that include number of calls, number of push-to-talks, and busies accumulated over user-defined period.

Examples of calls data reporting include: daily system call statistics [total number of calls and call-seconds]; daily group call statistics [calls made by each talkgroup over 24-hours]; and hourly group call statistic [number and length of all talkgroups calls over 24-hours].

When requested, the Supplier shall provide LA911 other custom reports that may include radio user data, ID emergency alarm data, talkgroup data, and site data.

The Supplier shall alert LA911 regarding problems and changes as they arise, including, procedural changes, key personnel moves, and significant system downtime.

Failures of equipment or software anywhere in LA911 communications system shall be reported and addressed according to the requirements of the Contract.

13.12 Maintenance and Service Manuals

Prior to Final System Acceptance, three [3] complete sets of Maintenance and Service Manuals shall be submitted outlining all systems and equipment provided under this contract, including all software user documentation and licenses.

Each site shall be equipped with appropriate manuals that pertain to the equipment on the site.

Documentation shall consist of equipment test data, software documentation (which describes system and equipment software), "as-built" drawings and diagrams in both electronic (PDF) and paper formats. Detailed equipment maintenance, setup and alignment manuals shall also be provided.

Paper documentation shall be inserted in appropriately labeled three ring binders – no loose papers allowed.

The manuals shall include complete maintenance instructions, wiring diagrams, as-built diagrams, and troubleshooting instructions and a complete collection of manufacturers' product and catalog literature for equipment and systems installed.

Operating characteristics, performance data, ratings, and manufacturers' specifications for each item of equipment or system shall also be provided.

System service instructions for work that the manufacturer recommends to be performed by the users and complete parts lists for each major item of equipment and/or system shall be supplied.

Procedures for the administration of user identifications, passwords, remote access controls and confidentiality of information consistent with LA911 security standards and procedures shall be included.

System diagrams showing "as-built" configuration (to date) for all parts of the RF system and infrastructure. Each major component shall be identified and the interconnecting relationship shall be clearly shown.

Cabling, conduit and terminal plans - Each cable and pair shall be identified as to terminal number, location and assignment. It is essential that this information be provided in Excel format in both electronic (PDF) and paper formats for future reference and update, if required.

Maintenance drawings - Each item that is capable of replacement for maintenance purposes shall be shown in an appropriate drawing that clearly indicates its position and relationship to the communications system. Exact names, part, and identification numbers shall be shown with instructions and information for future procurement.

Equipment List - Upon completion of installation and a condition for acceptance, shall provide the County an updated "as-built" equipment list by site showing: location, quantity, model number, description, and serial number.

Cable and Conduit Terminals – The Supplier shall provide accurate and current records, including necessary drawings, for cable and conduit runs, pair assignments and terminal locations.

All interconnecting cables shall have permanent identification markings to indicate cable function, origination and destination. Cable identification (tag, label, etc.) shall be accomplished in a manner that will allow visual cable identification after complete installation. The cable identification shall be uniform and consistent throughout the system.

System Diagrams - The Supplier shall develop detailed schematic drawings showing the various equipment components in the system, the interconnections, and the identifying circuit numbers.

Wiring Diagrams and Circuit Identification - The Supplier shall develop drawings indicating the specific method of wiring used on each item of equipment, and interconnection wiring between items of equipment clearly indicating the relationship to the rest of the communications system.

The above documentation shall also be provided on CD in PDF format.

13.13 Third-Party Manufacturer Warranties

The Supplier shall ensure that warranty on any Third-Party equipment meets the minimum warranty required elsewhere in this specification document.

For warranties that are provided directly from equipment manufacturers, the Supplier shall formally transfer all such warranties to LA911.

In the event that any Third-Party manufacturer customarily provides a warranty period greater than required elsewhere in this specification document, the warranty shall be for the greater period of time.

For each warranty manufacturer, provide name, address, and telephone number for service for each item of equipment or system with a copy of the formal signed equipment and software warranties.

Original software distribution media, and an itemized list of test equipment required supporting maintenance of the installed radio system.

13.14 Maintenance Plan and Procedures Manual

The Supplier shall prepare and submit a comprehensive Maintenance Plan and Procedures Manual for LA911 approval.

This Manual shall include descriptions of the Supplier's maintenance management system and detailed procedures for all corrective/repair and preventive work.

Once approved, the Manual shall be used by both LA911 and the Supplier to guide the management of all maintenance work.

The Manual shall be a living controlled document, updated as necessary by the Supplier.

Within the Maintenance Plan and Procedures Manual, the Supplier shall describe procedures and activities to be performed as part of the preventive maintenance program, including the frequency of each activity.

The Manual shall include all procedures recommended by the equipment manufacturers.

This includes performing regularly scheduled operational tests and alignments on the system and sub-systems as recommended by the manufacturer; including third party equipment suppliers. Tests and alignments results shall be recorded and included as part of the plan for future reference.

The Maintenance Plan and Procedures Manual shall also include inspection and maintenance of all field equipment, racks, and all electronic equipment including the inspection and replacement of filters; ensure that equipment is clear from material and clutter; cleaning of all mobile and portable radios and accessories when in for repair; and checks that all hardware and software is working properly.

Inspection of the Communication Console equipment such as servers, software, and computer equipment, such as keyboards, monitors, mice, storage drives, etc., shall be discussed in the Manual.

The Plan shall also include inspection of WAN/LAN equipment, such as routers and switches, and perform manufacturer's diagnostic tests, and performing manufacturer's diagnostic tests of the P25 Trunked Radio System.

Physical inspection of the infrastructure equipment to include equipment racks, local alarm indicators, cables, connections, emergency generator, UPS/battery maintenance, and HVAC.

Visual inspection of the compound, including the shelter, tower, antennas, and transmission lines.

The Supplier shall also supply a complete list of possible component failures and their associated priority in the Maintenance Plan and Procedures Manual, subject to approval of and modification by LA911.

The classification of the hardware, software, and/or system/subsystem failure as documented in the Maintenance Plan and Procedures Manual shall govern repair time requirements.

This includes all equipment, hardware or software failure that renders the P25 Trunked Radio System or any subsystem ineffective. If the failure affects multiple devices, this also shall constitute a Hardware/Software Critical Failure. Examples include: malfunctioning LAN, controllers, Control Center or damage to the radios and/or any supporting equipment provided by the Supplier.

It also includes a failure of the WAN that renders the entire system or any subsystem ineffective.

Also, non-critical failure of any individual equipment, hardware or software that does not affect the overall operation of the system. Examples include: malfunctioning radio control heads, microphones and speakers, or any radio accessory, dispatcher keyboards, mice, etc., or any item that could reasonably be replaced by LA911 personnel under telephone direction of qualified maintenance personnel.

13.15 Service Facilities and Maintenance Personnel

The Supplier shall be certified by the system manufacturer as an authorized service provider for the system being proposed.

The Supplier shall maintain one or more properly stocked, equipped, and staffed service facilities to maintain the equipment supplied under this contract.

The Supplier shall provide experienced personnel to execute the required maintenance tasks during the warranty and any subsequent exercised service period options.

All maintenance personnel who perform maintenance on the system shall have completed all required manufacturer-approved training for that equipment and evidence thereof shall be provided to LA911.

The Supplier shall provide a brief bio of key maintenance personnel in their proposal.

13.16 Test and Repair Equipment

During the warranty period and any subsequent maintenance options, the maintenance Supplier shall have the necessary common and specialized test and repair equipment for the components and all ancillary hardware provided in this contract. All Supplier test equipment shall be certified to be within the current calibration period.

The same level and types of test and repair equipment required by the Supplier [and third party Suppliers] for its own service organizations shall be identified and priced as an option for LA911.

The equipment list shall be comprehensive, identifying all test and repair equipment required to provision, maintain, test, repair, and troubleshoot the system and its sub-systems.

This includes standard and specialized test equipment and/or software needed to maintain trunked radio servers and control equipment, RF sub-system, microwave radio and multiplexers, IP network, and subscriber equipment.

The test equipment shall be presented in matrix format that shall include pricing and a description of the test equipment's role in maintaining the system.

13.17 System and Equipment Support

The Supplier shall obtain from the manufacturer a warrant that replacement or compatible parts for all system components, including proprietary products but not subscriber equipment, shall be available for purchase at least fifteen [15] years after the final acceptance date.

13.18 Training

The Supplier shall develop a User Operational and Technician Maintenance Training Plan to train LA911 personnel to become knowledgeable in the proper operation, administration, use, maintenance, and upgrading of the system.

The detailed Training Plan for all training shall be submitted by the Supplier and approved by LA911 Project Manager at least 60 days prior to the communications system installation.

The Supplier's Training Plan shall fully describe all proposed and available training courses. This shall include, at a minimum, classroom style instruction, operational style classes, a detailed training plan, description of available training material, resume of potential course instructors and a customer reference list of trained personnel.

Training aids such as videos, system diagrams, training manuals showing working functionality and a qualified instructor shall be available for these classes.

An experienced, highly skilled instructor that is certified to provide training on the specific equipment they are training on shall conduct all training classes. This includes software and overall operation of LA911 installed configuration.

All instructors must have exceptional verbal and written communicative skills, as well as technical skills, and is subject to initial approval and continual review by LA911.

The Supplier shall submit a resume, a list of training classes, and prior client references that have been trained by the proposed training personnel.

LA911 shall interview the Supplier's training team, and shall mutually agree on the training package and the qualifications of the training personnel prior to the development and execution of the training program.

LA911 will provide space where training can be conducted. All training sessions shall be scheduled at times and locations designated by LA911.

LA911 agrees to notify the Supplier promptly in the event that a date change for a scheduled training program is required.

The Supplier shall provide a list of course objectives, syllabus, preliminary schedule, approximate class time durations, and core competency skills for each of training sessions prior to completion of the Detailed Design Review.

All training elements shall include discussion of the basic features of a P25 network and differences between the old system and the new system.

User training shall be coordinated with the implementation and system cutover plan.

Training shall be held as close as possible to the implementation of each agency onto the system to maximize training retention.

All instructional material, training aids, handouts, manuals produced by the Supplier to assist in system training shall become property of the attendees.

All instructional material, presentation, training aids, handouts, manuals, and supplies produced by the Supplier to assist in system training shall be furnished to LA911 in both hard and soft copy for continuing education purposes. LA911 intends to duplicate these "masters" for distribution to other personnel as personnel requirements change.

All training material provided shall have no restrictions or licensing requirements.

Training shall be provided for Subscriber end-users, Communications Dispatchers, System Management staff, and Technical personnel.

Train-the-Trainer format shall be utilized for subscriber training; classroom format for Dispatcher, System Management and Maintenance training.

All training shall take place at LA911.

Each class shall be limited to a maximum size as follows:

1. Subscriber: up to 3 classes of up to 15 students
2. Dispatch Staff: 5 classes of up to 5 students
3. Management: up to 3 students
4. Technician: up to 2 technicians

Training resources to be provided to LA911 as follows:

5. Subscriber: 1 set per student, 1 master hard copies, 2 soft copies, 1 videotape
6. Dispatch: 1 set per student, 1 master hard copies, 2 soft copies, 1 videotape
7. Management: 1 set per student, 1 master copies for LA911, 2 soft copies
8. Technician: 1 set per student, 1 master copies for LA911, 2 soft copies

A reasonable effort shall be made by the Supplier for training of all personnel. This includes evening sessions, makeup sessions, as well as video sessions.

The Trainer shall develop and issue training aids for the system users to assist them in transitioning to the new equipment and system after cutover.

The Supplier shall also provide training class videos of at least one session of each type on CD to LA911.

The Supplier shall provide a report with the course attendance sheets.

13.19 Subscriber Training

Subscriber training shall be Train-the Trainer format, to be provided for selected LA911 personnel who will be responsible for training the remainder of those end-users needing training on the operation and functions of the new subscribers and new P25 radio system.

The Training Plan shall be designed so that, upon completion, each student will be qualified to train system end-users on the proposed subscribers.

Subscriber training shall include mobile radio, handheld radio, vehicular repeaters [if applicable] and control stations.

The Supplier shall provide radios from the new system inventory for subscriber hands-on training. Radio accessories or other subscriber related equipment shall also be covered.

The Supplier shall perform hands-on training, demonstrations and familiarization with all communications control functions, operating modes, and features of the new subscriber equipment.

The Trainer shall explain the operation of subscriber radios and how used in LA911.

Training shall also include familiarization of failure modes of operation and how to react to them.

The Trainer shall explain the operation of special features, such as encryption.

As the needs of law enforcement, fire and general users are different with differing channel plans; separate training shall be provided for each group as defined.

Training shall be based on the system configuration implemented within LA911

Training shall incorporate the final Fleetmap configuration integrated with training to ensure that the end-users are trained and familiar with the features and functions of the radios and of the system.

The Training Instructor shall show proper use of radio techniques as discussed by IAFC Portable Radio Best Practices.

13.20 Dispatcher Console Training

The Trainer shall provide intensive instruction and training on all aspects of the communications console for dispatchers and supervisors.

Classroom training shall be followed by immediate hands-on training where required, using LA911 radio consoles.

Training shall be conducted to accommodate the various work shifts.

Training shall include explanation of main console architecture and system components, console functions, basic screen layout, viewing call queues and history, identifying alarms and how to react to them.

Training shall also include basic radio functions such as: select, transmit, monitor, volume, clear, alert, simul-select, priority marker, and alert paging.

Other functions such as: speaker enable, auxiliary I/O functions, intercom, instant recall recorder, alarms, logon/off, reload configuration, etc.

Usage of the Instant Recall and Logging Recorders.

13.21 System Management Training

The Trainer shall provide intensive instruction on all aspects of the Network Management System to selected LA911 administrative, management and technical personnel.

This training shall be designed for administrators, agency coordinators, and system managers who will be responsible for management of the new system and require a solid, high-level understanding of the radio system and all supporting infrastructure

The training shall be designed so that, upon completion, a user will be qualified to comprehend radio system management, the microwave/fiber network, fallback design, perform basic system diagnostics, and operate the subscriber units.

Classroom training shall have immediate hands-on training where required.

The Supplier's highly skilled personnel, familiar with the same equipment as that being implemented, shall conduct this training.

Network administration training shall include database inquiry and entry, provisioning of new users, fleetmapping, setting up new and removing talkgroups, add/remove channels, trunked radio system function and features, and database management, report generation and utilization analysis.

Training shall also include the use of the Key Management Facility [KMF], how to manage encryption keys, and over-the-air rekeying [OTAR]. Discussion shall also include security procedures [FIPS142] for the Key Management System and encryption.

How to configure, manage, and operate logging recorders and perform basic administrative functions on this equipment.

Explanation and usage of system alarm and status monitoring and how to react to them.

13.22 Equipment/System Malfunctions in a Multi-Contractor Environment

Important for Installation, Warranty and Maintenance Tasks: Malfunctions that cannot be immediately diagnosed and pinpointed to a certain item of equipment or service will require the participation of all service providers [LA911, and its existing maintenance provider(s) as required] until responsibility for the problem has been established.

Once an issue is found, the contractor will conduct their own the research, problem identification and communicate their findings and solutions to LA911. The actual corrective action to address the issue would be managed by the organization that has the ability to restore, repair, re-program equipment or infrastructure at the root of the issue.

LA911 is not interested in the avoidance or placement of blame; but rather, contractor leadership for ownership and issue resolution in order to restore normal working conditions to ensure uptime operations.

In no instance shall the failure to resolve the issue of responsibility relieve any contractor of the mutual obligation to restore system operability with the least impact on the availability of the system to the end-user. LA911 reserves the right to adjudicate such matters after the fact and validate charges applicable to the provision of the contractor. The contractor shall be the sole point of responsibility to resolve all maintenance matters to the satisfaction of LA911.

14 PRICING AND FINANCIAL CONDITIONS

The equipment proposed by the Contractors shall be a complete turnkey system, with firm pricing for all equipment and services described by the specifications. Contractors shall submit their pricing based upon their best offer price at the time of initial bid submission, including special discounts, trade-ins, cost incentives or signing bonuses.

The jurisdiction is exempt from all federal excise, transportation taxes, and state sales taxes. No exemption certificates are required for this procurement, and none will be issued.

All pricing shall be FOB destination.

Prices are not subject to increase during the term of the contract. Any special or general price reductions for specific equipment offered to Contractor's customers generally shall be extended to the jurisdiction. The jurisdiction is not liable for escalation resulting from shipping delays caused by the Contractor.

Pricing provided in the response to this RFP request must be all-inclusive. If a specific type of equipment is proposed, all pricing associated with that piece of equipment must be included. The price shall include all requirements to make that equipment operational. For example a price for a mobile radio shall include the microphone, speaker, power cord, programming hardware and software, etc.

This pricing structure shall remain in effect for a period of not less than 12 months following final system acceptance.

After the initial period, unit pricing shall escalate at no more than the annual Consumer Price Index (CPI) as calculated by the jurisdiction Finance/Purchasing Department. This section shall apply not only to purchases made by the Jurisdiction but shall also apply to other entities within the jurisdiction including fire, law enforcement, ambulance services, public works, and other agencies as authorized by the jurisdiction.

Pricing shall include the resources needed to decommission legacy equipment, packaged and returned to the jurisdiction for disposal as described in this specification.

Maintenance pricing for parts and labor shall also be included in the pricing sheets. This includes subsequent years after expiration of the Warranty period, years-2 through year 10.

14.1 Prevailing Wage

Except as noted below, the Contractor shall comply with the current provisions of the Department of Labor of the State of Maine regarding Prevailing Wage. Additional information can be found at:
https://www.maine.gov/labor/labor_stats/publications/wagerateconst/index.html

14.2 Pricing Sheets

The Supplier shall submit all pricing for its proposal based on the provided pricing worksheets in the attachments.

Design review, equipment delivery, freight, installation, programming, optimization, project management, engineering, training, testing, Supplier travel and waiting time, per-diem, and supplies shall be included in the pricing worksheets.

Summary Pricing Sheets and detailed Pricing Worksheets of the proposed system, sub-assemblies, installation and implementation labor services on a per site basis.

Proposals should clearly and effectively communicate system concept, infrastructure configuration and user equipment options. Pricing should reflect both system and component level costs.

All costs shall be rounded to the nearest dollar!

Partial payment shall be made by the Jurisdiction after the items awarded to the Supplier have been received, inspected, and found to comply with procurement specifications, to be free of damage or defect, and to be properly invoiced. A single itemized invoice of equipment, software, and services shall bear the contract number and purchase order number.

14.3 Proposed Payment Schedule

LA911 will pay the winning vendor for services performed in accordance with the signed Agreement. Invoices will be submitted in the following schedule:

- 10% of contract price will be paid upon contract execution.
- 15% of contract price will be paid upon completion of Detailed Design Review [DDR].
- 45% of the contract price for services related to the fixed infrastructure will be paid after the complete installation of all equipment.
- 30% Balance of the contract will be payable after testing and final system acceptance.

The Committee reserves the right to request substantiating information on any bill submitted. The Committee will, within 30 days after receipt of an invoice requesting payment indicate the approval of payment and process the invoice

15 APPENDIX-A - PRICING SHEET

See separate spreadsheet for cost entry.

16 APPENDIX-B - CRITICAL BUILDINGS

AUBURN			
Auburn Edward Little High School	77 Harris Street	44 05 37.8	70 14 04.7
Auburn Esplanade	20 Great Falls Plaza	44 05 58.6	70 13 30.2
Auburn Fire Department Central Station	550 Minot Avenue	44 04 56.2	70 14 52.4
Auburn Fire Department Engine #2 Station	181 South Maine Street	44 05 50.5	70 13 56.4
Auburn Fire Department Engine #5 Station	651 Center Street	44 07 30.0	70 13 27.4
Auburn Lewiston Airport	80 Airport Drive	44 02 59.0	70 17 14.5
Auburn Mall	550 Center Street	44 07 20.2	70 13 45.1
Auburn Middle School	38 Falcon Drive	44 05 31.2	70 15 01.9
Auburn Police Department HQ	60 Court Street	44 05 50.4	70 13 33.0
Auburn Public Library	49 Spring Street	44 05 53.9	70 13 44.8
Conform Fibers	125 Allied Road	44 05 33.8	70 15 14.1
East Auburn Community School	15 Andrew Drive	44 08 44.3	70 13 18.4
Fairview Elementary School	397 Minot Avenue	44 05 08.8	70 14 37.0
Franklin – Merrill Hill Alternative School	23 High Street	44 05 47.5	70 13 38.8
Great Falls Plaza	2 Great Falls Plaza	44 05 55.0	70 13 36.8
Hasty Armory	48 Pettengill Park Rd	44 06 30.8	70 14 13.2
Ingersoll Turf Facility	48 Pettengill Park Rd	44 06 30.8	70 14 13.2
MMWAC	110 Goldthwaite Road	44 04 04.8	70 15 33.1
Norway Savings Ice Arena	985 Turner Street	44 07 28.1	70 13 47.2
Park Avenue Elementary School	161 Park Avenue	44 05 59.7	70 14 43.3
Pioneer Plastics	1 Pionite Road	44 04 04.8	70 15 33.1
Regional Educational Treatment Center	80 Lake Street	44 05 59.0	70 14 19.0
Sherwood Heights Elementary School	32 Sherwood Drive	44 04 40.2	70 13 42.8
Tambrands	2879 Hotel Road Rd	44 02 17.1	70 17 02.5
Wal-Mart Super Center	100 Mount Auburn Avenue	44 07 03.9	70 14 18.8
Walton Elementary School	92 Mary Carroll Street	44 04 52.9	70 13 01.0
Washburn Elementary School	35 Lake Auburn Avenue	44 06 31.5	70 13 38.0

LEWISTON			
Androscoggin Bank Colisee	190 Birch Street	44 05 44.2	70 12 18.5
Central Maine Medical Center	300 Main Street	44 06 07.8	70 12 52.3
Farwell Elementary School	84-110 Farwell Street	44 05 51.3	70 11 30.8
Gov. James B. Longley Elementary School	145 Birch Street	44 05 38.6	70 12 23.8
Lewiston Fire Department HQ	2 College Street	44 05 52.9	70 12 50.8
Lewiston High School & LRTC	156 East Ave Lewiston	44 05 35.8	70 12 04.9
Lewiston Middle School	75 Central Avenue	44 06 09.4	70 12 09.0
Lewiston Police Department HQ	171 Park Street	44 05 37.6	70 12 53.1
Lewiston Public Library	200 Lisbon Street	44 05 43.7	70 12 58.3
Lisbon Road Sub-Station	1046 Lisbon Street	44 04 49.1	70 11 39.6
Main Street Sub-Station	834 Main Street	44 08 50.8	70 11 53.0
Martel Elementary School	880 Lisbon Street	44 05 04.6	70 12 09.4
Montello Elementary School	407 East Avenue	44 06 28.9	70 11 00.1
Raymond A. Geiger Elementary School	601 College Street	44 07 20.7	70 11 15.0
Robert Connor Elementary School	156 East Avenue	44 05 40.3	70 12 01.1
Sabattus Street Sub-Station	976 Sabattus Street	44 06 08.2	70 09 55.3
St. Mary's Hospital	93 Campus Avenue	44 06 06.3	70 11 58.6
Thomas J. McMahon Elementary School	151 North Temple Street	44 06 30.5	70 09 32.9
Wal-Mart Distribution Center	31 Alfred Plourde Parkway	44 03 48.2	70 11 40.2

17 APPENDIX-C - AGREEMENT FOR SERVICES

Preamble

THIS AGREEMENT (the "Agreement") is made this _____day of _____ by and between The LA911 Committee (the Committee), with offices at 552 Minot Ave, Auburn, ME 04210 and _____with offices at _____ ("Contractor"), on the terms and conditions presented in this agreement and in the Contract Documents for the Lewiston – Auburn 9-1-1 Regional Radio System located in Lewiston & Auburn, Maine, the Committee hereby engages the Contractor to provide the services set forth in the following Agreement and the Contractor agrees to perform the services for the compensation set forth in this Agreement and also agrees to be bound by the provisions of this Agreement.

1. Scope of Work

This Agreement shall cover the Lewiston – Auburn 9-1-1 Regional Radio System Project in Lewiston & Auburn, Maine. Contractor represents itself to be experienced and competent to perform, and agrees to perform, the services under this Agreement as set forth in the Contract Documents consisting of *Lewiston – Auburn 9-1-1 Regional Radio System Project* dated _____ and the _____Bid Form and Bid Submittal Package dated _____. The contract schedule shall commence with the Notice of Award dated _____, 2019. All work shall be completed not later than _____.

2. Compensation

LA911 will pay _____for services performed in accordance with the signed Agreement. Invoices will be submitted in the following schedule:

- 10% of contract price will be paid upon contract execution.
- 15% of contract price will be paid upon completion of Detailed Design Review [DDR].
- 45% of the contract price for services related to the fixed infrastructure will be paid after the complete installation of all equipment.
- 30% Balance of the contract will be payable after testing and final system acceptance.

3. Termination

a.) The Committee may terminate this Agreement by written notice to Contractor in the event that Contractor fails to commence its services hereunder, or any portion thereof, within the specified time or otherwise fails to comply with any material term of this Agreement or if Contractor becomes insolvent, petitions for protection under any bankruptcy or creditor's laws or if any involuntary petition for such relief is filed by any creditors or Contractor. In the event of termination under this subsection a) no further payment will be made to Contractor until the services provided for hereunder have been completed by a third party (or parties) selected by the Committee and paid for. If the total amount paid to such third party (or parties) exceeds the maximum compensation stated in the Compensation provision, Contractor agrees to repay the deficiency to the Committee. If such amount is less than the maximum compensation, the difference (but not more than the contract amount otherwise earned by Contractor) shall be paid to Contractor.

b.) The Committee may, at any time and without cause, terminate this Agreement on five (5) days written notice to the Contractor. In the event of termination under this subsection b), Contractor shall be paid for work properly performed to the date of termination and agreed upon reasonable and actual expenses incurred by Contractor as a result of the termination.

c.) The Committee may suspend performance of services hereunder at any time by written notice to Contractor. Any such suspension shall extend the Agreement completion date commensurately. The Committee shall pay Contractor necessary and reasonable costs incurred by Contractor directly attributable to the suspension in addition to other compensation provided for by this Agreement.

4. Delays/Force Majeure

Neither party shall hold the other responsible for damages or delays in performance caused by acts of God, acts and/or omissions of Federal, State, and local governmental authorities and regulatory agencies or other events which are beyond the reasonable control of the other party and which could not have been reasonably foreseen or prevented.

5. Assignments and Subcontracts

Contractor shall not assign, subcontract, or otherwise transfer its rights or obligations hereunder without the prior written consent of the Committee.

6. Compliance with Laws

Contractor shall comply with all applicable provisions of federal, state, and local equal employment opportunity laws, rules, and regulations and with all other applicable laws, rules, regulations, and orders including without limitation federal, state, local, occupational safety, and health and environmental requirements.

7. Arbitration

All claims, disputes, and other matters in question between the parties to this Agreement, arising out of our relating to this Agreement or the breach thereof, shall be decided by arbitration in accordance with the then-most current rules of the American Arbitration Association, unless the parties mutually agree otherwise; provided that no such arbitration shall be binding if it would compromise or impinge on any insurer's policy rights to defend or settle any covered claims or suits.

8. Litigation

In the event of litigation or arbitration between the two parties to this Agreement, the non-prevailing party shall reimburse all reasonable costs and attorney fees to enforce this Agreement incurred by the prevailing party.

9. Independent Contractor Status

Nothing in this Agreement shall be construed to make Contractor or any of its employees or agents to be Committee employees, agents, or representatives. Contractor shall be an independent contractor and shall have responsibility for and control over the details and means for performing the services described herein. Contractor shall be subject to the direction of the Committee only with respect to the Scope of Services and the general results required.

10. Insurance

Contractor agrees to maintain at all times during the performance of services described in this Agreement insurance coverage as specified in Section 9.6 of the Environmental Remediation Work Plan. Certificates of insurance, including the above-mentioned endorsements and waivers, shall be furnished to the Committee immediately upon execution of this Agreement and prior to Contractor's commencing work. All insurers and policy forms must be satisfactory to the Committee.

The foregoing requirements as to types and limits of insurance coverage to be maintained by Contractor are not intended to and shall not in any manner limit the liabilities and obligations assumed by Contractor under this Agreement.

11. Liability and Indemnity

As an independent contractor, Contractor shall respond for its own operations in accordance with the following conditions:

a.) Contractor assumes all liability for work to be performed by it and for breach of any of the terms of this Agreement. Contractor agrees to indemnify, hold harmless, and defend the Committee, and any and all of its and their affiliates, partners, directors, officers, agents, or employees from and against all loss, injury, damage, and legal liability including attorneys' fees and other costs of defense or settlement, arising out of any negligent act, error, or omission of, or the willful misconduct of Contractor, its employees, agents, representatives, subcontractors, or suppliers.

b.) Contractor assumes all liability for workers' compensation and employer’s liability coverage for its own employees.

c.) Contractor shall be responsible for and shall hold the Committee harmless from loss of or damage to Contractor's or its subcontractor's construction tools and equipment and rented items which are used or intended for use in performing work and for any consequential special or indirect damages, or loss of anticipated profits sustained by Contractor or its subcontractors, and shall indemnify the Committee for loss of or damage to property intended to be incorporated into or used in the construction while in Contractor's care, custody, or control.

d.) Contractor agrees to protect and hold harmless the Committee from all costs, expenses or damages arising out of actual or alleged patent infringements by Contractor, except to the extent such claims arise from processes specified by the Committee.

12. Ownership of Materials and Documents

All materials resulting from Contractor's efforts in connection with this Agreement, including documents, reports, calculations, maps, photographs, computer programs, computer printouts, notes, and any other pertinent data are the exclusive property of the Committee. Contractor shall retain for a minimum of three (3) years, and shall not thereafter dispose of such materials without prior written notice to the Committee. Reuse of these materials by Contractor on projects other than with the Committee and without written permission and/or adaptation by the Committee for the specific purpose intended shall be at the user's sole risk, without liability on the Committee's part and the Contractor agrees to indemnify and hold harmless the Committee from all claims, damages, and expenses, including attorneys ' fees, arising out of such unauthorized use by Contractor. Any reuse or adaptation of this property occurring with or without permission shall entitle the Committee to compensation in an amount to be agreed upon with the Contractor.

13. Accounting and Auditing

Contractor shall prepare and maintain accounting records in support of all amounts billed to the Committee. Contractor's files and records relating to performance of this Agreement and billing therefore shall be subject to audit at all times during the course of the project and for a period of one (1) year after project completion.

14. Safety

Contractor shall place the highest priority on safety and health during the progress of work. Therefore, it shall be the responsibility of Contractor to provide and maintain a safe working environment for its employees during the progress of work and to adequately protect the health and safety of Contractor's agents and subcontractors and their respective employees, the Committee, oversight personnel, employees, the public and any other third parties. All tools, equipment, facilities, and other items used by Contractor, and practices employed by Contractor in accomplishing the work, as considered being part of the working environment.

15. Governing Law

Unless otherwise provided in an Addendum, the law of the state where the project is located will govern the validity of this Agreement, its interpretation and performance, and remedies for contract breach or any other claims related to this Agreement. If the project is located in more than one state, the law of the state where most of the services are performed shall govern.

16. Extent of Agreement

This Agreement which includes the Contract Documents referenced in Paragraph 1 of this Agreement, represents the entire Contract between the Committee and Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral.

This Agreement shall supersede any terms and conditions set forth on the back of any purchase order or other document used by either party in the performance of this Agreement.

17. Survival

All obligations arising prior to the termination of this Agreement and all provisions of this Agreement allocating responsibility or liability between the Committee and Contractor shall survive the completion of the services hereunder and the termination of this Agreement.

18. Signatures

Unless otherwise specified below, the following signatories are the authorized representatives upon whose decisions and information each party may rely in performance of this Agreement. Any information of notices required or permitted hereunder shall be deemed to have been sufficiently given to either party if given to these signatories or to such parties and/or addresses as they may subsequently designate.

This Agreement is effective the day and year first written above.

LA911 Committee (Owner)
552 Minot Ave
Auburn, Maine 04210

Signed by _____

Title _____

Date _____

_____ (Contractor)

_____

_____

Signed by _____

Title _____

Date _____

LA911
INFRASTRUCTURE PRICING SHEET

	ITEM	UNIT COST [List $]	QTY	EXTENDED COST	LABOR & INSTALLATION COST	TOTAL MATERIAL & LABOR COST	SITE QUANTITIES						
							911	ASO	Goff Hill	Montello	Webber	Gracelawn	Shredder
	SYSTEM FIXED EQUIPMENT												
INFRASTRUCTURE	Wide Area Server/Controller	$0.00	0	$0.00	$0.00	$0.00							
	RFSS Server/Controller	$0.00	0	$0.00	$0.00	$0.00							
	Remote Site Controller/Server	$0.00	0	$0.00	$0.00	$0.00							
	P25 Comparators/Voting/Audio Distribution	$0.00	0	$0.00	$0.00	$0.00							
	NMS/Fault Management	$0.00	0	$0.00	$0.00	$0.00							
	Network Management System Clients/Printers	$0.00	0	$0.00	$0.00	$0.00							
	Networking/Routing/Switching Equipment	$0.00	0	$0.00	$0.00	$0.00							
	Network Security and AntiVirus	$0.00	0	$0.00	$0.00	$0.00							
	NMS Software Applications	$0.00	0	$0.00	$0.00	$0.00							
	P25 Base Station Repeater	$0.00	0	$0.00	$0.00	$0.00							
	Antenna/Transmission Line/Protection System	$0.00	0	$0.00	$0.00	$0.00							
	Transmitter Combiner	$0.00	0	$0.00	$0.00	$0.00							
	Receiver Multicoupler	$0.00	0	$0.00	$0.00	$0.00							
	Timing/Frequency Reference	$0.00	0	$0.00	$0.00	$0.00							
	Alarms System Equipment	$0.00	0	$0.00	$0.00	$0.00							
	DC Power Plant/Rectifier/Charger/Distribution	$0.00	0	$0.00	$0.00	$0.00							
	Batteries	$0.00	0	$0.00	$0.00	$0.00							
	AC Power/Distribution	$0.00	0	$0.00	$0.00	$0.00							
	Grounding and AC protection	$0.00	0	$0.00	$0.00	$0.00							
	Key File Device	$0.00	0	$0.00	$0.00	$0.00							
	Test Equipment	$0.00	0	$0.00	$0.00	$0.00							
	Software/Firmware Licenses [Must Define All]	$0.00	0	$0.00	$0.00	$0.00							
	Programming Software, Cables and Interface Equi	$0.00	0	$0.00	$0.00	$0.00							
	Spare Equipment [Must Define Each Component]	$0.00	0	$0.00	$0.00	$0.00							
	INFRASTRUCTURE SUB-TOTAL					**$0.00**							
CONSOLE	Console Servers [Must define All Servers]	$0.00	0	$0.00	$0.00	$0.00							
	Console Software Applications [Must Define]	$0.00	0	$0.00	$0.00	$0.00							
	Dispatch Console Clients/Accessories	$0.00	0	$0.00	$0.00	$0.00							
	Dispatch Console Clients UPS	$0.00	0	$0.00	$0.00	$0.00							
	Instant Recall Recorder	$0.00	0	$0.00	$0.00	$0.00							
	Conventional Radio Controller & Gateways	$0.00	0	$0.00	$0.00	$0.00							
	Network Security and AntiVirus	$0.00	0	$0.00	$0.00	$0.00							
	Logging Recorder	$0.00	0	$0.00	$0.00	$0.00							
	Logging Recorder Clients	$0.00	0	$0.00	$0.00	$0.00							
	Backup Control Stations	$0.00	0	$0.00	$0.00	$0.00							
	AC Power/Distribution	$0.00	0	$0.00	$0.00	$0.00							
	Grounding/Suppression	$0.00	0	$0.00	$0.00	$0.00							
	Software/Firmware Licenses [Must Define All]	$0.00	0	$0.00	$0.00	$0.00							
	Programming Software, Cables/Interface Equipme	$0.00	0	$0.00	$0.00	$0.00							
	Spare Equipment [Must Define Each Component]	$0.00	0	$0.00	$0.00	$0.00							
	CONSOLE SUB-TOTAL					**$0.00**							
OPTIONS													
	OPTION - Geo-Backup RFSS Server/Controller	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - PTT over Cellular	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - Console Laptop	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - Wireless Headsets	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - ASO Console Positions	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - Montello Generator	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - Logging Recorder	$0.00	0	$0.00	$0.00	$0.00							
	OPTION - Redundant GPS	$0.00	0	$0.00	$0.00	$0.00							

LA911
INFRASTRUCTURE PRICING SHEET

ITEM	UNIT COST [List $]	QTY	EXTENDED COST	LABOR & INSTALLATION COST	TOTAL MATERIAL & LABOR COST	911	ASO	Goff Hill	Montello	Webber	Gracelawn	Shredder
OPTION - Redundant Console Server/Controller	$0.00	0	$0.00	$0.00	$0.00							
OPTION - Remote Operating Position	$0.00	0	$0.00	$0.00	$0.00							
OPTION - APD MIPS 5000 replacement ops	$0.00	0	$0.00	$0.00	$0.00							
OPTIONS SUB-TOTAL					**$0.00**							
SYSTEM FIXED EQUIPMENT SUB-TOTAL			**$0.00**									

LA911
INFRASTRUCTURE PRICING SHEET

ITEM	UNIT COST [List $]	QTY	EXTENDED COST	LABOR & INSTALLATION COST	TOTAL MATERIAL & LABOR COST	911	ASO	Goff Hill	Montello	Webber	Gracelawn	Shredder

SERVICES	
Bidder must list services detail here	
	$0.00
	$0.00
	$0.00
	$0.00
	$0.00
	$0.00
	$0.00
	$0.00
	$0.00
SERVICES SUB-TOTAL	**$0.00**

MAINTENANCE & WARRANTY

	INFRASTRUCTURE EXTENDED WARRANTY	SOFTWARE MAINTENANCE AGREEMENT	SYSTEM UPGRADE AGREEMENT	SUBSCRIBER MAINTENANCE
Year-1 through 3	Warranty	Warranty	Warranty	Warranty
Year-4	$0.00	$0.00	$0.00	$0.00
Year-5	$0.00	$0.00	$0.00	$0.00
Year-6	$0.00	$0.00	$0.00	$0.00
Year-7	$0.00	$0.00	$0.00	$0.00
Year-8	$0.00	$0.00	$0.00	$0.00
Year-9	$0.00	$0.00	$0.00	$0.00
Year-10	$0.00	$0.00	$0.00	$0.00
Year-11	$0.00	$0.00	$0.00	$0.00
Year-12	$0.00	$0.00	$0.00	$0.00
Year-13	$0.00	$0.00	$0.00	$0.00
Year-14	$0.00	$0.00	$0.00	$0.00
Year 15	$0.00	$0.00	$0.00	$0.00
SUB-TOTALS	**$0.00**	**$0.00**	**$0.00**	**$0.00**

MAINTENANCE & WARRANTY SUB-TOTAL	**$0.00**

LA911
INFRASTRUCTURE PRICING SHEET

ITEM	UNIT COST [List $]	QTY	EXTENDED COST	LABOR & INSTALLATION COST	TOTAL MATERIAL & LABOR COST	911	ASO	Goff Hill	Montello	Webber	Gracelawn	Shredder

SUMMARY

Infrastructure	$0.00	
Console	$0.00	
Services	$0.00	
Subscribers	$0.00	ENTER FROM SEPARATE SUBSCRIBER SPREADSHEET
Maintenance & Warranty	$0.00	
GRAND TOTAL	$0.00	

Cost Exceptions/Clarifications - Any deviation from above cost format to be entered here along with description:

LA911
INFRASTRUCTURE PRICING SHEET

ITEM	UNIT COST [List $]	QTY	EXTENDED COST	LABOR & INSTALLATION COST	TOTAL MATERIAL & LABOR COST	911	ASO	Goff Hill	Montello	Webber	Gracelawn	Shredder

LA911
SUBSCRIBER PRICING SHEET

Subscriber Equipment

		Qty	Unit List Cost	add VHF & 800 BAND	add SCAN	add ENCRYPTION	add OTAR	add MULTIKEY	add OTAP	add GPS	Extended Unit Cost	TOTAL
SUBSCRIBERS	**MOBILE RADIO**											
	LPD P25 dash mount radio	34	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	APD P25 dash mount radio	32	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	LFD P25 dash mount radio	14	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	AFD P25 dash mount radio	22	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	HAZMAT P25 dash mount radio	3	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	MOBILE TOTAL	**105**										**$0.00**
	PORTABLE RADIO											
	LPD P25 Portable	82	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	APD P25 Portable	63	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	LFD P25 Portable	63	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	AFD P25 Portable	39	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	HAZMAT P25 Portable radio	14	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	LA911 Comm. Center	4	$0.00	$0.00	$0.00				$0.00	$0.00	$0.00	$0.00
	PORTABLE TOTAL	**265**										**$0.00**
	CONTROL STATION											
	P25 Control Station	5	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Installation	5	$0.00								$0.00	$0.00
	CONTROL STATION TOTAL	**5**										**$0.00**
	MISCELLANEOUS											
	Programming Software, Cables, Interface	1	$0.00								$0.00	$0.00
	Potable Installation [est.] All Portables	265	0.00%								$0.00	$0.00
	Mobile Installation [est.]											
	Typical PD Vehicle	69	$0.00								$0.00	$0.00
	Typical Fire Apparatus	36	$0.00								$0.00	$0.00
	Mobile Removal [est.]	105	$0.00								$0.00	$0.00
	MISCELLANEOUS TOTAL											**$0.00**
	SUBSCRIBER SUB-TOTAL	**$0.00**										

NOTE: Bidder must detail mobile & portable radio installation cost if not included as part of proposal.

PLEASE PROVIDE COMPLETE LISTING OF SUBSCRIBER ACCESSORIES WITH UNIT PRICING UNDER SEPARATE COVER. INCLUDE ALL ITEMS SUCH AS VARIOUS CHARGER CONFIGURATIONS, REMOTE SPEAKER MICS, REMOTE ANT/SPKR/MIC, HEADSETS, SURVEILLANCE KITS, ETC.

Cost Exceptions/Clarifications - Any deviation from above cost format to be entered here along with description: