

North County Dispatch Joint Powers Authority



Request for Proposals

Public Safety Voice Radio Communications System Proposal Requirements

DUE: May 27, 2022 by 5:00pm

Prepared by



Federal Engineering, Inc.
10560 Arrowhead Dr., Suite 100
Fairfax, VA 22030
703-359-8200



Table of Contents

1.	Project Overview.....	3
1.1	Introduction	3
1.2	Background.....	3
1.3	Project Goals	3
1.4	Project Summary	4
1.4.1	Authorization	5
1.4.2	Proposals Desired	5
2.	Instructions to Proposers.....	7
2.1	Overview	7
2.2	Mandatory Pre-Proposal Conference and Site Visits	8
2.3	Vendor Agreement.....	8
2.4	Consequences of Submission of Response.....	8
2.5	Acceptance or Rejection of Response.....	8
2.6	Nondiscrimination / No-preferential Treatment.....	9
2.7	Indemnification.....	9
2.8	Vendor Not an Agent.....	10
2.9	Proposal Format	10
2.10	Evaluation	15
2.11	Addenda to the RFP	16
2.12	Award of Contract.....	16
3.	Proposal Requirements	17
3.1	Proposed Design	17
3.2	Project Management Plan	18
3.3	System Implementation Plan.....	19
3.4	Migration Plan.....	20
3.5	Warranty, Maintenance, and Support	20





1. Project Overview

1.1 Introduction

North County Dispatch JPA (JPA), representing the interests of the fire departments of the North Zone of San Diego County, invites proposals for the provision of a public safety emergency radio communications system to support mission critical communications. The proposed communications system must provide real time operable and interoperable two-way wireless communications capabilities to all authorized users.

1.2 Background

North County Dispatch JPA has a Very High Frequency (VHF) analog conventional land mobile radio (LMR) system for mutual aid communications among local, County, State and Federal fire agencies during wildland fire and all-hazard incident response.

North County Dispatch JPA radio users are experiencing operational and radio coverage issues with the existing VHF LMR system. Recognizing the need to replace or upgrade the VHF system, the JPA began by performing an assessment of the existing systems and working with stakeholders to identify the needs and requirements for a system upgrade. The next step was to analyze alternatives and to develop the conceptual design for a new system that would meet the JPA's needs for the next 10 – 15 years. Based on the outcome of the conceptual design, the VHF system upgrade includes:

- New VHF repeater sites with P25 capable equipment to supplement coverage in the North Zone
- Upgrading all dispatch consoles to include all XSD¹ Command (CMD) channels
- Installing “last-mile” licensed 900 MHz microwave links from VHF repeater sites to the RCS microwave backhaul system sites
- Site improvements to support the new VHF and 900 MHz equipment

1.3 Project Goals

- A. The goal of this Project is to implement a cost-effective, highly reliable public safety voice radio system that meets the JPA's needs for the next 15 years. The North County Dispatch JPA VHF Radio System Upgrade Project must provide:

¹ VHF channels are identified by XSD, the California Operational Area designation for the County.





1. A system that allows interoperability among local, County, State and Federal fire agencies during wildland fire and all-hazard incident response
2. Radio system users with at least the same level of functionality and configurability as the existing system
3. Radio system users with improved radio coverage for mobile radios and portable radios on the street
4. A stable, reliable radio infrastructure environment
5. A solution that leverages existing communications infrastructure (sites/facilities) to the greatest extent possible

1.4 Project Summary

- A. The Selected Vendor must furnish complete fully functional systems for the North zone, that includes:
 1. VHF repeaters and associated equipment
 2. Licensed 900 MHz microwave back-haul links and associated equipment
- B. The Selected Vendor must be responsible for:
 1. Furnishing and installing new equipment
 2. Radio site improvements
 3. Engineering and system design
 4. Project management
 5. Software installation and programming
 6. Training
 7. Proper labeling of repeaters, cabling, etc.
 8. Coverage and acceptance testing
 9. Cutover plan and execution
 10. Decommissioning, equipment removal, and disposal





11. Warranty
 12. Provide a Final Report for each site to include diagrams, photos, SATP, FATP reports, and warranties. The Vendor will provide the reports electronically and one (1) hard copy for the JPA and one for the each of the sites
 13. Maintenance and ongoing support (may include upgrade requirements)
- C. The Selected Vendor must plan, coordinate, and conduct all work with minimal interruption of service to existing systems.
 - D. All equipment provided must be in new condition and covered by a full factory or manufacturer's warranty of not less than 3 years.
 - E. The system must be complete and operate as specified without any additional hardware or software. Should the system not perform as specified, the Selected Vendor must make all upgrades and additions necessary to make it operate as specified, at no additional cost to the JPA.
 - F. If requirements are stated in more than one section and appear to differ, the more stringent requirement must apply.
 1. Should the requirements appear to conflict it is the Proposers' responsibility to bring the conflict to the attention of the JPA prior to the deadline for submitting questions
 2. If not brought forward, the JPA will retain the right to enforce the requirements as they see fit

1.4.1 Authorization

The JPA has authorized this RFP as part of an ongoing effort to enhance mission critical radio communications and interoperability.

1.4.2 Proposals Desired

- A. Proposals must completely describe the equipment and methods used to implement the system.
- B. The JPA will not accept proposals that include systems or equipment within 7 years of the end of their respective lifecycles or is scheduled to be replaced with a new system architecture within 7 years.





- C. Requirements described as an "OPTION" or "OPTIONAL" refer to features or equipment, which the JPA may or may not purchase, or items whose quantities are not determined yet. Proposers are required to respond to all OPTIONAL requirements.





2. Instructions to Proposers

2.1 Overview

Proposals must be submitted in a sealed envelope and received by May 27th, 2022 at 5:00 p.m. The JPA will not accept proposals received after this time.

- A. Procurement Schedule and Dates. Table 1 shows JPA schedule for the Procurement/RFP process.

Table 1 - Schedule for RFP Process

RFP Timeframes and Dates	
Item and Description	Date
RFP Release and Public Notice	April 6, 2022
Mandatory Pre-Proposal Conference and Site Visits (TBD)	Week of April 25 – 29, 2022
Last date for Proposer question submittals	May 6, 2022 at 5pm
Last date for the JPA to answer to Proposer questions	May 13, 2022 at 5pm
Last date for issuance of Addenda	May 20, 2022 at 5pm
RFP Proposal due date	May 27, 2022 at 5pm

- B. Proposer submissions may be done physically or electronically. Proposers may submit a bound physical original (clearly marked as original) and three (3) bound copies of the proposal in a sealed package. Each package must also include a copy of the proposal in electronic format on a flash drive as required in subsequent sections of the RFP. Hard copies can be submitted to the mailing address below, with separate envelope for Price Proposal:

North County Dispatch Joint Powers Authority
Attention: Jennifer Libby-Jones
P.O. Box 1206
Rancho Santa Fe, CA 92067

Proposals can also be submitted electronically via email to Jennifer Libby-Jones at jlibby-jones@ncdjpa.org. Price Proposal should be **submitted in a separate electronic file** labeled "Price Proposal."





2.2 Pre-Proposal Conference and Site Visits

- A. Proposers may attend a Pre-Proposal Conference on during the week of April 25-29, 2022 at a location TBD. To confirm your intention to attend, please email Jennifer Libby-Jones at jlibby-jones@ncdjpa.org.
- B. Site visit(s) may follow the Pre-Proposal Conference. The JPA will advise how many sites will be visited, and the maximum number of personnel allowed for each Proposer.
- C. Proposers can submit questions to the JPA in writing after the Pre-Proposal Conference. Questions from all proposers will be reviewed and responses provided to all proposers by the date indicated in Table 2 above.

Proposers must submit all questions via email to Jennifer Libby-Jones at jlibby-jones@ncdjpa.org.

2.3 Vendor Agreement

A Vendor agreement is subject to the JPA Board of Directors' Approval.

2.4 Consequences of Submission of Response

The RFP does not commit the JPA to pay any costs incurred in the submission of a response, or in making any necessary studies or designs for the preparation thereof, nor the purchase or contract for such services. Costs for developing the RFP are entirely the responsibility of the proposer and will not be chargeable to or reimbursable by the JPA.

Any information contained in this RFP is for informational purposes only. The JPA will not be responsible for its completeness or accuracy.

The JPA reserves the right to contact individual Proposers for clarifying information at any time during the process.

2.5 Acceptance or Rejection of Response

The JPA reserves the right to reject any or all proposals, to award a contract based on the RFP process in whole or in part to one or more Proposers, or to modify, delay, or delete the entire project. The JPA also reserves the right to waive irregularities in any statement, accept or reject all or any part of any statement, and waive any requirements of the proposals as deemed in the best interest of the JPA.





The JPA for any reason may decide not to award a Vendor Agreement as a result of the RFP.

2.6 Nondiscrimination / No-preferential Treatment

The successful Vendor(s) in the performance of the Vendor Agreement must be required to comply with all applicable federal, state, and county nondiscrimination / no preference laws and regulations.

2.7 Compliance with Applicable Laws and Regulations and Prevailing Wages

Proposer shall keep itself informed of and comply with all applicable federal, state, and local laws, statutes, codes, ordinances, regulations, and rules in effect during the term of this Agreement. This shall include, but not limited to, all California Labor Code laws regarding payment of prevailing wages and all OSHA regulations.

Pursuant to section 1770 et seq. of the California Labor Code, Proposer agrees that a prevailing rate and scale of wages, in accordance with applicable State and Federal Law, will be paid in carrying out this work. The prevailing rate and scale to be paid shall be the same as the 'General Prevailing Wage Rates' approved by the Department of Industrial Relations as of the date of this RFP.

2.8 Indemnification

The successful vendor is required to comply with the following indemnity and insurance requirements, which will be included in the final agreement between the parties (Agreement):

- During all phases of this Agreement, and to the fullest extent permitted by law, Vendor must defend, indemnify and hold harmless the JPA and its members, including their elected and appointed officials, officers, directors, agents, officials, representatives, and employees (the "JPA Indemnitees"), together with the JPA Indemnitees, the "Indemnitees"), from and against any and all claims, loss, cost, damage, injury, expense, and liability of every kind, nature and description (including, without limitation, incidental and consequential damages, court costs, attorney's fees, litigation expenses and fees of expert consultants or expert witnesses and costs of investigation) that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of Vendor in the course of Vendor's performance under the terms of this Agreement. The insurance provisions of this Agreement must not limit Vendor's indemnification obligations. The parties expressly agree that this section will survive the expiration or early termination of this Agreement.





- Without limiting the Vendor indemnification in this Section 2.7, it is agreed that the Vendor must maintain in force at all times during the performance of this Agreement the following policy or policies of insurance covering its operations:
 - Comprehensive General Liability, including contractual liability, business automobile liability, and products and completed operations, all of which must include coverage for both bodily injury and property damage with coverage in the amount of \$2,000,000 per occurrence and subject to an annual aggregate of \$4,000,000.
 - Workers' Compensation coverage at statutory limits.
 - Professional Liability in the amount \$1,000,000 per claim and annual aggregate of \$3,000,000.
 - Vendor/s liability insurance policy must contain the following clauses:
 - "The North County Dispatch JPA and its members, including their elected and appointed officials, officers, directors, agents, representatives, and employees, are named as an additional insured as respects operations of the named insured performed under contract with the JPA.

"It is agreed that any insurance maintained by the JPA must apply in excess of, and not contribute with insurance provide by this policy."
 - All insurance policies required by this Section must contain the following clause:
 - "This insurance must not be canceled, limited, or non-renewed until after thirty days written notice has been given the JPA."
 - The Vendor(s) must furnish the JPA with original certificates and amendatory endorsements effecting coverage required by the Agreement.

2.9 Vendor Not an Agent

Except as the JPA may specify in writing, vendor must have no authority, expressed or implied, to act on behalf of the JPA in any capacity whatsoever as an agent.

Consultant must have no authority, expressed or implied, pursuant to the Agreement to bind the JPA to any obligation whatsoever.

2.10 Proposal Format

- A. Proposals must be clear and concise with sufficient detail and be presented in the order specified below. Although the weight of the proposal requirements vary, Proposers must provide all required elements.
- B. Proposers may provide samples, literature, graphic aids and other materials in appendices to help describe how the Proposer will accomplish the specified work.





- C. Proposers may be requested to present their proposed solutions and respond to JPA questions for clarification at a date, time, and location determined by the JPA.
- D. Proposers must adhere to the proposal format provided here for the Technical Proposal, organized by section:
 - 1. Cover Page
 - 2. Completed Representations and Certifications Form (page two of proposal)
 - 3. Table of Contents
 - 4. Section 1: Executive Summary
 - 5. Section 2: Organization Information
 - a. Company mission and history
 - b. Proposed Staffing
 - 1) Organizational chart - Provide an organizational chart showing the Proposer's organization and the relationship of the proposed services with other organizational divisions, programs, and sections. Indicate the lines of organizational management, authority, and responsibility
 - 2) Staffing chart - Provide a staffing chart, including key subcontractor personnel, that describes the Proposer's project staffing plan identifying staff positions (by name and title, if known) and reporting responsibility. Proposers may combine the organizational and staffing charts if they contain all requested information
 - 3) Job descriptions - Provide job descriptions for all staff positions outlined in the staffing chart by 1) position, title, and requirements which may include skills, education, experience, and certifications; 2) position description including decision authorities, reporting responsibilities, and duties
 - 4) Staff resumes - Provide resumes for all key personnel, including subcontractors, in the staffing chart that provide sufficient information to determine that the person is qualified for their assigned position, including history of relevant





education and experience, emphasizing work similar to this project

- c. Government contracts - List all government contracts the Proposer has had in the last five (5) years. If Proposer has an extensive list of contracts, then list no more than ten contracts, beginning with the most recent. Information should include a point-of-contact (POC), type of services, length of contract, performance outcome, compliance issues, and total value of the contract. The JPA will verify contract information

Litigation - Provide a description of any litigation and resolutions of disputes in the past ten (10) years related to the contractor's performance. Provide a copy of a letter from the Proposer's attorney and/or in-house legal counsel concerning the status of lawsuits and pending litigation for the most recent year

- d. Financial information:

- 1) Provide documentation that the organization has sufficient financial reserves to maintain the program for the duration of the project. Documentation may include cash and/or credit reserves. In addition, Proposers must provide the following information for the last two (2) fiscal years:
 - i. Audited financial statements with applicable notes
 - ii. Independent auditor's report on compliance and internal control over financial reporting based on an audit of the financial statements in accordance with Generally Accepted Accounting Principles (GAAP)
 - iii. Independent auditor's statement of findings and questioned costs

6. Section 3: Experience:

- a. Proposers must have a minimum 10 years of experience in the design and installation of LMR systems for public safety and must provide information describing their experience
- b. Proposers must provide a description of five successfully completed LMR projects of similar size and complexity for public-safety





agencies. Project descriptions must be limited to two pages and must include:

- 1) Proposers' role on the project (e.g., whether integrator, prime contractor, subcontractor, or equipment installer, or any combination thereof)
- 2) Project description
- 3) Number of radio sites and base stations/repeaters
- 4) Regional population base (i.e., city, county, state, etc.)
- 5) References information
 - i. Customer and system name
 - ii. Location
 - iii. Contact person, telephone number and email address
7. Section 3: Proposed Design (see Section 3.1)
8. Section 4: Project Management, Implementation and Migration (see Section 3.2, Section 3.3 and Section 3.4)
9. Section 5: Warranty, Maintenance and Support information (see Section 3.5)
 - a. System
 - b. Subsystems and subscriber equipment
 - c. Software and equipment warranty information
10. Section 6: Additional Information
 - a. Training programs
 - b. Additional information that is not covered in other sections
11. Appendices
 - a. Coverage prediction maps
 - b. Supplemental information not included in the body of the proposal





E. Pricing Proposal

Proposers must submit their pricing proposal in a separate, sealed envelope or package. Pricing proposals must include:

1. Cover page listing all completed forms
2. Table of contents
3. Section 1: Description of Pricing Proposal
4. Section 2: Pricing Schedule
 - a. The JPA will evaluate proposals with consideration given to the best overall cost of ownership. Proposers must provide detailed cost of ownership information for the proposed LMR and microwave equipment for 10 years. Proposers must provide individual pricing for the proposed products and services in sufficient detail to allow the JPA to verify that all major components are included. The JPA may elect to purchase all, some, or none of the items offered
 - b. Proposers must submit the proposed system pricing by completing a pricing form in an MS Excel®. Individual components should be identified on the pricing form in a way the reviewers can easily understand what is being provided (i.e., VHF repeater, 900 MHz radio, omnidirectional antenna, uninterruptable power supply, etc.) and should be separated by site
 - c. Proposers must submit a proposed milestone payment schedule with each milestone and/or deliverable for which payment will be due. Payment for all deliverables or milestones is dependent on JPA acceptance
5. Section 3: Warranty and Support
 - a. Proposers must provide a copy of any standard support agreements (e.g., warranty, maintenance, software licensing) requiring the JPA's review and signature
6. Section 4: Post-Warranty Support
 - a. Proposers must submit a proposed fee schedule and contract discount (if applicable) for the hardware, software, and services following the warranty period





2.11 Evaluation

- A. Proposals must be clear and provide sufficient detail to allow the JPA to evaluate each of the RFP submittal requirements.
- B. Although some factors will be weighted more important than others, all factors are necessary for an acceptable proposal, as follows:
 - 1. Proposers Understanding of the RFP
 - a. Compliance with the requirements of the RFP
 - b. Completion of all mandatory forms
 - c. Capability, features, and functionality of the system
 - d. Warranty, maintenance, and support
 - 2. Qualifications and Corporate Experience
 - a. The JPA will evaluate the Proposer's qualifications and corporate experience based on the information provided.
 - 3. References
 - a. The JPA will contact and evaluate Proposer references based on the information provided.
 - 4. Interviews Oral Presentations
 - a. Following proposal submission and JPA review, Proposers are required to respond to the JPA's questions for clarification in writing.
 - b. The JPA may request that Proposers in the competitive range participate in an onsite presentation/interview. A Proposer's inability to accommodate an interview may disqualify the Proposer from further consideration. The Proposer's representatives attending the interview must be qualified to respond to questions related to the proposal. The cost of participation in the interviews is the Proposer's responsibility. The JPA may also ask for clarification and additional information.
 - 5. Price Proposal





- a. Provide exact cost amounts proposed in the appropriate spaces as required in the Scope of Work. Explain any assumptions or constraints in a price proposal to perform the services.
- b. Proposers must provide pricing in the MS Excel format, and, as part of their Proposal, submit in the native format (MS Excel).
- c. There must be no additional charges or fees in the proposal except as designated on the pricing sheet.

2.12 Addenda to the RFP

- A. During the proposal period, the JPA may issue written addenda making changes or corrections to the specifications as issued.
- B. Such changes or corrections must be reflected in the products and services covered by the Proposers' proposal, and such addenda will become part of the specifications and contract.

2.13 Award of Contract

Notification of intent to award will be sent via email on June 15, 2022 by 5:00 p.m. or sooner. The result will also be posted online at www.ncdjpa.org on the same date.

A contract, or contracts (if portions of the bid are awarded to different Proposers) may be negotiated with the Respondent(s) whose proposal is determined to be the most responsive to the JPA's needs and most advantageous to the JPA, considering costs as well as other factors based on the criteria described herein, all as solely determined by the JPA.





3. Proposal Requirements

The system functionality and approach will be assessed based on feasibility and ability to meet or exceed the performance objectives in the Functional Specifications (Attachment 1).

3.1 Proposed Design

Proposers must submit a comprehensive Proposed Design that contains the following:

- A. System Description that describes in great detail the proposed system, including equipment, software, design, and implementation services to be provided for the following:
 - 1. VHF system, including radio coverage and frequency plan
 - 2. 900 MHz backhaul links
 - 3. Site infrastructure/improvements
 - 4. Additional subsystems
- B. Block diagrams, equipment layouts and equipment list for the proposed system.
- C. A copy of the Proposer's detailed itemized pricing information (including part numbers) provided as part of the pricing proposal except with all the pricing redacted.
- D. Detailed equipment specification sheets for all proposed equipment.
- E. A list of standards or guidelines that cannot be met and an explanation as to why they cannot.
- F. Talk-in and talk-out coverage maps for mobile and on-street portable radios on street portable radios for each XSD Command (CMD) channel in the North zone.
- G. A list and description of the coverage models and parameters used to produce the predicted radio coverage results.
- H. A list of sites that will employ Tower Top Amplifiers (TTAs).
- I. A description of the frequency coordination and Federal Communications Commission (FCC) licensing procedures that the Proposer will follow to comply





with the spectrum and licensing requirements. Proposers will work with the JPA to identify licensing plan.

- J. Evidence that the design meets tower height restrictions, as well as output and Effective Radiated Power (ERP) levels permitted by the Regional Planning Committee and FCC rules and regulations.
- K. A description of the procedures that the Proposer will follow to meet the interference mitigation requirements and FCC Maximum Permissible Exposure (MPE) standards.
- L. The Proposed Design must describe how the proposed system will integrate with the RCS microwave backhaul system.
- M. Microwave path profiles and path calculations for all 900 MHz microwave links.

3.2 Project Management Plan

Proposers must submit a comprehensive Project Management Plan tailored to this project that contains:

- A. Project scope
- B. Work Breakdown Structure (WBS)
- C. List of deliverables
- D. Project schedule with a detailed Gantt Chart containing the following tasks:
 - 1. Detailed site surveys
 - 2. Detailed microwave path analyses
 - 3. Detailed design review
 - 4. Equipment manufacturing
 - 5. Factory acceptance
 - 6. Equipment delivery
 - 7. System installation (per site, phase, and/or subsystem)
 - 8. System configuration





9. System optimization
 10. Radio coverage and acceptance testing
 11. Training
 12. System cutover
 13. System documentation, development and delivery
 14. System Acceptance
- E. A Quality Assurance/Quality Control (QA/QC) plan
- F. A risk management strategy describing how the Proposer intends to monitor and control the installation and deployment of the proposed system and mitigate risks to ensure that the system meets the design specifications and delivery requirements.
- G. A responsibility matrix that describes the JPA and the Selected Vendor's responsibilities.
- H. A change order plan that describes how the Proposer will address requested/suggested changes initiated by the JPA and/or Selected Vendor
- I. Methodology for maintaining a real-time punch list, accessible by the JPA and the Selected Vendor.

3.3 System Implementation Plan

- A. Proposers must submit a comprehensive System Implementation Plan tailored to the JPA's project that contains a:
1. Preliminary cutover plan that uses a phased approach.
 2. Description of the Proposer's system staging plan, identifying the location of staging.
 3. Sample of the Staging Acceptance Test Plan (SATP) to be used for this system.
 4. Proposed Coverage Acceptance Test Plan (CATP) tailored for the JPA's system with basic testing procedures and methods the Proposer intends to follow, including:





- a. Sufficient detail for the JPA to understand the procedure
 - b. The equipment that will be used, including user radios and test equipment
 - c. A description of the methodology that will be used for talk-in and talk-out measurements
5. Description of the Proposer's plan for ensuring that all equipment will have the latest software/firmware revision before Final Acceptance Testing begins.
 6. Sample Final Acceptance Test Plan (FATP) to be used for the system.
 7. Description of the procedure that will be used for conducting and documenting Final Acceptance.
 8. Description of the proposed 30-Day Operational burn-in period
 9. Description of the Proposer's methodology for gaining JPA approval on all of the activities and documents required for System Acceptance.
 10. Catalog of training classes, including web-based, on-site (hands-on with actual system equipment), and train-the-trainer.
 11. Preliminary training plan detailing quantity and type of training for the JPA technical staff. The plan must contain a list of courses and course outline.

3.4 Migration Plan

- A. Proposers must include a detailed migration plan tailored to this project that describes their strategy for providing critical public safety voice communications throughout the migration period. Existing radio users and dispatch centers must have reliable communications with minimal impact throughout the migration. The Migration Plan must address every aspect of the migration strategy.

3.5 Warranty, Maintenance, and Support

Proposers must provide proposed warranty, maintenance and support package that contains:





- A. A description of system, subsystem, and equipment warranty and a copy of all applicable standard support agreements (e.g., warranty, maintenance, and software licensing).
- B. An explanation of how the Proposer intends to provide on-site support 24 hours a day, 7 days a week, 365 days a year for the first 12 months following System Acceptance and their 24-hour call center capabilities.
- C. Identification of the Proposer's qualified service organization(s) that will provide warranty service and repair.
- D. A description of how the Proposer will meet the following warranty requirements:
 - 1. Service and repair to be performed 24 hours a day, 7 days a week, 365 days a year.
 - 2. The ability for the JPA to perform any maintenance and/or repairs required during the warranty period without voiding or affecting the Proposer's warranty.
 - 3. Tracking system to track equipment needing factory or depot repairs.
 - 4. Hardware repair and replacement.
 - 5. Software and firmware upgrades and back up.
- E. A description of the procedures that will be used to handle system level failures and defects during the warranty period.
- F. A description of the software and firmware upgrade support to be provided during the warranty period.
- G. A list of recommended initial spare parts and equipment, including, but not limited to:
 - 1. All Field Replaceable Units (FRUs)
 - 2. All infrastructure components having no FRUs, but that can cause a critical failure (e.g., antenna systems, other non-modular components), including all third-party equipment items
 - 3. Power supplies
 - 4. Test, measurement, calibration, and repair kits





5. Diagnostic equipment to support JPA maintenance activities
- H. Proposers must describe their plan to provide system lifecycle support to the JPA for the life of the contract, including:
 1. Spare parts and equipment
 2. Technical support services
 3. Design and engineering services
 - I. Proposers must describe the OPTIONAL post-warranty service tier(s) available for system support.
 - J. Proposers must describe the OPTIONAL post-warranty services available for software support and upgrades to the system.
 - K. Proposers must describe OPTIONAL extended warranty available for all supplied equipment for up to an additional 7 years, in one 1-year increments and bundles.

