Lewis County
CONTRACT FOR PROFESSIONAL SERVICES

Contractor: Day Wireless Systems

Contract #: 2024-RFP-023

Project Title: American Rescue Plan Act (ARPA) Lewis County Public Safety Radio Equipment and Services

Contract Period From: November 1st, 2024

To: December 31, 2026

UEI (Unique Entity Identifier) No. PAEFFMRVTLZ6

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CONTRACT FOR PURCHASE OF SERVICES

I. NOTICE TO CONTRACTORS

A. PARTIES

This is a contract between Lewis County, located in the State of Washington, hereinafter referred to as "County", and Day Management Corporation dba Day Wireless Systems (UEI DLD3TZDSFMD5), of 6430 SE Lake Road, Milwaukie, OR 97222, hereinafter referred to as "Contractor".

The Contractor is a:
(To be completed by Contractor and copy of Contractor's W9 shall be given to the County)

- ✓ Corporation
- ☐ General Partnership
- ☐ Limited Liability Company
- ☐ LLP
- ☐ Sole Proprietor
- ☐ Unincorporated Association
- ☐ Other: _____

B. SCOPE OF SERVICES AND PROJECT MILESTONES

Contractor is responsible for the delivery of all equipment and services as outlined in **Section II: SCOPE OF WORK** and based on their accepted proposal, schedule and timeline attached as Exhibits to this agreement. The County may request alterations to the Scope of Work's equipment and services on an as needed basis, and upon execution of a mutually approved Change Order with the Contractor, the Scope of Work shall be amended.

Scope of Services and Specifications

While the scope described presumes the direct performance by the chosen Contractor, work may also be performed by a subcontractor to the firm. In such case, the proposal should state so, along with the subcontractor(s)' supporting qualifications to provide such services. In the event the work is performed by a subcontractor to the firm, then the firm shall be responsible for subcontracting with them, as well as for reviewing the work product of such subcontractor(s) for quality and completeness. All services must comply with local law and permit conditions as well as applicable federal, state, and local statutory, regulatory, recording, reporting, and other requirements.

I. The County will accept only turnkey solution proposals addressing all project systems, subsystems, and components.

II. Contractor must acknowledge a requirement and obligation to coordinate planning and implementation activities with other vendors and or county tech teams when required. All work to be performed shall be scheduled with the county tech team and any outages are to be planned in advance.

III. No technology will be accepted from any vendor that is within 5 years of end of life or any technology that has already been cancelled.

IV. Project shall not accept systems or equipment that will no longer be supported for software, spare parts, and repair by the manufacturer within no less than 10 years of system acceptance. Equipment support timeline must be provided by the equipment vendor.

V. As defined in the RFP response, Lewis County is responsible for the FCC licensing for the new LMR radio system.

VI. Warranty shall be honored if county employees provide maintenance and repairs. No equipment will be accepted if ANY warranty is void in the event that a properly trained employee provides any service or maintenance per provided training requirement listed in scope of work section.

VII. All invoices shall include manufacturer and model information of each component. Vague descriptions of equipment and components will not be accepted and will be cause for disqualification.

Scope of Work

The following criteria must be met and included in the scope of work of any submitted proposal and must comply with any and all project specifications provided herein.

I. Contractor will be expected to provide ALL services in house or through qualified subcontractors and submit a turnkey proposal.

II. Proposed equipment vendor information and equipment specific model numbers.

III. All equipment shall meet or exceed the minimum standards provided by the County technical staff.

IV. Labor to be performed shall be compliant with prevailing wage requirements and contractor shall be in compliance of prevailing wage standards.

V. Provide training to county employees for any new equipment as well as necessary software for programming and monitoring. Any cost for training and software is to be included in approved Contract pricing.

Minimum Equipment Standards

The county tech team has compiled minimum standards for equipment to be included in any proposal. If these basic requirements contained herein are not met the county has the right to reject any proposal not meeting the standards.

Progress Reports

To ensure timely completion of the project, Contractor shall provide County with regular project reports at the following intervals:

- General progress report shall be submitted monthly no later than the 10th of the month; and
- with any invoice submitted to the County.

Project Acceptance

- **Project Acceptance Criteria**

  A formal Acceptance Test Plan (ATP) will be developed jointly by Day Wireless System and Lewis County Communications and will be attached to this Contract as an Exhibit. The ATP will include a checklist of items to test and will be prepared by a representative of the County and Contractor, who shall conduct the testing together. Upon completion of the ATP and approval by the County, the system will be considered accepted, and a project completion certificate will be signed.

- **Project Closeout**
  - Contractor shall provide a closeout package consisting of:
    - Acceptance Test Plan (ATP) – signed by County and Contractor
    - Equipment list by site, including all relevant support documentation
    - Photograph package consisting of as-built photographs per site
  - Upon acceptance of ATP and project completion certificate, the County shall issue a letter of completion to the Contractor closing the project. All final invoices shall be remitted to the County no later than 60 days after the date of this letter.

Federal Assistance Notice: This Contract is an agreement funded with a federal assistance award to Lewis County from the US Department of Justice, Office of Community Oriented Policing Services (COPS Office) Technology and Equipment Program, Award ID 15JCOPS-23-GG-03999-TECP. The award is documented in an "Award Terms and Conditions" document signed by the County on October 16, 2023. All contracts made by the award recipients under the federal award must contain the provisions required under 2 C.F.R. Part 200, Appendix II to Part 200—Contract Provisions for Non-Federal Entity Contracts Under, which are incorporated herein by this reference as if set forth in full. Federal Awards Contractor will comply with all other applicable federal statutes, regulations, and executive orders, as applicable.

C. TERM AND EFFECTIVE DATE

This contract shall become effective upon execution by both parties (in case of the County, by the Board of County Commissioners on behalf of the County). However, in no event shall work commence before execution by the County. The term of this contract shall be from **November 1, 2024 to December 31, 2026.**

D. ENTIRE AGREEMENT

This contract for purchase of services, including all attachments, exhibits and other documents

referenced in Section 3 (hereafter, "Agreement" or "Contract"), is the entire agreement of the parties and supersedes any and all oral contracts and negotiations between the parties.

E. ASSIGNABILITY/SUBCONTRACTING

Contractor shall not assign nor subcontract any interest of obligation under this contract without the County's prior written approval. All the services required hereunder will be performed by the Contractor and employees of the Contractor unless a valid assignment or subcontract in compliance with this paragraph exists.

F. DESIGNATED REPRESENTATIVE

1. Contractor designates Justin Sterrett, Director of Government Sales, jsterrett@daywireless.com, (509) 209-3073, as contract agent with primary responsibility for the performance of this contract. In case this contract agent is replaced by another for any reason, the Contractor will designate another contract agent within seven (7) calendar days of the time the first terminates his or her employment or responsibility using the procedure set for in Section L, Notices.

2. In the event of the death, disability, removal or resignation of the person designated above as the contract agent, the Contractor will designate another contract agent within seven (7) calendar days.

G. EXECUTION AND PROGRESS

1. Services under this agreement shall commence upon written order from the County to the Contractor. This order will constitute authorization to proceed.

2. The Contractor shall complete the services under this agreement within the time for completion specified in the Scope of Services, including any amendments. The Contractor's services are completed when the County notifies the Contractor in writing that the services are complete and are acceptable to County in County's sole discretion based on all Project Acceptance Criteria as outlined in Section B of this agreement. The time for completion shall not be extended because of any delay attributable to the Contractor but may be extended by the County in the event of a delay attributable to the County, or extraordinary circumstances beyond the control of the Contractor. If at any time the Contractor believes that the time for completion of the work should be extended because of delay caused by an unexpected event, or because of a delay attributable to the County, the Contractor shall notify the County as soon as possible, but not later than seven (7) calendar days after such an event. Such notice shall include any justification for an extension of time and shall identify the amount of time claimed to be necessary to complete the work.

3. Services by the Contractor shall proceed continuously and expeditiously through completion of each phase of the work.

4. The Contractor shall notify the County in writing when the Contractor has determined that it believes that the services under this agreement have been completed. When the County determines that the services are complete and are acceptable according to the ATP, the County will provide written notification to the Contractor, acknowledging formal acceptance of the completed services.

H. AMENDMENT

This contract shall be binding on the parties hereto, their respective heirs, devisees, and successors, and cannot be varied or waived by any oral representations or promise of any agent or other person of the parties hereto. Any change in any provision of this contract may only be made by a written amendment, signed by the duly authorized agent or agents of the parties to execute this contract.

I. NO WAIVER

No failure to exercise and no delay in exercising any right, power, or remedy hereunder on the part of the County or Contractor shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or remedy preclude any other or further exercise thereof or the exercise of any other right, power, or remedy. No express waiver shall affect any event or default other than the event or default specified in such waiver, and any such waiver, to be effective, must be in writing and shall be operative only for the time and to the extent expressly provided by the County or Contractor therein. A waiver of any covenant, term or condition contained herein shall not be construed as a waiver of any subsequent breach of the same covenant, term or condition.

J. NON-DISCRIMINATION

In the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment regardless of age, ancestry, arrest and conviction record, color, creed, disability, genetic testing, honest testing, marital status, membership in the National Guard, State Defense Force or any reserve component of the military forces of the United States or this state, national origin, pregnancy or childbirth, race, religion, sex (including sexual harassment), sexual orientation, and use or nonuse of lawful products off of the employer's premises during nonworking hours.

K. SEVERABILITY

It is mutually agreed that in case any provision of this contract is determined by any court of law to be unconstitutional, illegal, or unenforceable, it is the intention of the parties that all other provisions of this contract remain in full force and effect.

L. NOTICES

All notices to be given under the terms of this contract shall be in writing and signed by the person serving the notice and shall be sent registered or certified mail, return receipt requested, postage prepaid, to the addresses of the parties listed below:

FOR THE COUNTY: **Lewis County 911 Communications**

351 NW North St
Chehalis, WA 98597

FOR THE CONTRACTOR: **Day Management Corporation**
dba Day Wireless Systems
6430 SE Lake Road
Milwaukie, OR 97222

M. STATUS OF CONTRACTOR/INDEPENDENT/TAX FILING

It is agreed that the Contractor is an independent Contractor and not an employee of the County, and that any persons who the Contractor utilizes and provides services under this contract are employees of the Contractor and/or its sub Contractors and are not employees of the County. Contractor has the right to direct and control Contractor's own activities in providing the agreed work or services.

Contractor shall have and maintain complete responsibility and control over all of its sub Contractors, employees, agents, and representatives, if any. No sub Contractor, employee, agent, or representative of Contractor, if any, shall be or deemed to be or act or purport to act as an employee, agent, or representative of the County.

Contractor assumes full responsibility for the payment of all payroll taxes, use, sales, income, or other form of taxes, fees, licenses, excises, or payments required by any city, county, state, or federal law which is nor or may during the term of this agreement be enacted as to all Contractor's employees, agents, or representatives, and as to all Contractor's duties, activities, and requirements in performance of the work on under this agreement. Contractor shall at all times maintain such unemployment insurance and workers' compensation insurance as may be required by applicable law in full force and effect for all of its members principals and employees who may, from time to time, perform work or services pursuant to this agreement.

Contractors assumes full responsibility to ensure that all its employees, agents, representatives, and sub Contractors, if any, who perform work or provide services under this agreement are eligible to work according to all applicable state and federal laws and regulations.

Contractor shall provide its taxpayer identification number (or social security number) to the County, prior to payment. The Contractor is informed that as an independent Contractor, s/he may have a responsibility to make estimated tax returns, file tax returns, and pay income taxes and make social security payments on the amounts received under this contract and that no amounts will be withheld from payments made to this Contractor for these purposes and that payment of taxes and making social security payments are solely the responsibility and

obligation of the Contractor. The Contractor is further informed that s/he may be subject to civil and/or criminal penalties if s/he fails to properly report income and pay taxes and social security taxes on the amount received under this contract.

The following events shall be reported as soon as possible, upon the occurrence thereof (and in any event with five business days of the occurrence thereof, if possible) to the County:

(a) The inclusion of the Contractor or sub-Contractor, or any employee, officer or other official of any of the foregoing, on any State or federal listing of debarred or suspended persons, or if any of such persons are proposed for disbarment, declared ineligible, or voluntarily excluded from covered transactions by any State or federal department or agency.

(b) Any criminal or civil litigation, or credible threat of such litigation, or investigation by any governmental entity of any of the persons listed in (a) for violations of State or federal law involving fraud, bribery, misappropriation of funds, breaches of fiduciary duty or other actions bearing on the trustworthiness, credibility, or responsibility of such person.

(c) Contractor must notify the County in the event of a project change and/or modification that impacts the objectives in their application.

N. THIRD PARTY RIGHTS

This contract is intended to be solely between the parties hereto. No part of this contract shall be construed to add, supplement, amend, abridge, or repeal existing rights, benefits, or privileges of any third party or parties, including but not limited to employees of either of the parties.

O. AUDIT AND RETAINING OF DOCUMENTS

Subject to any applicable laws and regulations (including SEC regulations) which may prohibit Contractor, as a subsidiary of a Nasdaq traded company, from publishing such information before it becomes public knowledge, the Contractor agrees to provide all reports requested by the County including, but not limited to, financial statements and reports, reports and accounting of services rendered, and any other reports or documents requested. Financial and service reports shall be provided according to a schedule (when applicable) to be included in this contract. Any other reports or documents shall be provided within five (5) working days after the Contractor receives the County's written requests, unless the parties agree in writing on a longer period. Payroll records and any other documents relating to the performance of service under the terms of this contract shall be retained by the Contractor for a period of three (3) years after completion of all work under this contract, in order to be available for audit by the County or its designee.

P. APPLICABLE LAW

The Contractor shall become familiar with and shall always comply with and observe all federal, state, and local laws, ordinances, and regulations which in any manner affect the services or conduct of the Contractor and its agents and employees.

A. This Contract shall be construed and interpreted in accordance with the laws of the State of Washington. The venue for any action hereunder shall be in Lewis County, WA.

B. Contractor agrees to comply with the requirements of section 603 of the Secure 2.0 Act, the Treasury's regulations implementing that section, and guidance issued by Treasury regarding the foregoing. Contractor also agrees to comply with all other applicable federal laws, regulations, and executive orders, and Contractor shall provide for such compliance by other parties in any agreements it enters into with other parties relating to this Contract.

C. Federal regulations applicable to this award include, without limitation, the following:

i. EXHIBIT A to this agreement, 2 C.F.R. Part 200 Appendix II requirements

ii. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200, including the following:

- Subpart A, Acronyms and Definitions;
- Subpart B, General Provisions;
- Subpart C, Pre-Federal Award Requirements and Contents of Federal Awards;
- Subpart D, Post-Federal Award Requirements;
- Subpart E, Cost Principles; and
- Subpart F, Audit Requirements. (*Single audit not required if for-profit subrecipient or Contractor*)

iii. Universal Identifier and System for Award Management (SAM), 2 C.F.R. Part 25, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 25 is hereby incorporated by reference.

iv. OMB (Office of Management and Budget) Guidelines to Agencies on Government-wide Debarment and Suspension (Non-procurement), 2 C.F.R. Part 180, including the requirement to include a term or condition in all lower tier covered transactions (contracts and subcontracts described in 2 C.F.R. Part 180, subpart B) that the award is subject to 2 C.F.R. Part 180 and Treasury's implementing regulation at 31 C.F.R. Part 19.

v. Recipient Integrity and Performance Matters, pursuant to which the award term set forth in 2 C.F.R. Part 200, Appendix XII to Part 200 is hereby incorporated by reference.

vi. Government-wide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20.

vii. Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§ 4601-4655) and implementing regulations.

D. Generally applicable federal environmental laws and regulations.

E. Statutes and regulations prohibiting discrimination applicable to this award include, without limitation, the following:

i. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and Treasury's Implementing regulations at 31 C.F.R. Part 22, which prohibit discrimination on the basis of race, color, or national origin under programs or activities receiving federal financial assistance;

ii. The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.), which prohibits discrimination in housing on the basis of race, color, religion, national origin, sex, familial status, or disability;

iii. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination based on disability under any program or activity receiving federal financial assistance;

iv. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), and Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibit discrimination based on age in programs or activities receiving federal financial assistance; and

v. Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto;

vi. Hatch Act. Contractor agrees to comply, as applicable, with requirements of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328), which limits certain political activities of federal employees, as well as certain other employees who work in connection with federally funded programs.

F. PROHIBITION ON PROVIDING FUNDS TO THE ENEMY (2 CFR 183)

i. The Contractor must exercise due diligence to ensure that none of the funds, including supplies and services, received under this Contract are provided directly or indirectly (including through subcontracts) to a person or entity who is actively opposing the United States or coalition forces involved in a contingency operation in which members of the Armed Forces are actively engaged in hostilities. The Contractor must terminate or void in whole or part any subcontract with a person or entity listed in the System Award Management Exclusions (SAM) as a prohibited or restricted sources pursuant to subtitle E of Title VIII of the NDAA for FY 2015, unless the Federal awarding agency provides written approval to continue the subcontract.

ii. The Federal awarding agency has the authority to terminate or void this Contract, in whole or in part, if the Federal awarding agency becomes aware that the Contractor failed to exercise due diligence as required by paragraph A of this

clause of if the Federal awarding agency becomes aware that any funds received under this Contract have been provided directly or indirectly to a person or entity who is actively opposing coalition forces involved in a contingency operation in which members of the Armed Forces are actively engaged in hostilities.

iii. In addition to any other existing examination-of-records authority, the Federal Government is authorized to examine any records of the Contractor and its Subcontracts to the extent necessary to ensure that funds, including supplies and services, available under this Contract are not provided, directly or indirectly, to a person or entity that is actively engaged in hostilities.

iv. The Contract must include the substance of this clause, including paragraph, in subcontracting agreements that have an estimated value over $50,000 and will be performed outside the United States, including its outlying areas.

Q. CONFLICT OF INTEREST

1. Contractor understands and agrees it must maintain a conflict-of-interest policy consistent with 2 C.F.R. § 200.318(c) and that such conflict-of-interest policy is applicable to each activity funded under this award. Contractor and subrecipients must disclose in writing any potential conflict of interest affecting the awarded funds in accordance with 2 C.F.R. § 200.112.

2. Entering into this Contract with the County requires that the Contractor agree to abide by certain provisions of the Lewis County Employee Code of Ethics or other applicable County Policies, including those relating to conflicts of interest and the employment of current or former County employees.

3. The Contractor warrants that it and its agents and employees have no public or private interest and will not acquire directly or indirectly any such interest, which would conflict in any manner with the performance of the services under this Agreement.

4. The Contractor shall not employ or contract with any person currently employed by the County for any services included under the provisions of this Agreement.

R. COMPENSATION

It is expressly understood and agreed that in no event will the total compensation for services under this contract exceed $2,231,597.33, plus any applicable sales tax, unless the County requests a Change Order or scope of work change that is approved by both parties in writing.

S. BASIS FOR PAYMENT

1. GENERAL

1) The County will pay the Contractor for the completed and accepted services rendered under this contract on the basis and at the contract price set forth in Section R of this contract.

2) The Contractor shall submit invoices to the County with fully itemized details, broken down by site, and with an updated Progress Report. The County will pay the Contractor following approved Project Report as outlined in Section B. The final invoice shall be submitted to the County within sixty (60) days of completion of services under this Agreement.

3) Payment shall not be construed as County acceptance of unsatisfactory or defective services or improper materials.

4) Final payment of any balance due the Contractor will be made upon acceptance by the County of the equipment and services under the Agreement and upon receipt by the County of documents required to be returned or to be furnished by the Contractor under this Agreement. County will remit payment with terms of Net 30 following acceptance of the equipment and services and receipt of documents to be returned or furnished by Contractor.

5) The County has the equitable right to set off against any sum due and payable to the Contractor under this Agreement, any amount the County determines the Contractor owes the County, whether arising under this Agreement or under any other Agreement or otherwise.

6) Compensation in excess of the total Contract price will not be allowed unless authorized by an amendment under Section H, AMENDMENT.

7) The County will not compensate for unsatisfactory performance by the Contractor.

2. PAYMENT TERMS

1) The County agrees to make payments to the Contractor based on the following milestone schedule:

- Signing of Contract: Upon execution of this Agreement, County shall make an initial payment equal to ten percent (10%) of the total contract value.

- Equipment Received: County agrees to pay up to fifty percent (50%) of the total contract value based on the documented reception of equipment at the designated “ship-to” location. This payment milestone is contingent upon:
    - Contractor to provide documentation of the inventory received,
    - A signed inventory report verifying receipt and accuracy of equipment, and
    - Confirmation and written agreement by the County of all received items.

- Installation Progress: County shall make monthly progress payments based on the documented percentage of installation completed. Monthly invoices will reflect installation progress up to a cumulative amount of thirty percent (30%) of the contract value.
    - Contractor shall provide detailed reports on installation progress for each site by the end of each billing period.

- Both County and Contractor shall review and mutually agree on the work completed, with any disputes over progress resolved in good faith prior to invoicing. A representative from each party shall sign off on the verified progress report to confirm mutual agreement.

- Final Acceptance: Upon County's final acceptance and approval of all installed equipment, the remaining ten percent (10%) of the total contract value shall be paid.

3. SERVICE ORDERS, EXTRA SERVICE, OR DECREASED SERVICE

1) Written orders regarding the services, including extra services or decreased services, will be given by the County, using the procedure set forth in Section L, NOTICES.

2) The County shall review the Contractor's submittal and respond in writing, either authorizing the Contractor to perform the extra service, or refusing to authorize it. The Contractor shall not receive additional compensation or time unless the extra compensation is authorized by the County in writing.

T. DEFAULT/TERMINATION

1. In the event the Contractor shall default in any of the covenants, agreements, commitments, or conditions herein contained, and any such default shall continue unresolved for a period of ten (10) days after written notice thereof to Contractor, the County may, at its option and in addition to all other rights and remedies which it may have at law or in equity against contractor, including expressly the specific enforcement hereof, forthwith have the cumulative right to immediately terminate this contract and all rights of Contractor under this contract.

2. Notwithstanding paragraph A., above, the County may in its sole discretion and without any reason terminate this Agreement at any time by furnishing the Contractor within ten (10) days' written notice of termination. In the event of termination under this subsection, the County will pay for all work completed by the Contractor and accepted by the County.

U. INDEMNIFICATION

To the fullest extent allowable by law, Contractor hereby indemnifies and shall defend and hold harmless the County, its elected and appointed officials, officers, employees, or authorized representatives or volunteers and each of them from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorneys' fees, costs, and expenses of whatsoever kind or nature whether arising before, during, or after completion of the work hereunder and in any manner directly or indirectly caused, occasioned, or contributed to in whole or in part or claimed to be caused, occasioned, or contributed to in whole or in part, by reason of any act, omission, fault, or negligence, whether active or passive, of Contractor or of anyone acting under its direction or control or on its behalf in connection with or incident to the performance of this Agreement regardless if liability without fault is sought to be imposed on the County. Contractor's previously mentioned indemnity and hold harmless agreement shall not be applicable to any liability caused by the sole fault, sole

negligence, or willful misconduct of the County, its elected and appointed officials, officers, employees or authorized representatives or volunteers. This indemnity provision shall survive the termination or expiration of this Agreement.

In any and all claims against the County, or any of its directors, officers, employees, or authorized representatives or volunteers by an employee of the Consultant, any subcontractor, or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Consultant or any subcontractor under Worker's Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

No provision of this Indemnification clause shall give rise to any duties not otherwise provided for by this Agreement or by operation of law. No provision of this Indemnity clause shall be construed to negate, abridge, or otherwise reduce and other right or obligation of indemnity that would otherwise exist as to the County under this or any other contract. This clause is to be read in conjunction with all other indemnity provisions contained in this Agreement. Any conflict or ambiguity arising between any indemnity provisions in this Agreement shall be construed in favor of indemnified parties except when such interpretation would violate the laws of the state in which the job site is located.

Contractor shall reimburse the County, its elected and appointed officials, officers, employees, or authorized representatives or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the County, or any of its elected and appointed officials, officers, employees or authorized representatives or volunteers.

V. INSURANCE

INSURANCE REQUIREMENTS
(Professional)

Unless otherwise specified in this Agreement, the Contractor shall, at its sole expense, maintain in effect at all times during the performance of the Work, insurance coverage with limits not less than those set forth below with insurers and under forms of policies set forth below.

The Contractor will insure, and will require each sub Contractor to insure, as indicated, against the following risks to the extent stated below. The Contractor shall not commence work under this Contract, nor shall the Contractor allow any Sub Contractor to commence work on its Subcontract, until the insurance required below has been obtained and corresponding certificate(s) of insurance have been approved by the County.

Commercial General Liability

Provide a Commercial General Liability Insurance Policy, including grant liability, written on an occurrence basis, in adequate quantity to protect against legal liability arising out of Contract Activity but no less than $1,000,000 per occurrence, $2,000,000 aggregate. Additionally, the Contractor is responsible for ensuring that any sub Contractors provide adequate insurance coverage for the activities arising out of subcontracts.

Automobile Liability

In the event that performance pursuant to this Contract involves the use of vehicles, owned or operated by the Contractor, automobile liability insurance shall be required. The minimum limit for automobile liability is $1,000,000 per occurrence, using a Combined Single Limit for bodily injury and property damage.

Worker's Compensation

The Contractor shall procure and shall maintain during the life of this contract Worker's Compensation insurance as required by applicable State law for all Contractor's employees to be engaged at the site of the project under this project and in case of any such work sublet, the Contractor shall require the sub Contractor similarly to provide Worker's Compensation Insurance for all the Contractor's or sub Contractor's Workers which are covered under the Contractor's Worker's Compensation insurance. In case any class of employee engaged in work on the project under this contract is not protected under a Worker's Compensation Statute, the Contractor shall provide and shall cause each Contractor or sub Contractor to provide Employer's Insurance in an amount of not less than $500,000.

Professional Liability

Contractor shall obtain and maintain at all times during the prosecution of the work under this Contract professional liability insurance. Limits of liability shall be $1,000,000 per claim and $2,000,000 aggregate. Any such policy of insurance and the Declarations Page therefore shall identify if coverage is being provided on an "occurrence" or "claims-made" basis. If this coverage is being provided on a claims-made basis, Contractor must maintain this policy for a period of one (1) year after the completion of the project or shall purchase the extended reporting period or "tail" coverage insurance providing equivalent coverage for the same period of time**.**

Acceptability of Insurers. The above-required insurance is to be placed with insurers who have an A.M. Best rating of no less than A- (A minus) and a Financial Category rating of no less than VII.

Proof of Insurance, Approval. The Contractor shall provide the County with certificate(s) of insurance showing the type, amount, effective dates, and expiration dates of required policies prior to commencing work under this Contract. Contractor shall provide the certificate(s) to the County's representative upon execution of the Contract, or sooner, for approval by the County. If any of the policies required above expire while this Contract is in effect, Contractor shall provide renewal certificate(s) to the County for approval.

The Contractor shall provide copies of additional insured endorsements or insurance policies, if requested by the County. The Contractor and/or Insurer shall give the County thirty (30) days advance written notice of cancellation, non-renewal or material changes to any of the above-required policies during the term of this Contract.

W. OWNERSHIP OF CONTRACT PRODUCT

Any and all Intellectual Property Rights related to the equipment/software/services are and shall remain at all times the exclusive property of Contractor or, as the case may be, its vendors and/or licensors.

All of the work product, including, but not limited to, documents, materials, files, reports, data, including magnetic tapes, disks of computer-aided designs or other electronically stored data or information (the "Documents"), which the Contractor prepares pursuant to the terms and conditions of this contract are the sole property of the County. The Contractor will not publish any such materials or use them for any research or publication, other than as expressly required or permitted by this contract, without the prior written permission of the County. The grant or denial of such permission shall be at the County's sole discretion.

The Contractor intends that the copyright to the Documents shall be owned by the County, whether as author (as a Work Made for Hire), or by assignment from Contractor to County. The parties expressly agree that the Documents shall be considered a Work Made for Hire as defined by Title 17, United States Code, Section 101(2).

As further consideration for the County entering into this contract, the Contractor hereby assigns to the County all of the Contractor's rights, title, interest and ownership in the Documents, including the right to procure the copyright therein and the right to secure any renewals, reissues and extensions of any such copyright in any foreign country. The County shall be entitled to the sole and exclusive benefit of the Documents, including the copyright thereto, and whenever required by the County, the Contractor shall at no additional compensation, execute all documents of assignment of the full and exclusive benefit and copyright thereof to the County. Any sub Contractors and other independent Contractors who prepare portions of the Documents shall be required by the Contractor to execute an assignment of ownership in favor of the County before commencing work.

X. PUBLIC RECORD LAW COMPLIANCE

It is the intention of County to maintain an open and public process in the solicitation, submission, review, and approval of contracts.

1. The parties acknowledge that County is a municipal corporation legally bound to comply with Ch. 42.56 RCW**.** It is further agreed that neither party will take any action to obstruct the operation of these laws. To comply with any request under said Public Record Law, the provider/Contractor herein shall produce copies of all materials, gathered or produced or modified pursuant to this Contract to the County, in their original (i.e., electronic or digital, etc.) format at actual cost of reproduction, without profit.

2. Any Public Records Law request received directly by a Contractor related to this Contract with County shall immediately be reported to the County. The Contractor shall assist the County in timely and fully fulfilling all of County's obligations under the Washington Public Records Act and/or any other authority by timely and fully responding and providing documents and records in response to County's request for the same. In the event that Contractor fails to fully fulfill its obligations pursuant to this section and should a court impose a fine, penalty, sanction, and/or judgment against County for

violation of said law, Contractor shall indemnify the County for the same, immediately pay County to satisfy the same together with all costs and attorneys fees incurred by County. The obligations created by this section shall survive the termination of this agreement.

3. The Contractor shall maintain all books, records, documents, data and other evidence relating to this contract and performance of the services described herein, including but not limited to, accounting procedures and practices which sufficiently and properly reflect all direct and indirect costs of any nature expended in the performance of this contract. Contractor shall retain such records for a period of seven (7) years following the date of final payment.

4. If any litigation, claim or audit is started before the expiration of the seven- (7) year period, the records shall be retained for a period of seven (7) years after all litigation, claims, or audit findings involving the records have been finally resolved.

Y. LIVING WAGE (Applicable to contracts exceeding $5,000)

Unless exempt, the Contractor agrees to pay all employees employed by the Contractor in the performance of this contract, whether on a full-time or part-time basis, a base wage of not less than minimum hourly wage. Contractor shall pay the prevailing rate of wages to all workers, laborers, or mechanics employed in the performance of any part of the Work in accordance with RCW 39.12 and the rules and regulations of the Department of Labor and Industries. The schedule of prevailing wage rates for the locality or localities of the Work, is determined by the Industrial Statistician of the Department of Labor and Industries. It is the Contractor's responsibility to verify the applicable prevailing wage rate.

Each Application for Payment submitted by Contractor shall state that prevailing wages have been paid in accordance with the pre-filed statement(s) of intent, as approved. Copies of the approved intent statement(s) shall be posted on the job site with the address and telephone number of the Industrial Statistician of the Department of Labor and Industries where a complaint or inquiry concerning prevailing wages may be made.

In compliance with chapter 296-127 WAC, Contractor shall pay to the Department of Labor and Industries the currently established fee(s) for each statement of intent and/or affidavit of wages paid submitted to the Department of Labor and Industries for certification.

In addition, the Contractor shall file weekly certified payroll records with the Department of Labor and Industries, as required by RCW 39.12.120

Z. IT NETWORK CONNECTION POLICY

If this Contract includes services such as software support, software maintenance, network services, system development services and/or will require a network connection to the County network, is hereby incorporated and made a part of this contract and Contractor agrees to comply with the County's Technology Policy and Procedures.

AA. AUTHORITY

Contractor represents that it has the authority to enter into this contract. If the Contractor is not an individual, the person signing on behalf of the Contractor represents and warrants that s/he has been duly authorized to bind the Contractor and sign this contract on the Contractor's behalf.

AB. COUNTERPARTS, CONTRACT DELIVERY

This contract may be signed in counterparts, each of which shall be taken together as a whole to comprise a single document. Executed copies of the originally signed contract must be delivered or mailed to the County Clerk's Office. Copies of the contract exchanged by facsimile, electronic scanned copy or similar technology shall not be considered a valid signed contract.

AC. TIME IS OF THE ESSENCE

Time is of the essence for all terms, conditions, obligations, and duties set forth or referred to in this agreement.

AD. INTERPRETATION OF THIS AGREEMENT

This agreement was negotiated and drafted jointly by the parties, and it shall not be construed against either party in case of any dispute.

This Agreement constitutes the entire agreement of the Parties on all these subjects. This Agreement may not be modified, interpreted, waived, or revoked orally, but only by a writing signed by both Parties. This Agreement supersedes and replaces all prior agreements, discussions, and representations on all these subjects, any and all of which are merged into and superseded by this Agreement. No Party is entering into this Agreement in reliance upon any oral or written promises, inducements, representations, understandings, interpretations, or agreements, other than those contained in this Agreement.

AF. SURVIVAL OF CONTRACT.

This Contract shall be binding upon and inure to the benefit of the parties hereto and all of their respective heirs, successors, and assigns. The terms, conditions, and warranties contained in this Contract that by their sense and context are intended to survive the completion of the performance, cancellation, or termination of this Contract shall so survive.

AG. SEVERABILITY

If any provision of this Contract is found to be invalid or contrary to law or public policy or is declared null and void by a court of competent jurisdiction, the remaining provisions shall remain in full force and effect and binding upon the parties.

II. SCOPE OF WORK

The Scope of Work shall include, but not necessarily be limited to, the work described herein.

Background

On March 11, 2021, the American Rescue Plan Act ("ARPA") was signed into law and established the Coronavirus State and Local Fiscal Recovery Fund ("SLFRF") program. This program is intended to provide support to State, territorial, local, and Tribal governments in responding to the economic and public health impacts of COVID-19 and in their efforts to contain impacts on their communities, residents, and businesses.

In 2022, the Lewis County Board of County Commissioners allocated $4,500,000 in Federal ARPA funding to Lewis County Communications for the Radio Services Infrastructure Project to improve functionality and interoperability of radio services systems in Lewis County.

Overview

Lewis County Communications is developing a complete replacement of the aging radio communications system. This project is intended to design, install, and complete a public safety grade radio communications system.

All phases of this project will be required to meet minimum standards that have been identified by the county tech team to meet their requirements. These requirements will include the engineering, design, installation, testing, and completion of a public safety grade radio communications system.

Sites have been identified per a current RF study completed in November 2023 through Televate Lewis County, WA Public Safety Radio System Engineering Study Report (Attachment B).

Lewis County issued a Request for Proposals (RFP) in order to find a qualified service provider for Public Safety Radio Equipment and Services related to the American Rescue Plan Act (ARPA) funds.

The Contractor submitted a response to the RFP that will serve as the initial scope of work for this project. This proposal and all subsequent updates will be attached to this Contract as an Exhibit and are incorporated in this Contract by such reference and shall be deemed to be a part of it as if they had been fully set forth in it.

Throughout this project there will be a need to maintain quality control and management of cost and expenses. The selected service provider will be expected to ensure that all applicable federal, state and local laws and regulations are followed. The project will require the Contractor to work closely with Lewis County and other relevant partners staff and the general public throughout the project.

III. EXHIBITS

All exhibits referred to in and attached to this Contract are incorporated in this Contract by such reference and shall be deemed to be a part of it as if they had been fully set forth in it.

A. 2 CFR (Code of Federal Regulations) 200 Appendix II requirements
B. 31 CFR (Code of Federal Regulations) 21 – New Restrictions on Lobbying - Certification Regarding Lobbying
C. Certification Regarding Debarment, Suspension and Other Responsibility Matters
D. Assurances Of Compliance with Title VI of The Civil Rights Act Of 1964
E. Request for Proposal for Radio Equipment and Services, an American Rescue Plan Act (ARPA) Project
F. Day Wireless Systems Final Narrative Proposal Final Design
G. Daw Wireless Systems Final Fee Schedule
H. Site Evaluation Checklist Template
I. American Rescue Plan Act (ARPA) / SLFRF Terms and Conditions

IN WITNESS WHEREOF, the parties hereto have executed this agreement at Lewis County, Washington.

COUNTY
a municipal government

APPROVED AS TO FORM

Prosecuting Attorney Jonathan Meyer

_____

By: Chief Civil DPA David Bailey

And

Lewis County

_____

Director Jennifer Libby-Jones

Date: _____

CONTRACTOR

_____

Day Management Corporation dba Day Wireless Systems

By: _____
(Signature)

Lane Falkner, CEO
(Print Name and Title of Person Signing)

Date: _____

EXHIBIT A: 2 CFR (Code of Federal Regulations) 200 Appendix II requirements

Notice: The contract or purchase order to which this addendum is attached is made using federal assistance provided to Lewis County by the US Department of Treasury under the American Rescue Plan Act ("ARPA"), Sections 602(b) and 603(b) of the Social Security Act, Pub. L. No. 117-2 (March 11, 2021).

The following terms and conditions apply to you, the contractor or vendor, as a contractor of Lewis County, according to the County's Award Terms and Conditions signed on **May 12, 2021** by ARPA and its implementing regulations; and as established by the Treasury Department.

In the event of a conflict between these required Terms Subject to the Uniform Guidance ("Federally Required Contract Terms") and the terms of the main body of the Contract or any exhibit or appendix, these Federally Required Contract Terms shall govern.

1. **Debarment and Suspension**. Contractor represents and warrants that, as of the execution of this Contract, neither Contractor nor any sub Contractor or sub-consultant performing work under this Contract (at any tier) is included on the federally debarred bidder's list listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." If at any point during Contract's term Contractor or any sub Contractor or sub-consultant performing work at any tier is included on the federally debarred bidder's list, Contractor shall notify the County immediately. Contractor's completed Vendor Debarment Certification is attached hereto and incorporated herein.

2. **Amendment Permitted**. This list of Federally Required Contract terms may be amended by the County in the event that the applicable federal grant providing funding for this Agreement contains additional required terms.

3. **Record Retention**. Contractor certifies that it will comply with the record retention requirements detailed in 2 CFR § 200.333. Contractor further certifies that it will retain all records as required by 2 CFR § 200.333 for a period of three (3) years after it receives County notice that the County has submitted final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed. Unless Contractor is functioning as a sub-recipient of grant funding, rather than as a Contractor, this requirement is in addition to, and not in place of, the County's public records retention requirements.

4. **Procurement of Recovered Materials**. A non-Federal entity that is a state agency or agency of a political subdivision of a state and its Contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

5. **Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387**), as amended—If this is a contract or sub-grant in excess of $150,000, Contractor must comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

6. **Byrd Anti-Lobbying Amendment (31 U.S.C. 1352).** Contractor certifies that:

    a. No federal appropriated funds have been paid or will be paid, by or on behalf of Contractor,

to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal Loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of and Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, Contractor shall request and provide, completed, the "Disclosure Form to Report Lobbying," in accordance with its instructions as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96).

c. Contractor shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

d. Contractor's completed Byrd Anti-Lobbying Certification is attached hereto and incorporated herein.

7. **Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)**. If this Contract is for an amount in excess of $100,000 and involves the employment of mechanics or laborers, Contractor must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, Contractor must compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

8. **Right to Inventions**. If the federal award is a "funding agreement" under 37 CFR 401.2 and this is an agreement between the County or a sub-recipient and a small business firm or nonprofit organization regarding the substitution of parties, assignment of performance or experimental, developmental or research work thereunder, the County or sub-recipient will comply with 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

9. **Davis-Bacon Act**, as amended (40 U.S.C. 3141-3148). If this is a "prime construction contract," in its performance under the Contract, Contractor shall comply with the Davis-Bacon Act (40 Page 13 of 38 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, Contractor is required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, Contractor is required to pay wages not less than once a week. **Note: this paragraph is not applicable to contracts paid for solely with ARPA SLFRF moneys.**

10. **Equal Employment Opportunity**. If this is a "federally assisted construction contract," as defined by 41 CFP Part 60- 1.3, except as otherwise provided in 41 CFR Part 60, in its performance under the contract, the 41 CFP Part 60-1.3 shall comply with the equal opportunity clause provided under 41

CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

a. **Minority and Women Business Enterprises (*if applicable to this Contract*)** Contractor hereby agrees to comply with the following when applicable: The requirements of Executive Orders 11625 and 12432 (concerning Minority Business Enterprise), and 12138 (concerning Women's Business Enterprise), ***when applicable.*** Accordingly, the Contractor hereby agrees to take affirmative steps to assure that women and minority businesses are utilized when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall include the following:

   i. Including qualified women's business enterprises and small and minority businesses on solicitation lists;

   ii. Assuring that women's enterprises and small and minority businesses are solicited whenever they are potential sources;

   iii. When economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by small and minority business, and women's business enterprises;

   iv. Where the requirement permits, establishing delivery schedules which will encourage participation by women's business enterprises and small and minority business;

   v. Using the services and assistance of the Small Business Administration, and the U.S. Office of Minority Business Development Agency of the Department of Commerce; and

   vi. If any subcontracts are to be let, requiring the prime Contractor to take the affirmative steps in a through e above.

b. For the purposes of these requirements, a Minority Business Enterprise (MBE) is defined as an enterprise that is at least 51 percent owned and controlled in its daily operation by members of the following groups: Black, Hispanic, Asian or Pacific Islander, American Indian, or Alaskan Natives. A Women Business Enterprise (WBE) is defined as an enterprise that is at least 51 percent owned and controlled in its daily operation by women.

11. **Domestic preferences for procurements**. Pursuant to 2 CFR §200.322, as appropriate, and to the extent consistent with law, Contractor should, to the greatest extent practicable under this Contract, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subcontracts and purchase orders for work or products under this Contract. **Note: this paragraph is not applicable to contracts paid for solely with ARPA SLFRF moneys.**

12. **Buy USA - Domestic Preference for certain procurements using federal funds.** Contractor should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award. For purposes of this section: (1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States. (2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum;

plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

13. **Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment**. Contractor shall not use funds under this Contract to purchase, or enter into subcontracts to purchase, any equipment, services, or systems that use telecommunications equipment or services as a substantial or essential component of a system that is subject to 2 CFR § 200.216 (generally, video surveillance or telecommunications equipment produced by Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company, their subsidiaries or affiliates, or any entity that the Secretary of Defense reasonably believes to be an entity owned or controlled by the government of a foreign country). In the event Contractor identifies covered telecommunications equipment or services that constitute a substantial or essential component of any system, or as critical technology as part of any system that is subject to 2 CFR § 200.216, during Contract performance, Contractor shall alert the County as soon as possible and shall provide information on any measures taken to prevent recurrence.

14. **Access to Records**. (applies to all purchases.) (A) The Contractor agrees to provide the County, the U.S. Department of Treasury, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions. The Contractor agrees to permit any of the foregoing parties to reproduce by any means or to copy excerpts and transcriptions as reasonably needed and agrees to cooperate with all such requests.

    a. The Contractor agrees to provide the Treasury Department or authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

15. **Publications**. Any publications produced with funds from this award must display the following language: “This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN (Federal Award Identification Number)] awarded to [name of Recipient] by the U.S. Department of the Treasury.”

16. **Increasing Seat Belt Use in the United States**. Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Contractor is encouraged to adopt and enforce on-the-job seat belt policies and programs for your employees when operating company-owned, rented or personally owned vehicles.

17. **Reducing Text Messaging While Driving**. Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Contractor is encouraged to adopt and enforce policies that ban text messaging while driving and establish workplace safety policies to decrease accidents caused by distracted drivers.

EXHIBIT B: 31 CFR 21 – NEW RESTRICTIONS ON LOBBYING - CERTIFICATION REGARDING LOBBYING

(To be submitted with each bid or offer exceeding $100,000)

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(c) The undersigned shall require that the language paragraph 1 and 2 of this anti-lobbying certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995).

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 et seq., apply to this certification and disclosure, if any.

_____
Signature of Contractor's Authorized Official

_Lane Falkner, CEO_____
Printed Name and Title of Contractor's Authorized Official

_____
Date

EXHIBIT C: CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

The bidder, proposer, Contractor, or sub Contractor, as appropriate, certifies to the best of its knowledge and belief that neither it nor any of its officers, directors, or managers who will be working under the Contract, or persons or entities holding a greater than 10% equity interest in it (collectively "Principals"):

1. Are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal or state department or agency in the United States;
2. Have within a three-year period preceding this proposal, bid, or agreement been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state anti-trust or procurement statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are presently indicted for or otherwise criminally or civilly charged by a government entity, (federal, state or local) with commission of any of the offenses enumerated in paragraph 2 of this certification; and
4. Have within a three-year period preceding this application/proposal had one or more public transactions (federal, state or local) terminated for cause or default.

The bidder, proposer, Contractor, or sub Contractor, as appropriate, certifies that they are "Actively" registered with SAMS (Service for Award Management) and have been assigned the following Unique Entity Identifier (UEI): _____. The Contractor further certifies that it shall not knowingly enter any transaction with any sub Contractor, material supplier, or vendor who is debarred, suspended, declared ineligible, or voluntarily excluded from covered transactions by any federal or state department/agency.

I understand that a false statement on this certification may be grounds for rejection of this proposal or bid, or termination of the award or, in some instances, criminal prosecution.

I hereby certify as stated above:

_____
Signature Date

_Lane Falkner CEO_____
Print Title and Name of authorized representative

I am unable to certify to one or more the above statements. Attached is my explanation.

_____
Signature Date

_____
Print Title and Name of authorized representative

EXHIBIT D: ASSURANCES OF COMPLIANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

As a condition of receipt of federal financial assistance from the Department of the Treasury, the Contractor named below (hereinafter referred to as the "Contractor") provides the assurances stated herein. The federal financial assistance may include federal grants, loans and contracts to provide assistance to the County's beneficiaries.

The assurances apply to all federal financial assistance from, or funds made available through the Department of the Treasury, including any assistance that the Contractor may request in the future.

The Civil Rights Restoration Act of 1987 provides that the provisions of the assurances apply to all of the operations of the Contractor's program(s) and activities, so long as any portion of the Contractor's program(s) or activities is federally assisted in the manner prescribed above.

1. Contractor ensures its current and future compliance with Title VI of the Civil Rights Act of 1964, as amended, which prohibits exclusion from participation, denial of the benefits of, or subjection to discrimination under programs and activities receiving federal financial assistance, of any person in the United States on the ground of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of the Treasury Title VI regulations at 31 CFR Part 22 and other pertinent executive orders such as Executive Order 13166, directives, circulars, policies, memoranda, and/or guidance documents.
2. Contractor acknowledges that Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency," seeks to improve access to federally assisted programs and activities for individuals who, because of national origin, have Limited English proficiency (LEP). Contractor understands that denying a person access to its programs, services, and activities because of LEP is a form of national origin discrimination prohibited under Title VI of the Civil Rights Act of 1964 and the Department of the Treasury's implementing regulations. Accordingly, Contractor shall initiate reasonable steps, or comply with the Department of the Treasury's directives, to ensure that LEP persons have meaningful access to its programs, services, and activities. Contractor understands and agrees that meaningful access may entail providing language assistance services, including oral interpretation and written translation where necessary, to ensure effective communication in the Contractor's programs, services, and activities.
3. Contractor agrees to consider the need for language services for LEP persons when Contractor develops applicable budgets and conducts programs, services, and activities. As a resource, the Department of the Treasury has published its LEP guidance at 70 FR 6067.
4. Contractor acknowledges and agrees that compliance with the assurances constitutes a condition of continued receipt of federal financial assistance and is binding upon Contractor and Contractor's successors, transferees, and assignees for the period in which such assistance is provided.
5. Contractor acknowledges and agrees that it must require any sub-grantees, Contractors, sub Contractors, successors, transferees, and assignees to comply with assurances 1-4 above, and agrees to incorporate the following language in every contract or agreement subject to Title VI and its regulations between the Contractor and the Contractor's sub-grantees, Contractors, sub Contractors, successors, transferees, and assignees:

The sub-grantee, Contractor, sub Contractor, successor, transferee, and assignee shall comply with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of; or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with "Limited English Proficiency" in

any program or activity receiving federal financial assistance, 42 U.S.C. § 2000d et seq., as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement.

Under penalty of perjury, the undersigned official(s) certifies that official(s) has read and understood the Contractor's obligations as herein described, that any information submitted in conjunction with this assurances document is accurate and complete, and that the Recipient is in compliance with the aforementioned nondiscrimination requirements.

Lane Falkner, CEO_____ _____ _____
Authorized Signatory Name Signature Date

LEWIS COUNTY NOTICE FOR:

Request for Proposals (RFP)

PUBLIC SAFETY RADIO EQUIPMENT AND SERVICES

RELATED TO AMERICAN RESCUE PLAN ACT (ARPA) FUNDS

[illegible] 19 2024 5 00 [illegible] 9 2024 5 00 [illegible]

[illegible]

[illegible] 63225 [illegible]

CLOSING DAY AND TIME: Responses will be accepted no later than 5:00 p.m. May 9th, 2024. All proposals received previously have been accepted and do not need to be resubmitted.

[illegible] 911 [illegible] 360 740 3394 [illegible]

[illegible] 4 30 24 [illegible] 5 1 24 [illegible] 5 1 24 [illegible] 5 1 24

Lewis County

REQUEST FOR PROPOSAL

FOR

PUBLIC SAFETY RADIO EQUIPMENT AND SERVICES RELATED TO AMERICAN RESCUE PLAN ACT (ARPA) FUNDS

RFP TRACKING NUMBER 2024-RFP-023

Issued by:

Lewis County
351 NW North St
Chehalis, WA 98532

February 13, 2024

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Section 1. RFP Timeline

The following timeline is subject to change at the discretion of the City.

RFP released to public	September 13, 2024
Deadline for submission of written questions	October 6, 2024 at 5:00 p.m.
Responses to questions posted	October 15, 2024 at 5:00 p.m.
Proposal submission deadline	October 25, 2024 at 5:00 p.m.
Project Team's Selection	November 3, 2024
Anticipated City Council approval of contract with selected firm	November 16, 2024

Section 2. Introduction and Project Description

Background

On March 11, 2021, the federal government enacted the American Rescue Plan Act ("ARPA") and established the Coronavirus State and Local Fiscal Recovery Fund ("SLFRF") program. This

2022 ... 4 500 000 ...

Overview

... 2023 ...

... "RFP," ...
"Request for Proposal") ...

Section 3. RFP Submittal and Closing Date

Cover Letter

... 911 ...

- State the company's ability to comply with all the stipulations of this solicitation.
- Point out the company's particular strengths.
- [illegible]
- [illegible]
- [illegible]

- Include the submitter's mailing address and telephone number.

Key Proposal Information

- 6
- and browse to the "Microwave
- click on "Submit Response"
- 911
- 360 740 3394

Lewis County Rights

amend this RFP, or cancel the RFP in order to achieve the County'
County's best information at the

Responsibility for Proposal Preparation

It is neither the County's responsibility nor practice to acknowledge receipt of any proposal as a result of the RFP process. It is the proposer's responsibility to assure that a proposal is delivered

No Conflict of Interest

Section 4. Inquiries and Addenda

addressed via the County's procurement platform, Open Gov.

Section 5. Mandatory Requirements

6

5.

6. proposer's

7. County's sole discretion.

8.

9.

10. provider's Proposal. The clearance in the Service Provider's proposal must be re

11.

12. 90

13. 72

Open Records/Proprietary Information

1.

2.

Section 6. Project Scope

Proposal Submission Requirements

Lewis County ("County") is initiating this request for proposals ("RFP") from qualified professional firms ("Contractor")

Scope of Services and Specifications

subcontractor(s)' supporting qualifications to provide such services. In the

Scope of Work

the county's tech team standard before final sign off.

Minimum Equipment Standards

Radio Equipment

- **Attachment A**

Section 7. Proposal Evaluation and Contractor Selection

7.1 Evaluation Process

evaluations may, at Lewis County's sole discretion, result in (A) notice to a Proposer(s) of

7.2 Pass/Fail Criteria

7.3 Evaluation Criteria

Criteria	Maximum Score
1	20
2	25
3	25
4	20
5	10
	100

Section 8. General Information; Terms and Conditions

1. selected contractor's project approach.
2. Worker's Lewis County's
3.
4.
5.
6.
7.
8.
9. 's reduction
   's right to require the Contractor to perform, at the Contractor's

's rights, which

Section 9. System for Award Management (SAM)

Section 10. Contract Provisions

200—

Terms Required for all Lewis County Contracts Funded with American Rescue Plan Act (ARPA) Funds Subject to the Uniform Guidance

Subject to the Uniform Guidance ("Federally Required Contract Terms") and the terms of

1. **2 CFR 200 APPENDIX II (A)**

41 1908

2. **2 CFR 200 APPENDIX II (B).** 10 000

3. **Debarment and Suspension.**

Contract (at any tier) is included on the federally debarred bidder's list listed on the go

2 180 12549 3 1986 189 12689 3 1989 235 "Debarment and Suspension." If at any point during Contract's term Contractor or any subcontractor or sub included on the federally debarred bidder's list, Contractor shall notify Contractor's completed Vendor Debarment Certification is attached hereto and incorporated herein.

4. **Amendment Permitted.**

5. **Public Records.**

6. **Record Retention.**

7. **Procurement of Recovered Materials.**

8. **Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended**—

9. **Byrd Anti-Lobbying Amendment**

9.1

9.2

61
1413 1 19 96
9 3
9 4 Contractor's completed Byrd Anti
10 **Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708).**
100 000
40 3702 3704
29 5 40 3702
40
40 3704
40
11 **Right to Inventions**. If the federal award is a "funding agreement" under 37 CFR 401.2 and this is
37
Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under
ative Agreements," and any implementing regulations
12 **Davis-Bacon Act, as amended (40 U.S.C. 3141-3148)**. If this is a "prime construction contract," in
40 13
38 3141 3144 3146 3148 29
CFR Part 5, "Lab
Assisted Construction"). In accordance with the statute, Contractor is required to pay wages to
Note: this paragraph is not applicable to contracts paid for solely with ARPA SLFRF moneys.
13 **Prevailing Wage.**
39 12
the Department of Labor and Industries. It is the Contractor's responsibility to verify the applicable

296-127 [illegible]

14. **Equal Employment Opportunity**. If this is a "federally assisted construction contract," as defined [illegible] Executive Order 11246, "Equal Employment Opportunity" [illegible] 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and [illegible] 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." The text of 41 CFR 60-1.4 [illegible]

15. **Domestic preferences for procurements.** [illegible]

16. **Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment** [illegible]

Section 11. BYRD Anti-Lobbying Certification

(To be submitted with each bid or offer exceeding $ 100,000)

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(c) The undersigned shall require that the language paragraph 1 and 2 of this anti-lobbying certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995).

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 et seq., apply to this certification and disclosure, if any.

_____

Signature of Contractor's Authorized Official

_____

Printed Name and Title of Contractor's Authorized Official

_____

Date

Section 11. Certifications Regarding Debarment, Suspension and other Responsibility Matters

10

"Principals"):

1

2

3

2

4

Lewis County

REQUEST FOR PROPOSAL

FOR

PUBLIC SAFETY RADIO EQUIPMENT AND SERVICES RELATED TO AMERICAN RESCUE PLAN ACT (ARPA) FUNDS

SCOPE OF WORK

ATTACHMENT A

SECTION 1

Introduction and Overview

1.1 Basic Project Description

1.1.1 Lewis County (Buyer) is requesting Proposals for a complete VHF analog simulcast radio system with option of future APCO P25 function.

(1) Radio system infrastructure including all radio equipment, controllers, interconnecting network equipment but not the actual transport facilities, microwave antennas, waveguides, and associated equipment

(2) Radio system network alarm management and reporting system

(3) Technical support training

(4) Ongoing equipment updates to keep the system at current manufactured status

(5) Development of a detailed transition plan for conversion from the existing system to the new system

(6) Radio system infrastructure implementation project management, engineering, and full radio system installation services

(7) Ancillary systems such as microwave and fiber transport, DC power, and radio site construction will be furnished by the Owner as will overall system project management

1.1.2 The Buyer anticipates the Successful Proposer will provide a complete RF system solution.

1.1.3 Proposals will be evaluated as indicated in the Instructions to Proposers.

1.1.4 The Successful Proposer will provide a complete radio system solution.

1.2 Document Overview

1.2.1 This Document has the following sections:

(1) Section 1 Introduction and Overview –

This section provides a general overview of the proposed system scope of the project.

(2) Section 2 – Existing System Description –

This section describes the existing system, users, sites, and other systems currently in use.

(3) Section 3 Common Technical Requirements –

This section defines the broadly applicable technical requirements that apply to all aspects of the technical systems and equipment.

(4) Section 4 Radio System Specifications and Requirements –

This section defines the requirements for the P25 capable analog simulcast radio system, interconnecting router networks, and network management systems.

(5) Section 5 Transport System Interface Requirements –

This section defines the interface requirements for any site interconnection systems including microwave, telephone T1 connections, or other interconnection technologies as required.

(6) Section 6 Site Improvement and Upgrade Requirements –

This section defines the requirements for any site improvements required by the Proposers.

(7) Section 7 DC Power Interface Requirements –

This section defines the requirements for 48 VDC power systems interface. The 48 VDC system will be supplied by the Buyer. The Proposer shall interface to this DC power supply.

(8) Section 8 Training Requirements –

This section defines the end user, management, and technical training requirements.

(9) Section 9 Data Network Requirements –

This section defines the requirements for any data networks supplied as part of this Project including system data interfaces. The Buyer will supply the transport data network. The Proposer shall interface to that network.

(10) Section 10 Implementation Requirements –

This section defines the requirements for implementation including but not limited to items such as transition planning, factory staging, field storage, etc.

(11) Section 11 Quality and Workmanship Requirements –

This section defines the requirements for quality and workmanship.

(12) Section 12 Acceptance Testing Requirements –

This section defines the acceptance testing of the entire system as well as coverage testing.

(13) Section 13 Documentation Requirements –

This section defines the documentation required to be produced and delivered for this project.

(14) Section 14 Warranty and Maintenance Requirements –

This section defines the warranty and maintenance requirements for system support.

(15) Section 15 Project Closeout Requirements –

This section describes the project closeout process and requirements.

1.3 Information about Lewis County

1.3.1 Lewis County is located in the Southwest region of Washington state. The county encompasses approximately 2400 square miles with a population of nearly 81,000 citizens. Boasting peaks reaching 7000 feet, the terrain makes for a challenge to provide radio service to emergency personnel.

Having a primarily rural population, the emergency services crews spend the bulk of their time working in low density areas. This coupled with the aggressive terrain of the county makes for reliable radio service coverage.

Lewis County is seeking to upgrade and expand its current radio service footprint to grow with the expanding population and ever-growing call for services.

SECTION 2

Existing System Description

2.1 Existing System Description

2.1.1 Existing system description is provided in the RFP Attachment B, separate document, title Televate Engineering Report.

SECTION 3

Common Technical Requirements

This section describes technical requirements of all equipment supplied as part of the system.

3.1 Equipment to be Furnished Complete

3.1.1 Unless specifically excepted by the terms of these specifications, any parts or accessories ordinarily furnished or required to make a complete operating unit or system must be furnished by the Seller whether directly mentioned or not mentioned in the specifications

3.1.2 The equipment must be complete, installed, and ready for operation at the Buyer's dispatch center location(s), central controller location (s), at any of the remote sites, in identified vehicles, and agency stations as required

3.2 Component Ratings

3.2.1 Every component part of the equipment must be operated within the manufacturer's continuous commercial duty rating under any combination of operating conditions specified.

3.3 Overload Protection

3.3.1 Adequate fuses and/or circuit breakers must be included to protect the equipment from internal and external faults. In the event these fusing devices are employed in circuits exhibiting switching surges, a suitable time delay element must be incorporated in the fuse device to preclude false operation and yet protect the equipment from a sustained overload.

3.4 Existing Equipment Interfaces

3.4.1 The Buyer and Seller must coordinate all interconnections to all Buyer supplied equipment in excess of being supplied under this bid. Actual interconnections to working systems will be completed by seller and coordinate cut-over procedures and timeline with buyer.

3.5 Equipment Placement

3.5.1 All equipment must be arranged and installed so its intended function will not be impaired because of weather, temperature, adjacent equipment, or any other factors. Sufficient installation space and clearance must be provided so service and maintenance can be readily performed. The relative arrangement of operating equipment must be consistent with good human engineering practices resulting in maximum operator efficiency. Plans showing the placement of all equipment must be submitted to the Buyer's Project Manager for approval a minimum of 30 days prior to actual placement since Buyer's installation requirements and standards must be preserved.

3.6 Equipment Mounting

3.6.1 Seller must install equipment in a standard telecommunications open frame rack 19-inch. Cabinets may also be proposed for locations that do not have traditional shelters.

3.6.2 If equipment placement will require cabinets, the cabinets must include a standard EIA 19-inch rack mounting facilities for mounting of equipment. All sections of the cabinet must be constructed to prevent warping, twisting, or sagging of any component or assembly. The cabinet must be supplied with removable front and rear doors and adequate ventilation to provide cooling for the contained equipment.

3.6.3 Access doors must be equipped with locks to prevent access to the equipment by unauthorized personnel. All front and back cabinet doors must be easily removed for equipment maintenance. These doors or panels must have dimensions to permit free, unobstructed access to all equipment mounted in the cabinet. The cabinet must be manufactured of durable, quality materials. All materials prone to rust and/or corrosion must be finished and painted. Swing out or slide out chassis/circuit card assemblies must be provided to facilitate assembly and maintenance. Wiring and cabling must be formed with sufficient slack to allow unrestricted chassis movement. Intra-rack cable management must support the auto-retraction or otherwise automatic stowage of any cables connected to equipment mounted on slide-out rack rails. All hinges, slides, rollers, fasteners, etc. must be of high-quality construction to provide for long life and endure Public Safety use.

3.6.4 All parts requiring periodic servicing or maintenance must be easily accessible and must not require the removal of other parts or exposure to voltages above 60 VDC or VAC in order to gain this access. All cables, wiring, mating connectors, and plugs required for the complete system must be provided by the Seller.

The following color code must be used unless Seller receives prior written approval from the Buyer:

White – telephone cables
Red – Alarm cables
Blue – Ethernet cables
Yellow – Cat 6 patch cords
Green – Radio system Ethernet data cables

3.6.5 Wiring and cabling both within the equipment and in the external interconnections must be neatly formed and dressed. Cable ties or lacing cord must be used to dress all cables in place.

3.7 Non-Lan Cables

3.7.1 All general-purpose interconnecting cables, except power, LAN, and equipment ground, used in the system must consist of standard telephone company type 25-pair cable with tinned-copper conductors, telephone standard color-coded insulation, with vinyl jackets, terminated with an Amphenol 50 terminal male connector on one end and a female connector on the other end. The number of installed cables must meet the system requirements plus specified future growth requirements.

3.7.2 Special purpose cables designed as part of the Seller's system are exempted from the requirement of 3.8.1.

3.7.3 LAN cables are specified in Section 9 Data Networks.

3.8 Connector Blocks

3.8.1 All cabling in the system for non-LAN connections must run below the computer flooring, in overhead cable tray or in Buyer supplied cableway and terminate in Seller supplied Leviton 40066-MR, or equal, 25-pair connector blocks having and standoff bracket and a prewired Amphenol female connector mating with the specified cable connector for general non-patch cable type interconnects. These “66 blocks” must be located on the plywood backboard mounted on the wall of the equipment room. The exact locations of the connector blocks must be identified on drawings and coordinated with the Buyer.

3.8.2 Should any conductor require a different gauge of wire than specified by the “66 block” manufacturer, or require shielding, the conductor must be supplied in addition to and terminate in the same locations with appropriate connectors at each end.

3.8.3 The number of blocks supplied must be the number required to accommodate all the circuits and functions, including the future growth requirements. At least one block must be supplied for each functional group of interconnections as listed. The blocks must be laid out in a logical manner to minimize the length of the interconnecting jumpers. Connections must be by jumpers as required from these blocks to the appropriate termination blocks. Blocks must not contain direct originating and terminating connections on the same block.

3.8.4 No series connecting (daisy chaining) of cabling must be used. All blocks and connectors used on the blocks must be identified with a marked identification strip. All blocks must include a protective cover over punch connections.

3.8.5 The blocks may be mounted directly to the wall-mounted plywood backboard provided they are mounted in an orderly manner with jumper rings or cable distribution posts attached to the backboard. Sufficient rings or posts must be installed and located to accept the vertical jumpers from between the blocks to facilitate jumper runs in either direction, and allow the jumpers to drop directly to their terminating positions. Rings or posts must also be installed located across the top to provide horizontal jumper runs positioned to allow the jumpers to access the vertical runs in either direction.

3.8.6 Patch panels may be used to transition from a single 8P8C (RJ45-type) cable and connector to a cross connect block or multi-conductor cable supporting multiple connections.

SECTION 4

Radio System Specifications and Requirements

4.1 Introduction

4.1.1 This section defines the requirements for the fixed radio system infrastructure. Other elements required to make the system a complete functional radio system are defined in other sections. However, Seller is required to supply all the equipment components and services required to implement a complete system even if not specified in detail in these specifications.

4.2 System Description

4.2.1 The Buyer is seeking to install a new turn-key VHF analog simulcast radio system. This system will be replacing an aging VHF multi-site system. A more detailed description of the current system can be found in a separate document.

4.2.2 The new simulcast analog VHF radio system must:

(1) Operate in the VHF public safety spectrum of 150-170 Mhz for current and future analog narrowband frequencies.

(2) Provided system and components shall be P25 capable for future upgrade.

(3) Meet the requirements of the Lewis County Communications tech team specifications.

(4) Work with existing infrastructure including microwave system, dispatch console s system, logging recorder, alarm systems, and Lewis County enterprise networks. If the new system proposed will not work with any part of existing infrastructure, the proposer must clearly state the reasons the systems are incompatible and provide costs to replace the components identified.

4.3 Frequency Requirements

4.3.1 Seller must analyze the VHF frequencies currently held by Lewis County for use with the system and provide information to the buyer. If new frequency coordination or additional frequencies are to be added, the seller shall propose a detailed list of necessary additional resources required. The buyer will be responsible for all FCC licensing, frequency coordination, and all associated costs, although seller may propose to provide licensing services as an option. Seller

must perform sufficient frequency research to determine if there is a high probability of being able to obtain all Frequency resources required by their proposed system design. Seller is responsible to develop, gain approval from Buyers Project Manager, and implement a plan to transition from existing system to the proposed replacement system.

4.3.2 Seller must assume that there will be at minimum 2 standalone repeater locations to be used as a backup in the event of a catastrophic failure of the system and should account for frequency coordination accordingly.

4.3.3 Seller shall coordinate and engineer the system to create a 7-channel system to include:

(2) Law Channel
(2) Fire Channel
(1) Fire Page only channel
(1) Public Works Channel
(1) Ops Channel

4.4 System Technical Requirements

4.4.1 The radio system must engineered to be a VHF analog simulcast multichannel system.

4.4.2 The Radio system shall be designed to be fully upgradeable to APCO Project 25 (P25) Phase 2 requirements to allow future conversion. All components are to me the requirement for this future option.

4.5 Subscriber Compatibility

4.5.1 The system must be provided to work with all currently used narrowband VHF analog subscriber equipment. This equipment includes mobile radio, portable radios, and fire pagers.

4.5.2 System design shall not have requirements for system keys or specific radio IDs.

4.6 Encryption

4.6.1 System shall allow for standalone encryption software or hardware on the user level. No system encryption requirements are required on a system level at this time.

4.7 Equipment

4.7.1 Equipment supplied under this procurement must be compliant with all FCC rules and specifications at the time of manufacture.

4.7.2 The fixed equipment must operate over a room ambient temperature range of 0 to +40 degrees C with an ambient relative humidity of 5 to 95 percent.

4.7.3 The following equipment must be compatible with 48 VDC:

A. All remote site RF equipment including RF base stations, power amplifiers, receive multicouplers, combiners, and any additional equipment necessary for the remote RF equipment to remain operational.
B. All remote site data and ancillary equipment including data switches, routers, controllers, fault and alarm, and any other equipment required to keep the remote site operational during an AC power failure.
C. All references in this specification refer to nominal 48 VDC refer to the DC power defined in this section and the DC power supply specification section.

4.7.4 All equipment must be installed in EIA standard 19-inch “relay” racks. All racks must be 7ft tall. Seller is to provide additional racks where necessary where current equipment racks do not exist. All racks must comply with the following standard:

A. Anodized aluminum or similar finish to resist corrosion.
B. Drilled and tapped holes on front and back of each rack support rail.
C. Vertical cable management must be 3.65 inches wide minimum and 6 inches deep minimum.
D. Horizontal cable management located on the racks as required to neatly dress and manage intra-rack horizontal cables.

4.8 Interoperability

4.8.1 The system must be capable of interoperable communications with surrounding agencies capable of a VHF narrowband analog signal.

4.9 Reliability

4.9.1 Reliability/Redundancy/Backup

A minimum of two failures occurring with overlapping times must be necessary to cause the loss of any communications system features and functions.

4.9.2 Failure Mode One

A. Due to operational requirements, a failure causing the system at one location to fail, the rf system shall maintain normal operation at all other site locations only degrading coverage surrounding the failed site in question.
B. The complete system or any portion of the system must not be off the air for longer than 10 seconds during system transition. All features of the remaining unaffected system shall remain functional.

4.9.3 Failure Mode Two

A. In the event of a primary system failure where the system loses connection (ie network failure) any linked system components shall continue to operate outside of the affected network failure areas.
B. Network loss resulting from microwave radio failures should automatically switch to alternate routing through IP network switching where available.

C. Primary RF resources shall be located at strategic points within the county footprint to offer standalone radio service from each of the primary sites.
D. Primary sites should be located (1) west area and (1) east area to act as standalone repeater options.

4.9.4 Failure Notification - In the event of a network failure monitoring software shall emit a notification to alert communications staff of the failure. Any loss of a network component over 10 seconds should trigger notification.

4.10 Coverage

4.10.1 Coverage should be calculated based on attachment B of this document (radio system study conducted by Televate).

4.10.2 Coverage testing and adjustment shall be required to meet mobile radio performance standards at minimum. Mobile coverage is expected in 95 percent of the county incorporated areas.

4.10.3 Proposer must provide predicted coverage of the proposed radio system for portable radio coverage.

4.10.4 Proposer must provide coverage areas in failure mode one and two for training and information purposes.

4.10.5 Coverage design, implementation, and testing for the system must adhere to the latest revision of Telecommunications Industry Association (TIA) Telecommunications System Bulletin 88 (TSB-88).

4.10.6 Mobile coverage requirements must be met for user level supplied VHF 40w mobile radios all using unity gain antennas.

4.10.7 Portable radio coverage requirements must be met for user level supplied VHF 5w portable radios all using unity gain antennas.

4.11 Sumulcast System Requirements

4.11.1 Where simulcast operation is proposed, the Proposer must provide full technical details about all aspects of the proposed simulcast equipment including but not limited to:

(1) Methods used to maintain required frequency stability and specifications for frequency stability.

(2) Methods used to maintain proper audio phasing and time of arrival requirements.

4.11.2 Buyer will supply the site interconnection transport facilities consisting of ISO Layer 2 connections using microwave, fiber, telco circuits or other transport facilities. If the proposer requires quality of service, other traffic prioritization, or other traffic shaping (i.e., MPLS services, or ISO Layer 3 routing services, the Proposer must supply the required system(s).

4.11.3 Proposer must detail the bandwidth required to implement the simulcast system. The Seller must supply any networking equipment required to connect the sites to the Buyer supplied transport network. Proposer must detail their limits on transport performance to maintain simulcast phasing in all configurations of transport operation.

4.11.4 Phase Delay Equalization

(1) Phase delay equalization must be provided to minimize simulcast overlap distortion. Equalization equipment must be provided for each transmit channel and will have sufficient delay adjustment to provide "over" and "under" adjustment of at least 25 percent or as required by the overlap distance requirements, whichever is greater. The equipment configuration must support adjustments in the simulcast delay or “launch time” adjustments from the controller location or other defined single location without making a trip to the remote site.

(2) The simulcast timing/phase delay equipment must automatically compensate for changes in the network routing. This compensation must allow for an infinite number of network configurations. Proposer must specify the maximum Buyer network/ transport time delay they can accommodate with their equipment.

4.12 Receiver Voting Systems

4.12.1 Receiver voting systems must be employed as part of any area wide simulcast system. The voting equipment must be capable of continuous duty operation. Proposer must provide detailed information on the voting receiver system including primary and secondary voting for each transmission.

4.12.2 The equipment supplied must be capable of the following operational criteria when an on-channel, properly coded signal appears in the system.

(1) The remote receiver voting system must be designed and interconnected to constantly select the highest quality digital signal being received and automatically rejecting the weak and noisier (e.g., higher bit error rate) signals. The process must be continuously selective and provide for automatic switchover without interruption of speech or data. The best quality digital audio signals during a transmission as changes of condition or location occur must be selected. The voting comparator must monitor the integrity of the incoming receive data circuits and reject any lines not meeting the required bit error rate.

(2) The system must be essentially “fail safe,” so any receiver or data transport circuit failure will not cause the rest of the system to malfunction or result in an interruption of communications.

(3) Controls must be provided allowing for individual selection and disabling of each receiver input.

4.13 Receiver Multicoupler System

4.13.1 Sites with multiple receivers must have a receiver multicoupling system. At each site, one receive antenna must be used as much as practical for all receivers at the site. If more than one antenna is required, on any site, for all VHF receive operations, a detailed explanation of the proposed configuration along with complete justification must be included in the proposal. The receiver multicoupling system must not be included in the transmitter combiner system.

4.13.2 The multicoupling system must be expandable to at least 15 channels and employ a high third order intercept above +40 dBm to limit the generation of intermodulation products. Noise figure must not exceed 5.0 dB. Any port not used in the system must be terminated in a 50-ohm load.

4.13.3 The multicoupling system must be powered by a nominal industry standard 48 VDC power connection. The 48 VDC system will be supplied by buyer.

4.14 Antennas and Transmission Lines

4.14.1 All transmission antenna system components must be rated as low PIM (passive intermodulation) by the manufacturer.

4.14.2 The VHF base/repeater antennas furnished as part of the system must be designed to produce uniform signal strength on the ground from the antenna site to the horizon. Heavy null fill is required to assure close in coverage. Polarization must be vertical.

4.14.3 Separate transmit and receive antennas must be provided at all repeater sites. In all cases, antennas must be chosen to provide the best balance for system transmission and reception. Proposer must state the number of antennas required for the proposed system configuration

4.14.4 All proposed antennas must meet the following minimum specifications:

A. Antenna gain: As required
B. Radiation Pattern: As required
C. Down Tilt Angle: As required
D. Rated Power Limit: 500 watt minimum
E. Wind Rating: 120 MPH minimum
F. VSWR: 1.5 to 1 maximum
G. Antenna Termination: N Type connector or equivalent
H. Cable Termination: N Type connector or equivalent
I. Operating Frequency: As Designated

4.14.5 The antenna must be supplied with mounting brackets, mast, and all other suitable mounting hardware for top or side mounting on a mast or tower. All brackets, mast, clamps, and hardware must be of a suitable galvanized steel material to minimize corrosion and rust. Proposer must state in their Proposal the material to be used. The Buyer will supply the specific tower mounting structure and tower mounts as required by the antenna locations indicated in the Proposal. Seller must supply the hardware to mount to the Buyer-supplied tower mounts.

4.14.6 Transmission line losses must be kept at a minimum at each site. Depending on the line length required at each site, the following represents the types of transmission line preferred:

1. Transmission Line – Transmit and receive: Commscope AVA or LDF series, ½" or 7/8" jacket foam dielectric.

2. Impedence: 50 ohms

3. Outer Conductor: Solid copper.

4. Grounding Kit: Kits must be furnished and installed to bond the transmission line at both the top and bottom of towers and at the bottom of non-tower (buildings) sites. Kits must be furnished and installed at all building entry points

5. Cable Attachment: Proper cable attachment device shall be used to securely attach any cabling to tower or cable support structure at all locations. Type of support device will be site dependent. Seller is to provide all cable attachment devices.

6. Lightning Protection: Appropriate PolyPhaser, or approved equivalent, type entrance devices and lightning protectors must be provided at all locations. The lightning arrestors must be configured with Male and Female connectors to allow the removal of a failed lightning arrestor and direct reconnection of the coax cables without the use of a barrel connector

7. Connectors for the equipment end of the transmission line must be field installed.

8. Equipment in-building interconnecting cables may be 1/4" or 1/2" Superflex coaxial cable to interconnect transmitter, combiner, receiver multicoupler, and antenna system transmission lines. However, all equipment in-building interconnecting cables must be either solid jacketed or double-shielded.

4.15 System Monitoring

4.15.1 Proposer must provide a monitoring system allowing the buyer and buyer's technical staff to be alerted to outages remotely as well as remote system monitoring through the network. Monitoring system shall be compatible with the following:

A. Windows 10 or newer.
B. Remote IP accessible though VPN connection supplied by buyer.
C. Alerts through CAD vendor provided through IP network connection supplied by buyer.
D. Multiuser platform capable of being viewed on multiple machines.
E. Remote programming through software over IP network.

SECTION 5

Transport System Requirements

5.1 General

5.1.1 Buyer is responsible for supplying all site interconnections and transport using its microwave system and fiber links. Buyer will provide redundant transport links to each site. For any new radio sites required in the new simulcast radio system, Buyer will supply back haul to the new site by modifying its microwave system or other back haul method after review of the proposed back haul solution with the Seller.

5.1.2 Buyer has requested a fully executed proposal to replace its microwave system to support both native TDM (T1) traffic and native IP packet traffic to its existing radio sites.

5.1.3 The demarcation point between the Buyer's microwave network is the Ethernet ports on the microwave network. In other words, the Seller is responsible for all data cabling and equipment up to the port on the Buyer's equipment

5.1.4 Seller provided networking equipment must provide redundant connectivity.

5.2 Backhaul Requirements

5.2.1 The Proposal must include information related to the following:

(1) Minimum required and recommended backhaul bandwidth for connection between each remote site and the system controller(s).

(2) Minimum required and recommended transport bandwidth for connection between the primary dispatch facility and the system controller(s).

(3) Minimum required and recommended transport bandwidth for connection between the geographically diverse locations of system cores

(4) Details of all physical interfaces and requirements for the proposed new system equipment for future use should additional transport methods become available

(5) Any other transport requirements necessary for making a fully operable system

5.2.2 Seller must provide transport network compatible with a new newly installed microwave system.

5.3 Data Networking Equipment

5.3.1 Buyer will supply network equipment and site to site connections. Each site will contain a IP network switch consisting of 48 ports with POE capability. Any receiver site will have a provided IP network switch of varying port availability.

5.3.2 Buyer supplied IP network equipment will be of a 48 VDC power configuration when available. If this option in not available, seller shall provide a UPS for necessary equipment that will not be 48 VDC or POE powered for backup power.

5.3.2 County technical staff will provide the following for seller prior to install:

1) Network Switching Equipment

2) VPN Information

3) Network Addresses (based on seller identified requirements)

4) Port Assignments (based on sellers identified requirements)

SECTION 6

Site Improvements and Upgrade Requirements

6.1 General

6.1.1 Except as described elsewhere in the Proposal Documents, all necessary site improvements at the remote sites, dispatch center, system controller location, and any other fixed-equipment locations will be performed by Buyer. This scope includes but is not limited to any improvements, modifications, or additions to the grounding systems, AC power systems, heating, equipment shelters, towers, ventilation, and air conditioning (HVAC) systems

6.1.2 Securing of Seller supplied equipment to meet seismic requirements is the responsibility of the Seller.

6.1.3 Space and power limitations may be of concern at some site locations. Depending on the sellers space requirements, buyer should be made aware of the concerns. Buyer will work to address the concerns and make corrective action when necessary.

6.1.4 Seller is encouraged to minimize the space requirements whenever possible. Considerations should be made for future expansion and equipment spacing.

6.1.5 Seller must specify the following for each location of proposed fixed infrastructure equipment so the Buyer can determine the effects on the proposed equipment on the site requirements:

1) Equipment space requirements, including:

A. Number of rack spaces required
B. Rack dimensions, including, width, depth, and height with all equipment.
C. Any interior non-rack space required.

2) Equipment heat and power loads including:

A. Number of AC circuits required and what current and voltage ratings.
B. Number of DC circuits required and what current and voltage ratings.

3) Antenna Requirements, including:

A. Number and types of antennas required, including all transmit, receive GPS and any other necessary antennas.
B. Necessary installation space for each antenna

C. Mechanical/wind loads for each antenna
D. Antenna mounting requirements

4) Any additional requirements or preparations necessary for equipment or antenna installation.

6.1.6 Buyer will develop applications, apply for, attend public hearings, provide responses to questions, for all permits, FAA clearance and review, tribal notifications, and any other environmental, tower, antenna, land use, historical, or related permits and/or approvals required for this project. Buyer will pay the actual permit application fee directly.

6.1.7 Seller must provide a normal length of calendar time for obtaining permits and site construction in their project schedule.

6.2 Seismic

6.2.1 Seller supplied equipment systems and seismic bracing must be capable of withstanding the effects of earthquake motions as defined in seismic design parameters of the adopted edition of the Revised Code of Washington (state) Chapter 70.86.

6.3 Shelter and Equipment Grounding

6.3.1 Seller will be responsible for grounding any new equipment to existing grounding systems.

6.3.2 Seller will be responsible for providing all necessary hardware for grounding.

6.3.3 Seller will be responsible for entry panels, surge protectors, grounding hardware, and any other hardware for attaching to grounding systems in new sites.

6.3.4 Any exterior ground connections not attached to transmissions lines shall be zinc coated wherever open to the weather or ground contact.

6.3.5 Any ground connections will be made to industry standards both interior and exterior.

6.3.6 Buyer will be responsible for upgrades to current site locations for grounding systems.

6.4 Antenna Mounts

6.4.1 Tower attached antenna mounts must be furnished and installed by the Seller. Buyer and Seller must agree on antenna mounting hardware, elevation, azimuth, and other technical parameters prior to installation.

6.4.2 Sellers must supply all antenna mounting hardware required to fasten or install the antenna.

6.5 Transmission Line Supports

6.5.1 Transmission line supports must be furnished and installed by the Seller as needed

6.5.2 Transmission lines must be installed and supported following cable manufacturer instructions, not to exceed more than 48 inches between supports.

6.5.3 The transmission lines must be routed to an in-ground cable trench or an overhead icebridge depending on the site conditions.

SECTION 7

DC Power Interface Requirements

7.1 General

7.1.1 For existing and new sites, Buyer will provide all necessary 48 VDC power, including rectifiers, chargers, batteries, and primary circuit breakers, at all remote sites, dispatch centers, system controller location, and any other fixed-equipment locations as necessary

7.2.2 Industry standard power at the top of the DC power rack as defined by:

(1) Voltage range 43 VDC to 56.4 VDC (48-volt nominal)

(2) Ripple and Noise: 30 millivolts

(3) Low Voltage cut off at 42 VDC and reconnect when power is reapplied to the charger at 49 VDC.

7.2.3 DC power circuits must use a black colored wire for negative ground and red colored wire for positive VDC voltage.

7.2.4 Installation of DC power circuits must comply with the National Electrical Code. NEC Article 336 requires TC or TC-ER rated cables in cable trays. Alternatively, DC conductors in cable trays may be run in Electrical Non-metallic Tube (ENT) commonly called smurf tube.

7.2.5 Unless otherwise approved by Buyer, Seller must furnish and install an appropriately sized circuit breaker panel at the top of each equipment rack, including appropriately sized circuit breakers, to allow each piece of equipment installed in each rack to be individually powered on and off.

7.2.6 Seller must furnish and install appropriately sized wiring between each rack's circuit breaker panel and the site's primary DC plant.

7.2.7 All RF-site equipment must operate on industry standard 48 VDC power. This requirement includes base stations, routers, switches, controllers, etc.

7.2.8 Seller must furnish and install any necessary DC-to-DC converters required to support voltages other than 48 VDC. If any such converters are used, circuit breakers must also be used on the output to control each piece of equipment powers by the converter(s)

7.2.9 To ensure adequate 48 VDC power is made available by the Buyer, Seller must specify the current load for each piece of equipment proposed to be installed at each site, plus the total -48 VDC current load for all proposed equipment at each site.

7.2.10 Proposer must detail the DC power plant design requirements in their Proposal including design calculations and assumptions, operating parameters, and system technical information to fully describe the DC power equipment and system requirements.

7.3 Power Distribution

7.2.1 Any 12 VDC distribution planned for load rack locations must have its own load power distribution panel.

7.2.2 DC Power Distribution in the load racks must be provided as required by the system design. DC distribution must be designed to reduce the amount of equipment losing power when a circuit breaker is turned off. At the very minimum, equipment should be connected so the loss of a single power circuit does not affect the redundancy of the equipment design.

7.2.3 The distribution panels must incorporate circuit breakers providing a connection to each circuit breaker to indicate when it has tripped because of an overload condition and an alarm relay providing a Form C dry contact closure when any of the circuit breakers are tripped.

7.2.4 All wiring to the loads must be done by Seller. All wiring must comply with the NEC wiring methods.

7.2.5 Any equipment (load) rack with a circuit breaker distribution installed as part of this work must have its own power and ground buses of suitable size for the equipment loads and be electrically isolated from the rack itself.

7.3 DC-to-DC Converter Specifications

7.3.1 Any 48V DC to 12V DC converter supplied must supply its rated output voltage ±2% at the load with an input range of 41 to 60 VDC.

7.3.2 The converters must have Form C alarm contacts to indicate a converter failure.

7.3.3 The converters must have the following indicators as a minimum: Input DC, Output DC, Failure.

7.3.4 The converters must be equipped with the following meters: DC output voltage, DC output current. The meters must have an accuracy of 2 percent or greater

7.3.5 The converters must automatically restart when the cause of the shutdown has been removed.

7.3.6 Converters must operate at full output capability over a temperature range of -20°C to 50°C, relative humidity 5 percent to 95 percent.

7.3.7 The converters are all planned for installation at load racks. Seller must furnish and install all equipment and hardware required to mount the specified equipment in 19-inch racks.

7.4 Inverters

7.4.1 Any inverters must provide filtered 120V AC output with an AC ripple component of less than 0.03 volts RMS (30 millivolts). Random electrical noise levels must be 32 dBrnc or less measured at the output terminals for all load currents.

7.4.2 The input voltage range must be 42 to 60 VDC minimum.

7.4.3 All inverters must be capable of supplying 120 VAC at 1 kW load continuously at +25°C temperature.

7.4.4 The inverter AC grounding and neutral connection must be installed in compliance with the NEC. The inverter must be defined as a separately derived system for code requirements.

SECTION 8

Training Requirements

8.1 General

8.1.1 Seller must provide a recommended list of training for the Lewis County radio system. A catalog of available training and a budgeted line item for training is not sufficient to meet this requirement.

8.1.2 Seller must train personnel selected by Buyer in the operation and maintenance of all the equipment supplied under this contract. The training must be for Buyer's training, technical, management, and end user personnel. All training must take place at the Lewis County training/meeting room. This training must occur as close to cutover as possible.

8.1.3 Any system specific programming and or training to maintain and monitor the system will be provided by seller as part of the proposal. Any training not able to be done in the field or on site should be separated and identified by seller.

8.1.4 Seller must propose a system that is configured and able to be maintained by county technical staff and free from void of any warranty of the system or its components. Any system that will void warranty if maintained by trained and qualified staff will not be considered.

8.1.5 Seller must assist with the development of training content for "Train the Trainer" delivery for end-user of radio users and end-user training in the operation of all of the user console equipment supplied. This training must include:

(1) Training aids to be used by the trainers to train Buyer's staff and line personnel. Seller must grant Buyer permission to copy and use any training aids received for training users of the console system.

(2)Vendor activities to support the development of "End User" training on mobile and portable user radios. Training develop is expected to be slightly different between law enforcement users and fire users.

(3) The radio system and console system training must consist of "End User" and "System Manager" training. The "End User" and "System Manager" training classes must be separate and onsite. The "End User" training must also be used to train Buyer's trainers. Training mustinclude all proposed systems.

(4) Manuals or operating guides must be provided for each student in the "System Manager" training sessions.

(5) Seller must provide overall system management training. These classes must be given Monday-Friday 0800-1700 hours at a location in Bremerton, Washington.

(6) Seller must provide training for any optional features provided with the system. These classes must be held in Chehalis, Washington

8.1.6 Seller may be required to provide additional hours of training after contract award.

8.1.7 Seller must coordinate any training schedule with Buyer 45 days prior to starting any training. Concurrently the Seller must provide concise and comprehensive collection of training materials for Buyer's approval.

8.1.8 Seller must supply to Buyer for its approval a sample of all training materials 15 days prior to the start of any training classes

8.1.9 Seller must provide class schedules, syllabi, and costs for basic system technical training. The purpose of this training is to allow Buyer's technical personnel to perform Tier 1 maintenance on all the equipment provided. Maintenance activities include troubleshooting and repair to the major assembly and Field Replaceable Unit (FRU) level. This training must include at a minimum the following:

(1) Detailed explanation of system design.

(2) Detailed explanation of communication network structure.

(3) Detailed instructions on modifying and/or adding new sites, users, base stations, channels, MPLS routers, etc.

(4) Detailed instructions on modifying and/or adding system parameters,

(5) Detailed explanation of Intersystem Interfaces.

(6) Detailed explanations of operational, backup, recovery, and restart procedures.

(7) Diagnostics.

(8) Detailed instructions on repair to the FRU level.

(9) Detailed instructions on software and hardware updates.

(10) Other topics as required to maintain the system.

8.1.10 Proposer must define training for the system software and functions. This training must not be a quick functional overview but must include the following topics:

(1) Operating System basics.

(2) Detailed explanations and instructions on adding or modifying functions.

8.1.11 Proposer must provide cost and class information for factory training of technical personnel on a per-student basis as outlined in the pricing tables. The cost for recommended technician and management factory-based training for two Buyer's personnel, not including travel expenses, must be provided in the base cost of the system. The specific recommended

classes must be listed in the Proposal. In addition, these classes must be bid as an OPTION for additional personnel or additional training desired.

8.1.11 All programming equipment and software shall be included in the proposal.

SECTION 9

Spare Components

9.1 General

9.1.1 Seller will provide in the proposal a replacement stock of system equipment.

9.1.2 (1) spare at minimum shall be included in the proposal for each proprietary system component. This should be considered any manufacturer specific component not readily available on the open market. These components include:

A. Complete radio chassis
B. Simulcast controller
C. Simulcast comparator
D. Voting hardware
E. Additional radio chassis power supply
F. Proprietary timing devices

SECTION 10

Implementation

This section defines the implementation requirements.

10.1 General

10.1.1 These standards and other standards are the requirements for the installation of the system(s) and equipment.

14.1.2 Seller must carefully coordinate all phases of the work with the Buyer's Project Manager.

14.1.3 The following requirements are provided for installation of equipment including, but not limited to, antennas and antenna systems, consoles, base/control/repeater equipment, data networking equipment, and other miscellaneous equipment and devices required or used. Any variation in these guidelines require the approval of Buyer's Project Manager. (1) Seller must furnish all personnel to perform the initial installation, placement and assembling at the Buyer's locations or elsewhere as required, of the individual equipment and the components into an operating system. This requirement includes the performance of any test to determine the satisfactory operating condition of the equipment before it is formally accepted by Buyer. (2) Seller is responsible for the installation of all equipment furnished under this Contract. Seller must provide sufficient competent engineers and technicians to perform the installation, as well as a full-time, factory-trained, technically competent project manager to supervise all phases of the system installation. The project manager must be assigned to this project through

the installation and all testing phases. Seller must also perform connections between Buyer provided equipment and Seller provided equipment (e.g., microwave equipment, routers, Ethernet switches, logging recorder, etc.) as may be required.

10.2 Equipment Installers

10.2.1 The equipment installations required by this specification include the following described items as well as all other attachments, hardware, software, and procedures as may be provided to ensure a completed installation in accordance with the standards of good engineering practices, all building codes and ordinances (including earthquake protection) in effect at the sites specified in this specification and requires the approval of Buyer's Project Manager.

10.2.2 All special tools, testing devices, extenders, and other equipment required to properly maintain the complete network, mobiles, portables, control stations, and any associated components must be supplied with the network in accordance with the maintenance and testing requirements. A list of all such devices, extenders, tools, or equipment must be enclosed with the Proposal.

10.2.3 Wiring of 120 and 240 VAC to the nearest distribution panel will be provided by Buyer as part of the project. A review of existing circuit drops, and available breaker positions must be conducted by Seller. All new circuit breakers in panels must be supplied by Buyer. Wiring from this distribution panel to any new equipment is the responsibility of the Seller. Proposer must identify in their proposal the number and type of AC circuits required.

10.2.4 Buyer will provide space for all console and control equipment. The Seller must install the equipment within this space and connect the units to commercial/ emergency power. Seller must cooperate with the Buyer to connect all Buyer-provided equipment to the Seller-provided equipment. All bonding and grounding connections to the existing bonding and grounding systems must be provided by the Seller.

10.2.5 All site work permits and licenses, as required to improve or develop any of the sites, must be provided by Buyer as part of their work. Seller will be required to obtain electrical and building permits as may be applicable to their work. Each Point of Destination will require separate permits from the agency having jurisdiction.

10.2.6 All site work, tower strengthening, earth work, site grading access improvements, equipment shelter construction, utility work and improvements, structural analysis, architectural work, and associated items will be provided by Buyer. Seller is required to provide all services associated with the implementation of the radio system except those specifically identified in these specifications as provided by Buyer.

10.2.7 Proposed prices must include all installation hardware, brackets, braces, fasteners of all kinds, wiring, conduit, ancillary devices, procedures, and services required to install and/or interface equipment and components to provide a complete operating system fulfilling the requirements of the specification.

10.2.8 Seller is required to adhere to FCC rules and all state and local government codes and ordinances in all matters pertaining to the work.

10.2.9 The proposed installation work must be authorized by Buyer's Project Manager prior to commencement of any particular phase of work at each Point of Destination. Seller must provide descriptions and layout drawings showing the proposed installations at each site at least 30 days prior to beginning any work. Buyer must receive written approval of Buyer's Project Manager prior to beginning work.

10.2.10 Access to all Points of Destination will require prior coordination with Buyer's Project Manager

10.2.11 Fixed equipment and cable installations must be accomplished in accordance with earthquake protection practices. This requirement includes, but is not limited to, providing flexible entry cables, surge loops, special battery racks, and special equipment rack design and mounting practices.

10.2.12 Rack mounting may be accomplished by either of two methods—special floor only mounting or a combination of floor and top mounting. Proposer must recommend a particular method and provide an option for any other method. Buyer will select the preferred method prior to execution of the Agreement. All mounting arrangements must comply with the current edition of the Washington State Building Code and local building requirements.

10.2.13 It is Seller's responsibility to be aware of the facilities for delivering, storing, placing, handling, and disposing of materials. All aspects of the installation must be planned and executed in a professional manner as approved by Buyer's Project Manager. Seller must make provisions to have all trash properly disposed of daily.

(1) Seller must supply all the necessary installation items required to make the equipment a complete operating system including Buyer-supplied equipment. This requirement must include, but is not limited to, clamps, wiring, cable, hardware, ty-wraps, anchors, etc.

(2) Seller must make all the test, adjustments, level settings, etc. to the equipment required to control and operate the consoles, recorders, base stations, and associated equipment in a normal manner.

10.2.14 The Seller must provide any necessary cutouts in the computer floor sections as required. Buyer's Project Manager must approve the location of any cutouts required.

10.3 System Staging

10.3.1 The system minus the antennas and antenna feed lines, but including the transmitter combiners, receiver multicouplers, and tower-top amplifiers must be assembled and tested. This testing may be done at the factory or other location chosen by the manufacturer not on Buyer's premises. This process is referred to as “System Staging” in this Document as defined below.

10.3.2 Due to space constraints at some sites, system staging in racks may not be possible. Seller is required to conduct an in person evaluation of space assessment prior to staging.

10.3.3 Due to both systems being required to be operational for a period of time, considerations should be made to allow for shelter space.

10.4 Installation Plan

10.4.1 Seller must develop and submit a final installation plan to Buyer's Project Manager for approval at least 45 days prior to the start of installation. No equipment is to be installed until the plan has been approved by Buyer's Project Manager. The plan must detail location of equipment, cabling, mounting, hardware, and installation procedures. Diagrams must be used to indicate equipment locations.

10.4.2 The existing system including consoles, remote desktop units, mobiles and portables, etc. must remain operational during the system transition. At no time, can Buyer's users be without communications from one of the systems or the other. Seller must develop an installation plan identifying all the processes for effecting the transition between the old system and the new system including fall back plans and any common operation required.

10.4.3 Proposer must discuss the possibility of using City facilities for the mobile installation and programming work instead of Seller provided facilities. Buyer desires to keep the vehicle fleet as close to the place of use as possible to minimize downtime.

10.5 Equipment Recording

10.5.1 Prior to the installation of equipment, Seller must establish a record system for each unit or equipment to be furnished under this contract. The system must be computerized and must keep current the correlation between equipment serial numbers and model numbers. This system may be in a database or spreadsheet format. The system must allow Buyer's technical staff to keep the information up to date over the life of the system. As a minimum, the record must contain the following but not be limited to:

(1) Type of equipment

(2) Manufacturer

(3) Model number

(4) Serial number

(5) Date of installation

(6) Accessory operational checklist

(7) Maintenance list

(8) Parts replaced

(9) Name of technician who performed the work

14.5.2 Seller, prior to the installation of equipment, must establish a system maintenance log and a failure reporting system to assist in recordkeeping and management of the maintenance program. This system may be the same system as outlined in the previous paragraph but with the additional capacity to add maintenance and repair notes and information.

14.5.3 The record system, the failure reporting system and the system maintenance log must be subject to approval by Buyer's Project Manager. The record system and the system maintenance log must be maintained locally under Buyer's technical staff control.

10.6 Failure to Meet Requirements of Specifications

10.6.1 Should any of the inspections, tests, or operation of the equipment under service conditions show the system or equipment does not meet the requirements of the specifications, Buyer's Project Manager may reject the equipment and direct Seller to immediately furnish new equipment or parts as needed to bring it up to the requirements of the specifications.

10.7 Antennas and Mounts

10.7.1 All communications antennas, regardless of specific installation location, must be erected plumb, level, and square unless specifically noted in the design (e.g., mechanical downtilt antennas). Seller must supply antenna mounts and all attachment hardware required to install Seller-supplied antennas. If fabrication is necessary, antenna mounting hardware must be hot dipped galvanized after fabrication. Antenna mounting hardware must be made of hot dipped galvanized or stainless-steel material. Heavy wall conduit (already galvanized) may be used when mounting antennas to buildings, wooden poles, or other non-tower structures. Exterior utilization of electrogalvanized or plated material for mounting of antennas is not permissible.

10.7.2 If the galvanizing on any antenna support is heavily scratched, saw cut, drilled, or destroyed in any manner, the damaged area must be repaired using cold galvanizing compound.

10.7.3 Antenna mounting hardware must provide a good bond between antenna and antenna mount.

10.8 Antenna Feed Lines

10.8.1 All antennas must have a jumper constructed of Commscope LDF4-50A or equal (not to exceed 50 inches) when using Commscope AVA5-50 or equal or larger as the primary length of feed line. If Commscope LDF4-50A or equal is used as the primary length of feed line, it must be connected directly to the antenna. A "drip loop" must be formed as this jumper or feed line is installed. The manufacturer recommended bending radius specifications must not be exceeded. No connectors must fall within, or be obscured by, any antenna support pipe or conduit run when making antenna feed line installations inside of support pipes or conduit runs.

10.8.2 At tower sites the following items must be employed:

(1) Where feed line support systems have not been provided, cable ladder or angle mount clamps must be installed to support the feedline using waveguide cushions or similar mounting approach.

(2) At locations where galvanized pipe or electrical conduit are used for mounting antennas, the external feed line runs may be secured by the utilization of stainlesssteel wraplock or stainless-steel ties.

10.8.3 When installing antenna feed line runs, the antenna feed line must not be attached to any individual antenna feed line run already installed. Attachment methods must encompass all

antenna feed line runs and antenna feed line support at this point. Attachment intervals must follow requirements contained within this RFP or manufacturer recommendations.

10.8.4 The use of cable trays or messenger cable for antenna feed line support must be considered on an "as needed" basis. All antenna feed line runs must be secured to the messenger or cable tray by the utilization of stainless-steel wraplock or stainless-steel ties.

10.8.5 All antenna feed line runs inside buildings (where cable trays are provided) may besecured by utilization of black nylon cable ties. Where cable trays are not provided, the use of jiffy clips, one hole pipe straps, rigid conduit straps, Unistrut and Unistrut clamps, or black nylon cable ties are permitted to secure antenna feed line runs. Utilization of electrogalvanized or plated material inside of buildings is permitted.

10.8.6 All antenna feed lines must have cable identification tags denoting the corresponding antenna. Each antenna and transmission line must be identified with colored tape bands and brass tags supplied and installed by Seller as follows:

(1) Red – Receive.

(2) Yellow – Transmit.

(3) Brass Tag – Antenna/feedline names chosen during design.

10.8.7 Number of bands denotes antenna number.

10.8.8 Place colored tape bands on antenna, near ends of each cable and jumper and on cables on both sides of building entrance panel and on both sides of cable on the inside of the building.

10.8.9 Color tape must be 3M 7 mil Scotch 35 Vinyl Electrical Color-Coding Tape (red and yellow).

10.9.10 Place 1.5” diameter round blank brass tags (Brady Catalog #23211) near ends of each cable. Each brass tag must be customized to clearly identify each run of cable utilizing ¼” steel stamps for letter and number sets (Brady Catalog #23240 and #23241).

SECTION 11

Quality and Workmanship Requirements

This section defines the quality and workmanship requirements of all phases of this project.

11.1 General

11.1.1 Seller must advise Buyer's Project Manager of any equipment failing during installation and testing or arrives damaged, the cause of the failure or damage, and the actions to remedy the problem. Failed equipment may not be repaired unless the entire module or assembly is replaced with a new unused spare assembly previously been factory tested and aligned.

11.1.2 All equipment must contain the latest current production hardware, firmware, and software at time of the start of system acceptance testing unless otherwise agreed to in writing by Buyer's Project Manager. Such agreement must include a list of all the equipment, firmware, and software not at current production levels, as well as the current version of the equipment,

firmware, and software, plus an explanation as to why it was not upgraded to current release and a description of any difference between the installed version and the current production version.

11.1.3 All field service bulletins, software patches, and similar service and repair notices must be installed prior to the start of system acceptance testing. Buyer's Project Manager must be provided with all such field service notices, documents, patches, release notes, etc. applying to the system being installed prior to the start of acceptance.

11.1.4 In the event of a conflict or different ways of accomplishing the same result, the more stringent code or specification requirement must be used. Seller must request additional clarification from Buyer's Project Manager. Failure to request clarification may result in Seller having to re-install equipment or rework an installation at Seller's own expense

11.1.5 Upon completion of installation, all material must be free from defects, corrosion, scratches, or other such conditions as to present an other-than-new appearance. All the equipment an material must be of recent manufacture and design, new and unused.

11.1.6 All finished work must be straight, level, true and plumb where applicable, and installed exactly per the manufacturer's instructions, recommendations, and drawings. Only qualified mechanics skilled in this kind of work must be used. All workmanship must be first class in all respects. All mounting locations must be approved by Buyer's Project Manager before installation; failure to do this may result in the repair, removal, and reinstallation of the equipment at Seller's expense.

11.1.7 Equipment racks must be securely anchored and electrically isolated from the floor.

11.1.8 Seller must restore any floor panels, ceiling tiles, raceway covers, power panel covers, junction box covers, equipment cabinet panels, and similar covers or protective devices removed during installation. Should Seller find missing covers, panels, etc. the missing items must be brought to the attention of the Buyer's Project Manager as soon as possible for remedy.

11.1.9 Seller must use only technicians trained in the installation of this equipment. Seller must identify and provide resume information including training history of any technician proposed to perform work on the system. Buyer's Project Manager must have the right to reject personnel from proposed project team for in Buyer's Project Manager's opinion lack of training or prior unsatisfactory performance.

11.1.10 All work must be performed, according to local conditions, in a manner best calculated to promote timeliness and accuracy, to secure safety of life, person, and property, to assure safe and continuous operation of Buyer's equipment and mission, and to reduce to a minimum any interference with the public and with other contractors in or about the property.

11.1.11 Seller must be responsible for any damages to Buyer's property which may occur during the installation of the equipment specified in this Contract due to negligence on Seller's part.

11.1.12 Seller must take all appropriate actions to ensure the work areas are kept clean and safe. All waste materials generated by Seller must be removed daily.

11.1.13 All wiring and cabling must be laced, clamped or supported by appropriate means. All wiring must be done in a neat and workmanlike manner. Wiring and cabling must use Buyer-provided cable tray, race way, conduit, or underfloor wiring systems where provided. Ty-wraps must not be used to support or bundle LAN cables rated at CAT 6 or higher. Hook and loop style (e.g., Velcro) straps and cable ties or similar method must be used for all LAN cables rated at CAT 6 or higher. Any method compressing or deforming the LAN cable must not be used.

11.2 AC Wiring

11.2.1 Wiring practice, material and cabling must be in accordance with requirements of the National Electrical Code, OSHA, Underwriters Laboratories, and applicable local codes and standards. All wiring must be laced clamped or supported by appropriate means. All wiring must be done in a neat and workmanlike manner.

11.2.2 If installed by the Seller, AC wiring from the building circuit-breaker or fuse switch panels must be a minimum of 12 AWG.

SECTION 12

Acceptance Testing Requirements

This section defines the acceptance and performance testing requirements for the system and the individual components. The acceptance testing process includes the following:

- Factory Staging Acceptance Testing
- System Acceptance Testing
- Performance Acceptance Testing
- Interface Acceptance Testing
- Coverage Acceptance Testing

12.1 Assembly Staging Testing

12.1.1 The entire system must be assembled and tested at the equipment supplier's location as described in the Implementation section of this specification.

12.1.2 The complete system must pass the Staging Acceptance Test Plan (SATP) prior to final installation. The SATP must include the following as a minimum:

- Certification for each piece of equipment meeting its manufacturer's published specifications
- Test results showing receive sensitivity, transmitter power output, and modulation for each piece of base station equipment showing the test results matched to the serial number of the specific equipment
- Test results showing the testing of each alarm point provided for all alarms
- Test results for the receiver multicoupler and tower-top amplifier
- Test demonstration showing the basic capabilities of the system to make, and process calls at each site in the system.

- Test demonstration of the ability of the system to continue full system functionality during the sudden failure of any single processor or controller in the system where system redundancy is provided.

- Test demonstration of the ability for backup systems to take over operation or provide service.

- Inspection of equipment and installations including cable dressing, cable construction, grounding, equipment condition, etc

- Spot verification of the previous information provided in the test results discussed above for the RF performance, alarm performance, and any other items for which an actual demonstration is not provided on up to five pieces of equipment and or subsystems

12.2 System Acceptance Process

16.2.1 The system acceptance process must:

(1) Seller must submit a final performance test plan or test procedure (Acceptance Test Plan (ATP) for Buyer's Project Manager's approval at least 30 days prior to the time of the tests. The test plan must set forth the test equipment to be used and the procedures to be followed for evaluating the system performance to ensure conformance with these specifications. This test plan must be agreed to by both parties.

(2) Seller must advise Buyer's Project Manager the system is ready for the system acceptance process to start.

(3) Seller must supply to the Buyer the acceptance documentation as outlined in the Performance Test Section below. Buyer's Project Manager will review and approve the documentation or request additional documentation or clarifications if the documentation is not satisfactory.

(4) Buyer and Seller must mutually agree on a schedule for the site visits to inspect the quality of the work, verify the equipment has been installed, perform any spot checks or other tests outlined below performed in the field. Buyer's Project Manager will perform these tests with Seller's assistance to perform measurements. Buyer's Project Manager will then accept each site, generate a punch list of items to be fixed or completed, or reject the site.

(5) Buyer and Seller will then perform the system operational tests as described below and in the ATP.

(6) Seller with Buyer's Project Manager's supervision will then perform the Coverage Acceptance Test Plan (CATP) as described below. Seller must generate a report showing the area tested, the tested locations, the number of locations and the pass fail criteria. This information will be supplied to Buyer's Project Manager. Should the CATP not pass, Seller must verify system operation and re-run the tests. If on the second CATP, the system still does not pass, Buyer's Project Manager will stop the acceptance process and determine the course of action.

(7) After a successful CATP, the general operational testing as described below and in the CATP will commence.

(8) After successful general operational testing the system must run for 30 days without the following:

– Any failure causing the complete loss of one or more channels or a site

– Any central controller failures

– Any voting system failure

– Any console position failure resulting in the loss of one or more console positions

– Any failure of the alarm reporting system resulting in the loss of alarms from more than one site.

(9) If any of the failures described above occur, Seller must replace the failed equipment and the 30-day acceptance period will start again. If 30-day acceptance period is restarted twice, the Seller and Buyer's Project Manager will stop the acceptance process and evaluate the next steps.

12.3 Performance Tests and Buyer's Acceptance

12.3.1 Performance tests must include but are not limited to the following tests. All tests must be performed after the equipment has been fully installed in its final location:

- Certification for each piece of equipment meeting its manufacturer's published specifications
- Test results showing receive sensitivity, transmitter power output, and modulation for each piece of base station equipment showing the test results matched to the serial number of the specific equipment
- Test results showing the testing of each alarm point provided for all alarms
- Test results for the receiver multicoupler and tower-top amplifier • Site effective receiver sensitivity test.
- Test demonstration showing the basic capabilities of the system to make, and process calls at each site in the system
- Test demonstration of all basic console functions to be able to place page calls, patch channels together, interface to conventional resources and any other interconnections defined in these specifications.
- Test demonstration of the ability of the system to continue full system functionality during the sudden failure of any single processor or controller in the system where system redundancy is provided.
- Test demonstration of the ability for backup systems to take over operation or provide service.

- Inspection of equipment and installations including cable dressing, cable construction, grounding, equipment condition, etc

- Spot verification of previous information provided in the test results discussed above for the RF performance, alarm performance, and any other items for which an actual demonstration is not provided on up to five pieces of equipment and or subsystems.

12.4 Interface to Other Equipment

12.4.1 Testing must be conducted by Seller in accordance with the approved plan. All testing must be under the direction and supervision of and witnessed by designated representatives of Buyer's Project Manager. Seller must supply all the test equipment required for each test.

12.4.2 Seller must notify Buyer's Project Manager at least ten days in advance of the time he or she is ready to make the tests on the entire system.

12.4.3 The Buyer's Project Manager will accept the system when it has operated continuously for a 30-day period without a failure after the successful completion of the performance test. This period is in addition to the time of completion.

12.4.4 The acceptance of equipment or parts thereof will in no way relieve Seller of the responsibility for furnishing equipment which meets the requirements of these specifications.

12.5 Coverage Testing

12.5.1 All radio equipment used for coverage testing must be configured with the most current firmware and software available at the time of testing.

12.5.2 Coverage testing must be performed by Seller. At its discretion, Buyer's Project Manager may have a representative present for any or all testing.

12.5.3 All equipment necessary to perform the coverage testing, including radios, power supplies, vehicles, and any other ancillary equipment, must be provided by Seller.

12.5.4 Seller must verify and certify proper calibration of all equipment used during the coverage testing.

12.5.5 All coverage test data and relevant records must be provided to Buyer's Project Manager in both paper and electronic format readable with standard software (Word, Excel, Adobe Acrobat, or other Buyer-approved software).

12.5.6 Prior to performing coverage tests, Seller must submit proposed test grid maps to the Buyer's Project Manager for approval.

12.5.7 Seller must submit a detailed Coverage Acceptance Test Plan (CATP) for approval by Buyer's Project Manager.

12.5.8 Seller is responsible for the coverage guarantee provisions, including remedial actions to be undertaken by and at Seller's expense if the coverage as depicted in the proposal plots is not met. Remedies for coverage failure must address the entire problem area(s) and not be limited to correcting a portion of the failed area. Remedies may not degrade areas of coverage

previously accepted. A retest of coverage must be conducted in any area (previously failed or not) potentially affected by the remedy in order to verify the composite coverage is maintained.

12.5.9 After completion of the coverage test, the Proposer shall provide the raw data collected in a file and an interactive map with the test results for each data point collection

SECTION 13

Documentation Requirements

13.1 General

13.1.1 Seller must deliver the following documentation in electronic format. Documentation must be delivered on removable media (CD, DVD, USB drive) within 60 days following final acceptance of the system.

13.1.2 Whole System

(1) Document: System Detailed Design – The System Detailed Design document includes a clear description of design goals and assumptions, propagation predictions and accompanying data, equipment lists, installation diagrams, interconnect diagrams, transport diagrams, annotated diagrams showing audio, RF, and signaling paths, electrical design including grounding and TVSS devices, list of channels/talkgroups, detailed list of required CTCSS/DTMF/other tone signaling, and other engineering detail sufficient to procure, install, configure, operate and maintain the subsystems comprising the vendor's response to the project scope.

– Format: PDF.

(2) Document: System Access Information

– Seller must supply a complete list of all usernames, account names, passwords, reset instructions, and other information required to satisfy system security requirements. These requirements explicitly require the Seller to supply all information for all levels of access.

–Seller must provide a signed statement attesting no hidden accounts, "backdoors," or other points of unauthorized access exist in the systems. The statement must be dated and signed in ink by a responsible officer of Seller.

– Format: Excel Spreadsheet and PDF.

(3) Document: Programming Documentation

– Where provided by manufacturer, Seller must supply all programming, configuration, and troubleshooting documentation for all components to the Buyer. Seller must further supply to Buyer's Project Manager comprehensive written documentation of all programming and configuration settings implemented on all components of the system.

– Format: PDF and hardcopy.

(4) Document: Licenses and Registrations

– Seller must furnish all hardware, software, and firmware licenses and warranties for all components being provided. Seller must supply proof of registration in Buyer's name for all software, firmware, and hardware where such registration is required for installation, configuration, or other purpose. Seller must further provide a complete list of software, firmware and hardware not registered in Buyer's name, said list to include all information necessary for Buyer's Project Manager to complete registration (i.e., product identification codes, CD keys, serial numbers, etc.).

– Format: PDF and hardcopy.

5) Document: Component Warranty Materials – All certifications and documentation activating, relating to, and governing equipment warranties from component manufacturers, properly completed and authorized by Seller.

– Format: PDF and hardcopy.

13.1.3 Project Management

(1) Document: Work Breakdown Structure (WBS)

– Seller and Buyer's Project Manager must jointly produce a work breakdown structure identifying the elements of work required to fulfill the project's goals and objectives. The WBS must be at a level of detail deemed by Buyer's Project Manager to be sufficient for effective project management. Each entry in the Lewis County Radio System RFP WBS must include, at a minimum, a unique identification number, the task name, the anticipated duration, and all dependencies. WBS in chart form is preferred.

– Format: Native.

(2) Document: Schedule

– Seller must furnish a project schedule for review, modification and acceptance by the Buyer's Project Manager. Schedule must show each set of tasks to be completed, expected duration, start and end time for each subsystem, and responsible person for each task at a level of detail determined by Buyer's Project Manager to be sufficient for project management.

– Format: Native.

(3) Document: Contact List

– Seller and Buyer's Project Manager must generate a common contact list identifying all key participants in the project including, at minimum, project owners; project executives/sponsors; Executive leadership responsible for the project for Seller and Buyer; project managers; engineering leads; technical leads; salespersons; sales manager; technicians; and supervisory personnel for Buyer, Seller, and all subcontractors. Contact information must include, at a

minimum, each person's name, company, project role, email address, office telephone number, mobile/24-hour telephone number, mailing address.

– Format: Native and PDF.

(4) Document: Security/Background Information

– This project requires entry to one or more secure public safety facilities. Seller personnel, including subcontractors, must successfully complete a criminal background security check to be allowed access to these facilities. Seller must supply fully completed Background Check Authorization Forms as supplied by Buyer's Project Manager for each Seller or subcontractor employee who will be on premises. Said forms must be supplied no later than five working days prior to the expected date of facility access.

– Format: Hardcopy.

(5) Document: Risk Register

– Seller must provide an ongoing risk register plan to the Buyer's Project Manager. Buyer's Project Manager must participate in the register's creation and maintenance. Register must contain, at minimum, number, description, probability, impact, risk owner, triggering event or circumstance, and response for each risk identified.

– Format: PDF and hardcopy.

(6) Document: Communication Plan

– Seller and Buyer's Project Manager must jointly produce a communications plan identifying project and agency stakeholders, their level of information required, the frequency of needed communication, the method of communication, and the creator of each communication.

– Format: Native and PDF.

(7) Document: Site Readiness Plan

– Where applicable, vendor must provide reports on the readiness of each Point of Destination and facility to accept the provided systems in accordance with industry standards and codes. Site readiness reports must include the specific instances of standard or code shortfalls, I including drawings, pictures, and text explanations, along with reference to the specific code, standard, or practice being applied. This document is intended to be used as the basis for Buyer improvements at the sites and must be prepared by Seller to best suit this use.

– Format: PDF and native

(8) Document: System Implementation Plan

– Seller must furnish documentation detailing the overall plan for changes in the system. This plan must be focused on subsystem level activity and illustrate the sequencing, interface, and dependencies of each subsystem.

– Format: PDF and native.

(9) Document: Transition Plan for Each Subsystem

– Seller and Buyer's Project Manager must jointly create a transition plan for each subsystem. The transition plan identifies the specific steps and changes required to move Buyer from the existing system to the new/upgraded system, including all interim or temporary states through which the process must move before achieving end state. For example, if system users must temporarily move to a backup location while the primary location is being implemented, this condition must be noted in the transition plan.

– Format: PDF and hardcopy

(10) Document: System Planning Documentation

– System Planning documentation includes the following, all of which are to be presented by Seller to Buyer's Project Manager for review, input, and approval prior to equipment ordering:

- Channel/talkgroup/frequency plan
- Transport design.
- Network management design identifying type and number of devices, alarms, monitors and presentation program and other elements required by the system

– Format: PDF and hardcopy

(11) Document: Staging Acceptance Plan

– Seller must provide a comprehensive test plan for all system components and their i interactions in a staged configuration to Buyer's Project Manager for review and approval. Seller must provide written (hardcopy) certification of the plan's successful completion signed by Seller and Buyer's Project Manager.

– Format: Native and hardcopy.

(12) Document: System Acceptance Plan

– Following installation and configuration, Seller and Buyer's Project Manager must inspect and test the system prior to implementation. Seller must supply the initial System Acceptance Plan (SAP) to Buyer's Project Manager for review and approval prior to implementation. Seller and Buyer must complete the testing as identified in the SAP and both must sign the document as satisfactorily completed prior to implementation beginning.

– Format: Native and hardcopy

(13) Document: Certificate of System Acceptance

– Seller must furnish a Certificate of System Acceptance to Buyer's Project Manager for review and signature. The Certificate must be signed by the Buyer's Project Manager upon successful completion of the project including any post installation system run time requirements.

– Format: Hardcopy.

13.1.4 Radio System

(1) Document: System Overview – A written description of the system including components used, transport methods employed, installation locations, configuration parameters, features and functionality of the installed system. – Format: PDF and native.

(2) Document: Component Operation, Installation and Maintenance Manuals – Manufacturer supplied operation, installation and maintenance manuals for all radios, antennas, TVSS devices, combiners, multiplexers, power distribution units, inverters, timing sources, simulcast equipment, and other components of the radio system.

– Format: PDF.

(3) Document: As Built

– The set of drawings, equipment specification sheets, engineer's instructions and other documentation detailing how the systems addressed by the project scope were implemented. The make, model, serial number and installed location of each major component must be noted and supplied in Native format (MS Excel preferred). Where applicable, a complete inventory of circuit board/card used in each equipment chassis, along with their location in the chassis, must be provided in Native format (MS Excel preferred). As built documents must include photographs of components' completed installation. This information will be used by Buyer's Project Manager to maintain and operate the system and will form the basis for ongoing documentation throughout the lifetime of the system.

– Format: PDF and native.

13.1.5 Federal Communications Commission (FCC) Licenses

(1) All applications made on behalf of the Buyer.

– Format: PDF.

(2) All documentation received from the FCC or sent to the FCC on behalf of Buyer in regard to the licenses.

– Format: PDF.

(3) All licenses received from the applications made on behalf of Buyer.

– Format: PDF.

13.1.6 Antenna Systems

(1) Document: As Built

– Antenna system as built drawings must include manufacturer make, model, and serial number for each installed antenna along with the site location, antenna support structure (tower), location on the structure (leg/face, height and azimuth), connection media, and downtilt. Additional components such as tower top amplifiers, waveguide splitters, circulators and others must be noted with make, model, serial number, mounting location, and connection

type. Photographs of the connection media's entry point into the equipment facility must be supplied and the proper connection media clearly identified. Photographs and identifying notations of antennas as mounted, grounding, inline TVSS, and cable paths must also be included.

– Format: Native.

13.1.7 Transport

(1) Document: Transport Design

– All network designs and engineering documentation including MPLS, WAN, and LAN systems. Documentation must include:

- System diagrams for all data networks and interconnections

  (i) Radio Network with interconnections to other networks

  (ii) Network Management Systems

  (iii) MPLS Network

- IP Addressing (Multicast and Unicast) - IP Address, Subnet Mask, and Default Gateway

- Port assignments for every data network device including unused ports indicating interface type (i.e., copper, SFP, etc.)

- VLAN diagrams (simply adding VLAN number to IP addressing tables will not suffice to meet this requirement) ◊ IP Multicast networks and protocols

- MPLS Network Diagrams:

  (i) LSPs
  (ii) Individual diagrams for each MPLS service instance (i.e., each epipe, VPLS, VPRN, IES, etc

– Format: Native.

(2) Document: As Built

– Where the Vendor furnishes transport elements, the Vendor must supply diagrams and explanatory text identifying each component and connection comprising the system transport (i.e., Ethernet, microwave, telco) as actually built. The characteristics of each connection (i.e., speed/bandwidth, protocol) must be identified for each link in the transport. Each component

of the system transport must be identified by make, model, device type, and serial number along with its installation location.

– Format: PDF and Native.

(3) Document: Maintenance and Operation

– Seller must supply all manufacturer provided documentation regarding the maintenance and operation of each component of the transport systems being furnished by Seller.

13.1.8 Network Management

(1) Document: System Design

– All final design and engineering documentation pertaining to the network management system must be supplied by Seller to Buyer's Project Manager for review and approval prior to implementation. The System Design must include diagrams, explanatory text, and other material detailing all network health, monitoring, configuration, routing, alert, alarm, and notification systems, devices and mechanisms used in the system. These systems include site alarms, environmental monitoring and report, equipment alarms, data network, database, server, backhaul, and other subsystems.

(2) Document: As Built

– Seller must supply drawings, specifications, diagrams, photographs, test data, and explanatory text identifying all network management elements described herein as they were built and configured. As builts must include addressing schemes used, equipment makes, model, serial number and firmware/software revision as applicable.

(3) Document: Maintenance and Operation

– Manufacturer supplied operations and maintenance manuals must be supplied for each portion of the network management system and the related subsystems (i.e., alerting, environmental, site alarms, etc.).

SECTION 14

Warranty and Maintenance Requirements

This section describes the warranty and maintenance requirements for the Lewis County Radio System.

14.1 Warranty and Maintenance

14.1.1 Seller must repair or replace without charge to Buyer, any equipment or part thereof, which fails in operation during normal use within 12 months after system acceptance. Repairs or replacement do not apply to failures caused by acts of God or extraordinary circumstances beyond the control of Seller.

14.1.2 Seller must perform all maintenance, servicing, removal and replacement of defective parts, and adjustments and measurements to maintain the equipment supplied under this contract to the manufacturer's specifications and requirements of the FCC for a period of 1 year from the date of Buyer's acceptance of the system. These actions must be at no additional cost to Buyer for those services requested for malfunctions reported during a normal working day. A normal working day is Monday through Friday, 0800 to 1700 hours, holidays excepted.

14.1.3 Seller must provide Buyer with written documentation after each service call describing the service performed, the cause of the outage or repair, and post repair testing, programming, or other actions taken to verify proper operation. If Buyer's spares were used in the repair, the item number or model number and serial number of the spare used, and the defective unit replaced must also be documented. Seller must return the defective unit to Buyer's specified location.

14.1.4 Seller must have a trained and competent technician to maintain the supplied equipment in a timely manner on 24-hour call at all times. Buyer must be given the phone numbers and addresses of the people to contact in an emergency. The designated technician on call must be located within a 60-minute normal driving range of Buyer's dispatch center.

14.1.5 When a malfunction is reported and service is requested, Seller's technician must be in contact with county technical staff within 30 minutes after Seller was notified by Buyer of request for service.

14.1.6 Seller must provide the names of the persons acting as the primary contact point for service, complaints, and general inquiries. Their names, addresses, and telephone numbers must be given to Buyer. Seller must supply the escalation process and personnel in written form in the event the normal trouble alerting and service request process not work.

14.1.7 Buyer may at its discretion elect to have its technical staff on site during the warranty repair and maintenance actions. The onsite staffing will be to witness and possibly assist in the equipment repair or upgrade process as desired.

14.1.8 Seller must provide the after-warranty services for board and module level return and repair service for the following:

- Five-day turnaround from receipt of the defective unit to return shipment.

- Twenty-four-hour turnaround from receipt of the defective unit to return shipment.

- Advance Replacement if a replacement unit is sent for Buyer's use prior to removal of service of the defective unit and Buyer returns the replacement unit to the repair depot after receiving Buyer's repaired unit back.

14.1.9 All warranty and repair work must be done to restore the original operation of the system is restored to the more stringent of these specifications or the manufacturer’s original specifications. All replacement parts must be of new manufacturer, appearance, and performance. Any replacement parts or modules with a shelf life must have the original shelf life starting from the time of receipt by Buyer as when the unit was manufactured.

14.1.10 Maintenance and Test Equipment

(1) Each Proposer must include with the Proposal a list of recommended spare parts deemed necessary by the manufacturer to minimize down time and test and maintenance equipment required to maintain the equipment to the card level. Each Proposer must also submit a required list of test equipment and fixtures to maintain the system to the component level if possible or as close to the component level as possible.

14.1.11 Proposer must provide quotes as an option for the following:

- Complete system maintenance on a normal 0800-1700, five days a week basis for quoted on an annual basis for a 5-year term. Provide after-hours' call out hourly rates as well.

- Complete system maintenance on a 24/7 basis but not including mobile and portable units quoted for on an annual basis for a 5-year term.

- Services and equipment to keep the hardware and software up to date for a period of 10 years. The exact services included must be detailed along with any additional required services not included in the cost. This requirement includes work required of Buyer as well.

18.2 Future Equipment and Parts Availability

18.2.1 The manufacturer must certify in writing all parts, components, software, firmware, and major subassemblies used in this equipment will be available for at least 10 years after award of contract. This requirement ensures additional equipment required in the future can be assembled and supplied and replacement parts, software, and firmware will be available to maintain the supplied equipment.

SECTION 15

Project Closeout Requirements

This section describes project closeout requirements applicable to the Project. Each of the following elements must be accepted by Buyer's Project Manager as complete before the project will be considered closed and final payments issued.

15.1 Objectives Met

15.1.1 Buyer's Project Manager will conduct a product completion review to verify all project work was completed. All project objectives, goals and deliverables must be met at the quality and quantity identified in the project plan, specifications, and contract. This determination must be made solely at the discretion of Buyer's Project Manager in accordance with the contract, specifications, and plan relevant to this Project.

15.1.2 Accomplishment of goals and objectives must be signified by Buyer's Project Manager's signature on a Final Acceptance document.

15.2 Contract Terms

15.2.1 Every contract requirement and term, including requirements contained change orders, contract amendments, and other formally incorporated documents must be fulfilled to the Buyer's Project Manager's satisfaction prior to the acceptance of the proposed system as complete.

15.3 Documentation

15.3.1 Each document described in Section 17 Documentation Requirements must be completed and accepted by Buyer

15.4 Governmental Certifications

15.4.1 Where required, Seller must provide proof of compliance with federal, state and local requirements prior to project closure. These requirements may include, but are not limited to:

(1) Compliance with prevailing wage, insurance, tax and other requirements.

(2) Escrows for source code or other intellectual property as required by the Contract.

(3) Proof of payment to suppliers, subcontractors, and others as required by law and/or contract.

(4) Grant requirements, as applicable

15.5 Transfer of Responsibility and Support

15.5.1 1 The Project's resulting systems must be transferred from project teams to operations, maintenance, and warranty teams as appropriate. Seller must supply documentation of the transfer and conduct a training/orientation session regarding the Buyer contacts and process with ongoing support providers identified by the Seller.

15.6 Financial Review and Final Invoice

15.6.1 Final invoice may be submitted following completion of a financial review and reconciliation of the Project conducted by Buyer's Project Manager with Seller.

15.7 Project Closure Certification

15.7.1 Upon satisfactory completion of these requirements, Buyer's Project Manager and Seller must certify the Project as complete by signing a Project Closure document.

>>> END OF TECHNICAL SPECIFICATIONS SECTION<<<

END OF TECHNICAL SPECIFICATIONS DOCUMENT

Lewis County, WA Public Safety Radio System Engineering Study Report

Televate, LLC
1934 Old Gallows Road
Suite 350
Vienna, VA 22182

November 2023
P: 703-639-4200
www.televate.com

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Executive Summary

Introduction

Lewis County, WA ("the County") engaged Televate to identify gaps in current public safety radio system coverage and provide recommendations to improve radio site coverage, compatibility, and interoperability. Specifically, the County requested that Televate:

1. Develop a plan for and make recommendations for replacement of existing radio infrastructure equipment as a county-wide simulcast system
2. Develop a plan for and make recommendations for replacement of existing microwave infrastructure
3. Develop a plan for and make recommendations for replacement of existing DC power plants
4. Perform an analysis of existing sites and provide recommendations of additional/alternate sites for improved coverage, and
5. Provide coverage maps of existing and proposed sites.

To accomplish these objectives for the County, Televate sought to define a comprehensive public safety radio system upgrade, which will prepare the County for an effective procurement and smooth execution of the upgrade implementation process. Televate proceeded to work in partnership with Lewis County project leadership and stakeholders to document their unique requirements and to help prepare for the next phase of the system procurement cycle that will establish a mutually agreeable contract with a qualified radio system vendor resulting in a sustainable, interoperable, standards-based and cost-effective radio system that addresses the public safety community's needs throughout the County. This report documents and details the findings and recommendations for the County.

Key Findings

During the needs analysis and through discussions with County stakeholders, Televate identified multiple systems supporting public safety and public works communications within the County. These systems include:

- Fire System East
- Fire System West
- RFA City System
- RFA District 12 System
- Fire Paging
- City PD System
- LCSO System East
- LCSO System West
- Public Works
- Microwave/Backhaul System

Televate also identified the following key items affecting County system users:

System Item/Feature	Findings
Coverage	• Fire coverage is limited in many areas • The use of a simplex channel for fire hampers the ability of field users to communicate directly with each other and they must relay messages through dispatch in many situations • Coverage within the cities and along Route 12 is a priority

	• FD14 has coverage issues in the southern portion of the district – repeater was moved from Watch Mountain due to site access problems • FD1 has coverage issues along Route 508 • Lewis County Sheriff's Office (LCSO) experiences coverage issues along Route 12 east of Packwood, in the Mineral area, in the northwest portion of the County, in addition to other areas • Western fire districts including FD11, FD13, FD16 have many coverage issues – can usually hear dispatch but can't reliably talk back • Fire Paging generally has adequate coverage • PD coverage in the cities of Chehalis and Centralia is generally good – has improved since the main site was moved – some in-building issues exist in buildings such as the hospital, Walmart and Home Depot • Coverage for the separate Riverside Fire Authority (FD12 and Centralia) system is generally good, except for in-building coverage in large commercial facilities • Public Works operates with a single repeater in the east and a single repeater in the west
Interference	• The County frequently receives substantial interference on the primary fire frequency (Fire 1) from transmitters in Mason and Pacific Counties – this should be addressed as soon as possible • Some fire districts in the eastern portion of the County use a different channel to avoid the interference
Site Connectivity	• Microwave connectivity is limited • Connectivity to many sites is done through aged Telco T1 channels over partner's microwave, or via analog circuit connections
Capacity	• Capacity for the most part is adequate, however, additional repeated Tactical channels should be considered for both fire and law enforcement, if available, to offload the dispatch channels • Newly acquired simplex Tactical channels (5) will provide additional opportunity to offload traffic from the main dispatch channels – these tactical channels, along with other potential frequency changes, need to be programming into all radios
System Reliability	• System reliability has generally been acceptable, although it was noted that one microwave link becomes unreliable when temperatures are over 95 degrees • Regular site checks are performed by the Radio Services personnel which helps to maintain consistent operation

Dispatch Operations	• Dispatch spends time repeating communications between units in the field since they can't hear each other – a repeated frequency pair will significantly reduce this need • Dispatch contends with users in the east and west portion of the County since they can't hear each other • The dispatch workload suggests 24 dispatch operators are needed, yet the center currently has only nine • Users in the field would like more consistent dispatch related to training/procedures, voice volume and clarity
Interoperability	• County fire and law enforcement can talk to each other • No interoperability with the State Patrol, although it is seldom needed • Fire districts require interoperability with the state Division of Natural Resources (DNR) • FD11 also needs to talk with Pacific County to the west
Site Infrastructure	• The conditions of the sites vary – an assessment was performed • The Democrat site is currently located at a residence and needs to be upgraded • Additional recommendations will be provided as part of the enhanced system concept
Features	• The Lewis County Sheriff's Office (LCSO) and the local police departments need encryption capability and would also like radio location capability, emergency button use, and individual call capability
Operational	• New Radio Services personnel have been very helpful and have made substantial improvements • The radio committee meetings should be continued • The fire chief's meetings should be continued

Table 1: Study Key Findings

Following a complete analysis of the existing systems and considerations of the key findings and needs, Televate provided specific actionable recommendations for each of the systems listed above to provide significant improvements in public safety communications for the County's first responders. Please see the Recommendations for Improved Public Safety Communications section of this report.

Televate additionally provided capital cost estimates for the recommended site facilities upgrades, as well as estimated ongoing operating and maintenance costs. Please see Cost Estimate of Proposed Recommendations. A complete estimated project budget was also provided under separate cover.

Finally, to facilitate an efficient project to implement the recommended enhancements, a set of next steps for the County to pursue were provided, including:

- Achieving consensus on the recommended direction and performing coordination with its partners

- Developing a comprehensive frequency plan as soon as possible, which entails:
    - Performing coordination on potential new frequencies and identifying frequency pairs
    - Evaluating available frequencies from a combining/multicoupler perspective for the following groups:
        - East simulcast cell group:
            - Fire East repeater pair
            - LCSO East repeater pair, and
            - Public Works East repeater pair.
        - West simulcast cell group:
            - Fire West repeater pair
            - LCSO West repeater pair, and
            - Public Works West repeater pair.
    - Identifying a new Fire West frequency and begin using ASAP
- Identifying and allocating sufficient funding for the project
- Developing a long-term Public Safety Communications strategy
- Establishing a procurement strategy and developing a procurement specification, and
- Considering dispatch improvements.

EXISTING SYSTEM BACKGROUND

County Systems

In order to develop firsthand familiarity with the County's system and to subsequently outline viable paths for system enhancement options, an exhaustive data collection, review and analysis effort was conducted. System data was collected through a review of available electronic records from the County's operational personnel, publicly available information from FCC records and other sources, as well as through targeted onsite physical surveys. Additionally, a series of discussions were held with the radio services and dispatch personnel to better understand the system's history, strengths and gaps, desired outcomes, and overall vision.

Data collected to support the assessment included:

- Overall radio and microwave network architecture and system design
- VHF radio and microwave equipment types, models, quantities, and years in operations
- RF site coordinates
- Operational frequencies
- Dispatch center equipment and interfaces, and
- Site equipment inventory.

Current Systems Overview

The County currently operates VHF analog conventional systems for both their law enforcement and fire operations. These systems support the following County and partner agencies:

- Law Enforcement:
  - Lewis County Sheriff
  - Centralia PD
  - Chehalis PD
  - Napavine PD
  - Winlock PD
  - Toledo PD
  - Morton PD
- Fire Agencies:
  - LCFD #1-Onalaska
  - LCFD #2-Toledo
  - LCFD #3-Mossyrock
  - LCFD #4-Morton
  - LCFD #5-Napavine
  - LCFD #6-Chehalis
  - LCFD #8-Salkum
  - LCFD #9-Mineral
  - LCFD #10-Packwood
  - LCFD #11-PeEll
  - LCFD #13-Curtis
  - LCFD #14-Randle
  - LCFD #15-Winlock
  - LCFD #16-Doty
  - LCFD #18-Glenoma
  - Cowlitz-Lewis #20
  - Riverside Fire Auth.
  - Chehalis FD
- Other Agencies:
  - American Medical Response
  - Coroner's Office
  - Public Works/DEM
  - US Forest Service

Televate analyzed the different systems in order to establish a complete picture of communications throughout the County. These systems include:

- Fire System East
- Fire System West
- RFA City System
- RFA District 12 System
- Fire Paging
- City PD System
- LCSO System East
- LCSO System West
- Public Works
- Backhaul System

A description of each of these systems is provided below and estimated coverage performance based on a propagation simulation is provided in Appendix B: Current System Predicted Coverage.

Fire System East:

The fire system in the eastern portion of the County operates with Tx/Rx sites at Storm King (154.19 MHz for the Mineral area – FD9), Dog (154.19 & 156.105), Randle Fire (155.805), and Packwood (155.805). The Storm King and Dog sites use the Fire 1 channel of 154.19, while the Randle Fire and Packwood sites utilize the Fire 3/4 repeated channel (155.805/156.105) which support fire districts 10 and 14. The Hopkins site is used as a relay site for Storm King (via 159.315). A diagram of this configuration is shown in Figure 1.

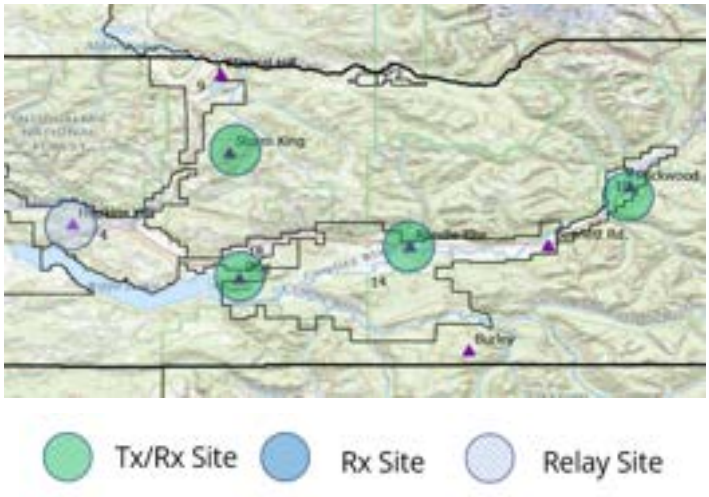


Figure 1: Lewis County Fire System East Sites

Fire System West:

The fire system in the western portion of the County operates with Tx/Rx sites at Crego and Democrat, with receive only sites at Cooks, Onalaska, Toledo, and at the Fire District 11 Station (receives one frequency then transmits on 154.19). All of these sites utilize the Fire 1 channel of 154.19, except for the alternate receive frequency used at the Fire District 11 Station. A diagram of this configuration is shown in Figure 2.

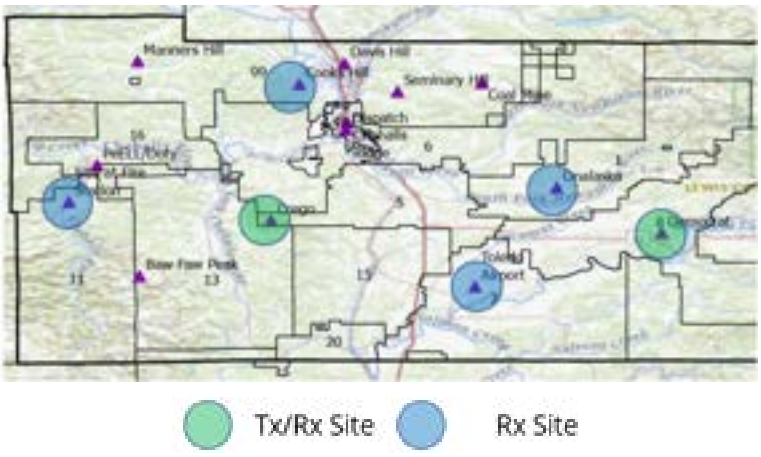


Figure 2: Lewis County Fire System West Sites

RFA City System:

The RFA system that supports the fire departments for Chehalis and Centralia uses Tx/Rx sites at the Courthouse and Seminary Hill, with receive only sites at Cooks and Crego. This system is configured as simulcast transmit and voted receive and uses the repeater pair of 154.145/158.760 MHz, which is also referred to as the Fire 6 channel. A diagram of this configuration is shown in Figure 3.

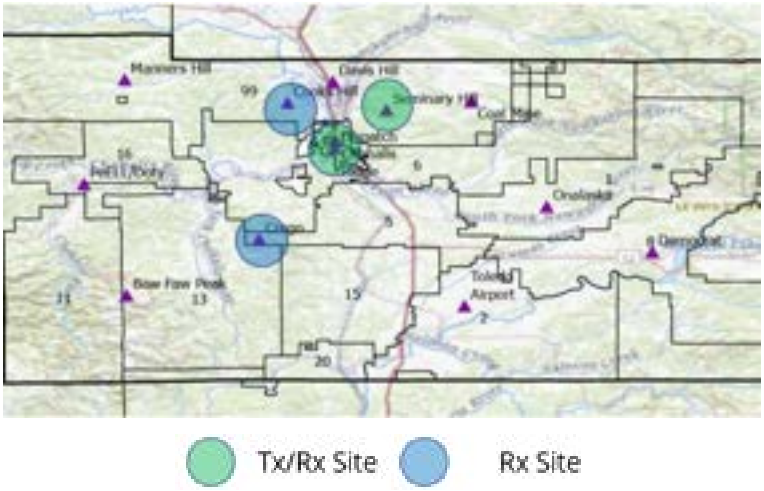


Figure 3: RFA City Fire System

RFA District 12 System:

The Riverside Fire Authority (RFA) District 12 system supports the fire district in the northwest portion of Lewis County and utilizes Tx/Rx sites at Crego, Cooks, Coal Mine, Manners and receive only sites at the Courthouse and Seminary Hill. This system is configured as simulcast transmit and voted receive and uses the repeater pair of 154.9725/159.0975 MHz, which is also referred to as the Fire 2 channel. A diagram of this configuration is shown in Figure 4.

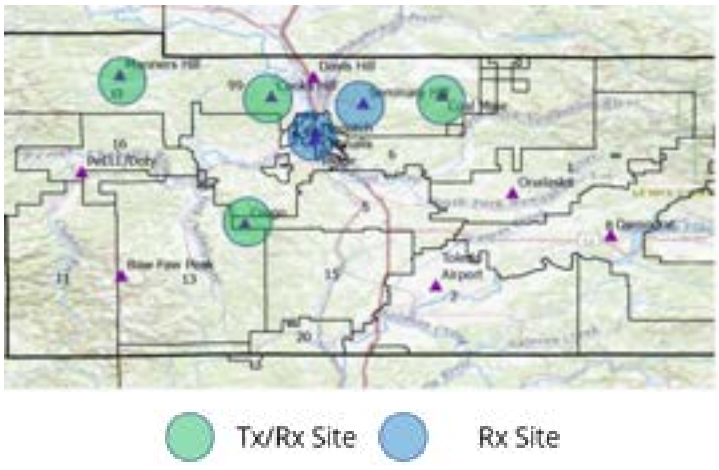


Figure 4: RFA District 12 System

Fire Paging System:

The paging system that supports all fire agencies within the County utilizes two sites in the east (Dog and Packwood) using the mobile receive side of the voice channel in that area (155.8050 MHz) instead of a dedicated paging channel. The paging system in the western portion of the County uses a total of four sites at Cooks, Crego, Manners, and Toledo using a dedicated paging frequency 155.7150 MHz. A diagram of this configuration is shown in Figure 5.

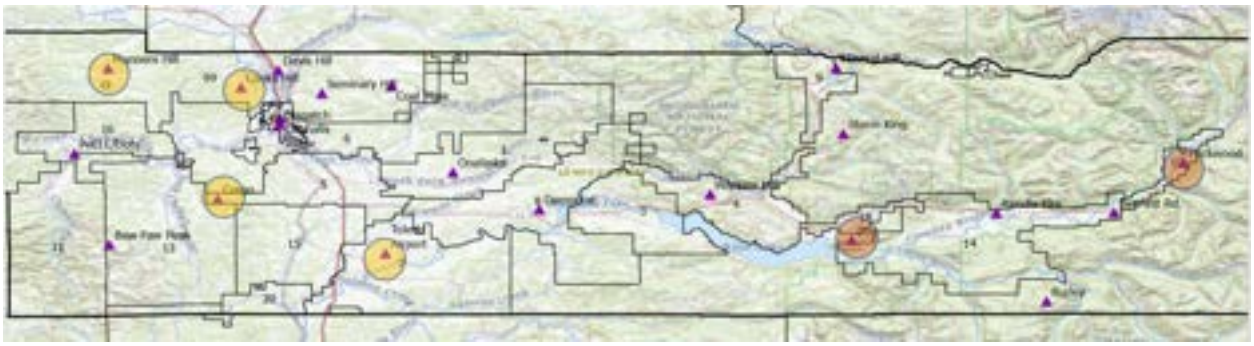


Figure 5: Fire Paging System

City Police Departments (PDs) System:

The system that supports the police departments for Chehalis and Centralia uses one Tx/Rx site at Chehalis Ridge and a receive only site at Seminary Hill. An additional receive site at Davis Hill has been disabled as it was not found to provide any additional benefit. This system uses the repeater pair of 156.1800/159.0000 MHz. A diagram of this configuration is shown in Figure 6.

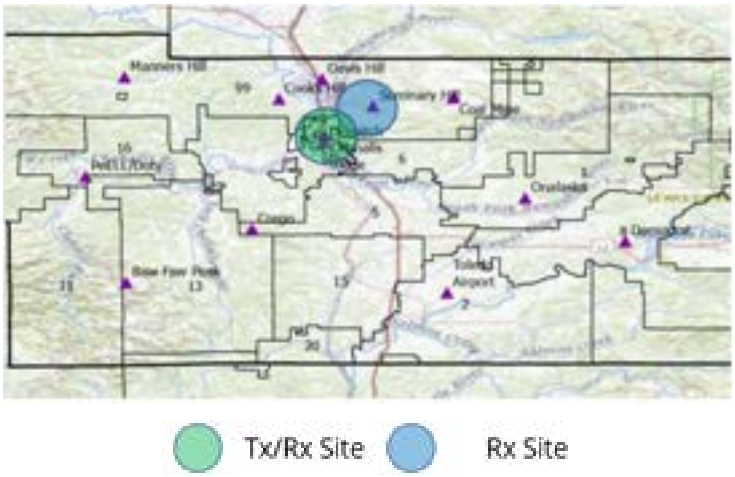


Figure 6: City PD System

LCSO System East:

The system that supports LCSO in the eastern portion of the County uses the Burley and Storm King remote sites as Tx/Rx, which are linked via a transmitter at Crego. This system also uses receive only

sites at Bennett, Dog, Hopkins, and Packwood. The frequency pair used for this system is 155.6250/156.0300 MHz. A diagram of this configuration is shown in Figure 7.

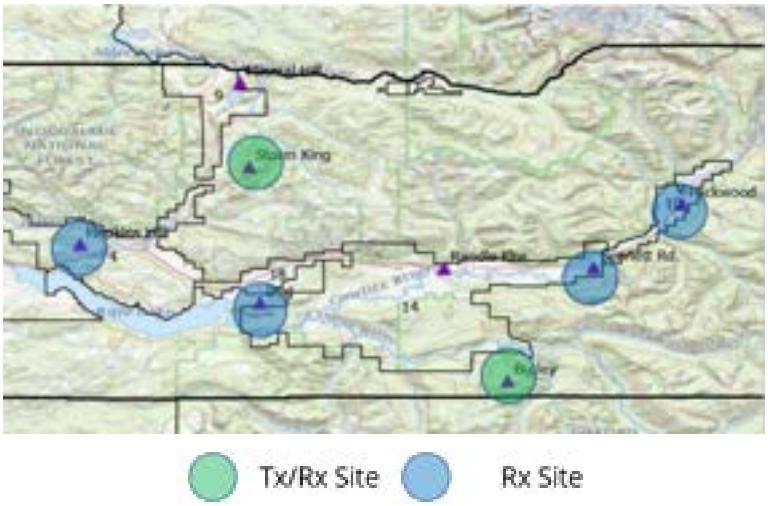


Figure 7: LCSO System East

LCSO System West:

The system that supports LCSO in the western portion of the County uses a single Tx/Rx site at BawFaw and receive only sites at Crego, Davis Hill, Hopkins, and Toledo. The frequency pair used for this system is also 155.6250/156.0300 MHz. A diagram of this configuration is shown in Figure 8.

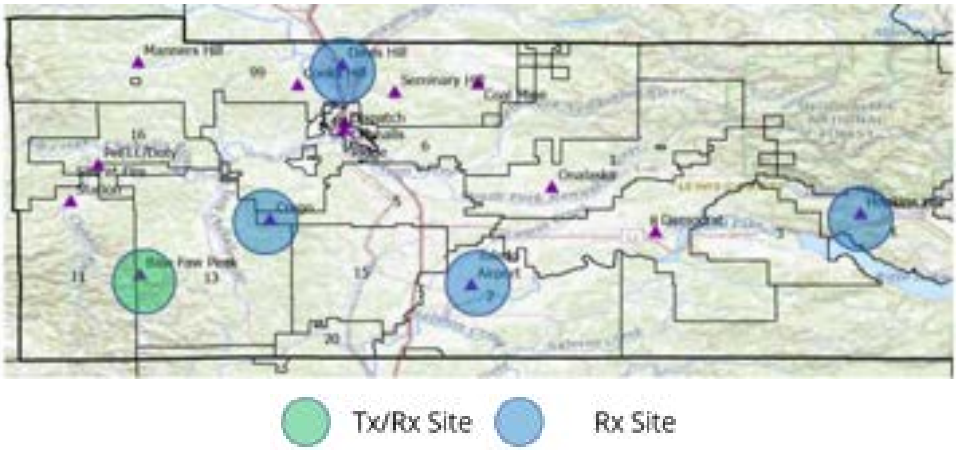


Figure 8: LCSO System West

Public Works:

The public works system operates from a single repeater site at Hopkins for the east side of the County, and single repeater site at Crego for the west side of the County. A diagram of this configuration is shown in Figure 9. Both repeaters use the frequency pair 155.1000/155.7450 MHz for their operations.

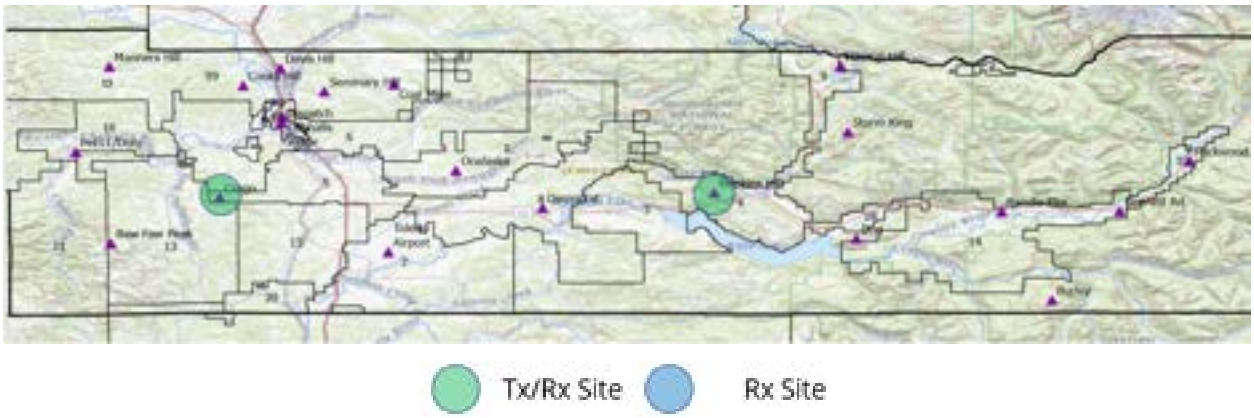


Figure 9: County Public Works System

County Microwave Backhaul Network:

The County currently uses microwave links to provide radio site backhaul connectivity to some of the communications sites in use throughout the County. Some microwave links are owned by the County and other connections provide a T1 connection configured over a County partner's microwave. These existing connections are shown in Figure 10.

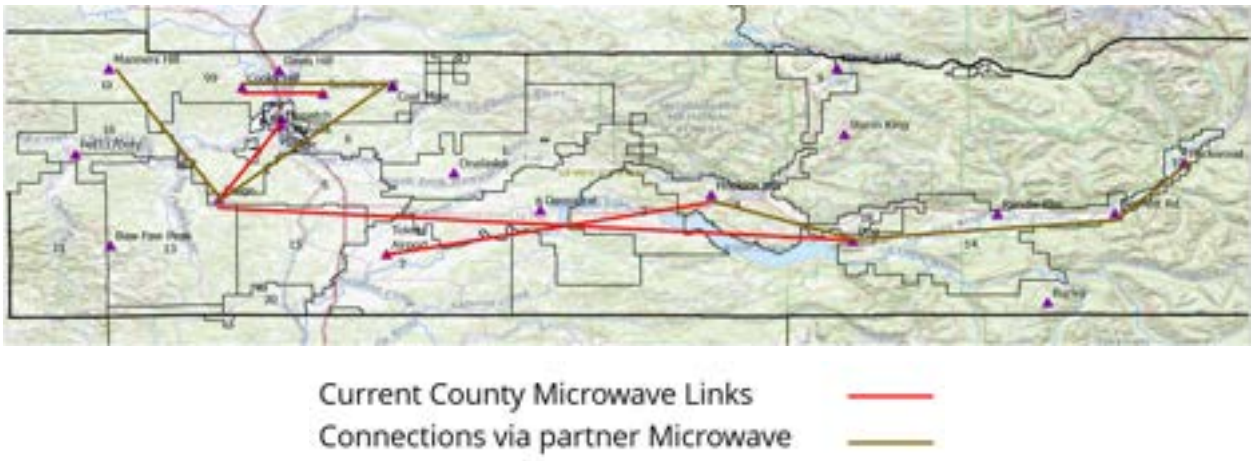


Figure 10: Lewis County Microwave Backhaul Network

Physical Infrastructure

The County maintains approximately twenty communications sites to support the operations described above. These sites contain substantial physical infrastructure which includes radio towers or other support structure, equipment shelters with environmental support systems, DC power plants and backup generators. These facilities are essential for maintaining a robust radio network. Basic descriptions of the sites currently in use today in Lewis County appear below in Table 2.

Site Name	Structure	Equipment Location	Backup Power
BawFaw Peak	Self-support tower	Custom block building	Batteries and generator

Bennett Rd.	Self-support tower	Concrete prefab building	Batteries and generator
Burley	Tower	Custom building	None – Solar power only
Chehalis Ridge	Monopole tower	Custom block building	Generator
Coal Mine	Self-support tower	Custom building	Batteries and generator
Cooks Hill	Self-support tower	Room inside fire station	Batteries and generator
Crego	Self-support tower	Portion of custom block building	Batteries and generator
Davis Hill	Pole attached to building	Custom brick building	None
Democrat	Pole attached to house	Garage	None
Dog	Self-support tower	Custom building	Batteries and generator
Historic Courthouse	Building rooftop	Building equipment room	UPS and generator
Hopkins Hill	Self-support tower	Custom building	UPS and generator
Manners Hill	Self-support tower	Custom block building	Batteries and generator
Onalaska	Pole attached to building	Room inside fire station	Batteries
Packwood	Ladder structure of water tower	Custom building	Batteries
Seminary Hill	Wooden pole	Outdoor cabinets	Batteries and generator
Storm King	Tower	Custom building	None – Solar power only
Toledo Airport	Self-support tower	Custom building	Batteries
Randle Fire	Tower attached to building	Room inside fire station	Batteries

Table 2: Current Lewis County Infrastructure Sites

FCC Licenses

Another key ingredient for maintaining a public safety radio system is the access to licensed frequency spectrum. Voice communications is achieved via the use of frequencies licensed by the Federal Communications Commission (FCC). The primary frequencies in use by Lewis County, as well as some additional licensed frequencies, are listed in Table 3.

Frequency (MHz)	Current Usage
154.1900	Primary fire dispatch and voice channel - simplex
154.1450/158.7600	Used by RFA for fire voice for Chehalis and Centralis fire
154.9725/159.0975	Used by RFA for fire voice for fire district 12
155.8050/156.1050	Repeated pair for fire paging and voice for fire districts 10 and 14

155.7150	Fire paging for County and RFA fire districts
155.6250/156.0300	Law enforcement voice channel for Lewis County Sheriff's Office
156.1800/159.0000	Law enforcement voice channel for Chehalis and Centralia PD
155.4150/159.0300	Jail voice channel
155.1000/155.7450	Voice communications for County public works
154.3400	Hospital Emergency Administrative Radio (HEAR) - Primarily used by ambulance services for administrative communications with hospitals
155.7675	SW WA public department (fairgrounds voice communications)
155.9550	Used by fire district 14
154.4300	Licensed by Lewis County and RFA
154.9800	Licensed by Lewis County
154.9950	Licensed by Lewis County
155.0100	Licensed by Centralia, Chehalis, and Lewis County
158.9250	Licensed by Lewis County

Table 3: Lewis County Licensed Frequencies

FCC license changes are likely to be required when the County chooses to implement system enhancements.

Subscriber Devices and Vehicular Repeaters

The public safety agencies within Lewis County operate a variety of mobile and portable radios as part of their communications systems. Based on on-site interviews and responses to a user survey, it is estimated that the County agencies operate approximately 300 mobile radios and 500 portable radios. These radios come from various manufacturers, including Bendix King, Icom, Kenwood, and Motorola. The majority of these radios support analog voice only, although a small percentage would be capable of supporting digital voice. Some agencies also utilize in-band vehicular repeaters as a means to extend the usable range of portable radios in areas of limited coverage.

Dispatch Centers and Equipment

Radio dispatch consoles are critical tools used by telecommunicators or dispatch staff to communicate with, support, and coordinate the first responder field response and operations. Dispatch equipment is situated at call-taking/dispatch operator positions and is typically connected via wired or wireless links to central switching controllers or to base station radio sites. Lewis County dispatches from the historic courthouse location and maintains eight dispatch positions utilizing Motorola MCC7500 consoles. The County also uses a Motorola (formerly Spillman) Computer Aided Dispatch (CAD) system.

Current Systems Signal Measurements

LMR network signal level measurements were taken to confirm existing system performance, as well as to provide input into the radio propagation tool to improve the accuracy of the RF coverage simulations. During Televate's on-site visit in August 2023, a signal measurement device was used to gather existing system signal measurements. A Berkeley Varitronics Systems Coyote™ (shown in Figure 11) unit was used to measure the signal level and correlate it to GPS location.

Figure 11: Measurement Device

The unit was programmed to receive and measure frequency 155.1000 MHz for testing purposes. The testing was performed in a County vehicle while driving throughout the County with the unit held inside in the passenger seat. Since the Lewis County systems are conventional, the channels are normally only active when a call is in process. However, to record data throughout the drive route, the channel was placed into a periodic transmit mode, which would cycle the transmitter on and off for 30 seconds each. The data was then filtered to eliminate the data when the transmitter was off.

Over a two-day period, measurements were recorded from a total of four sites: BawFaw, Crego, Hopkins and Packwood. Data from each of these measurements are shown in the figures below. In each case, the following legend applies to illustrate the measure radio signal strength:

> -78 dBm	
-78 to -88	
-88 to -98	
-98 to -107	

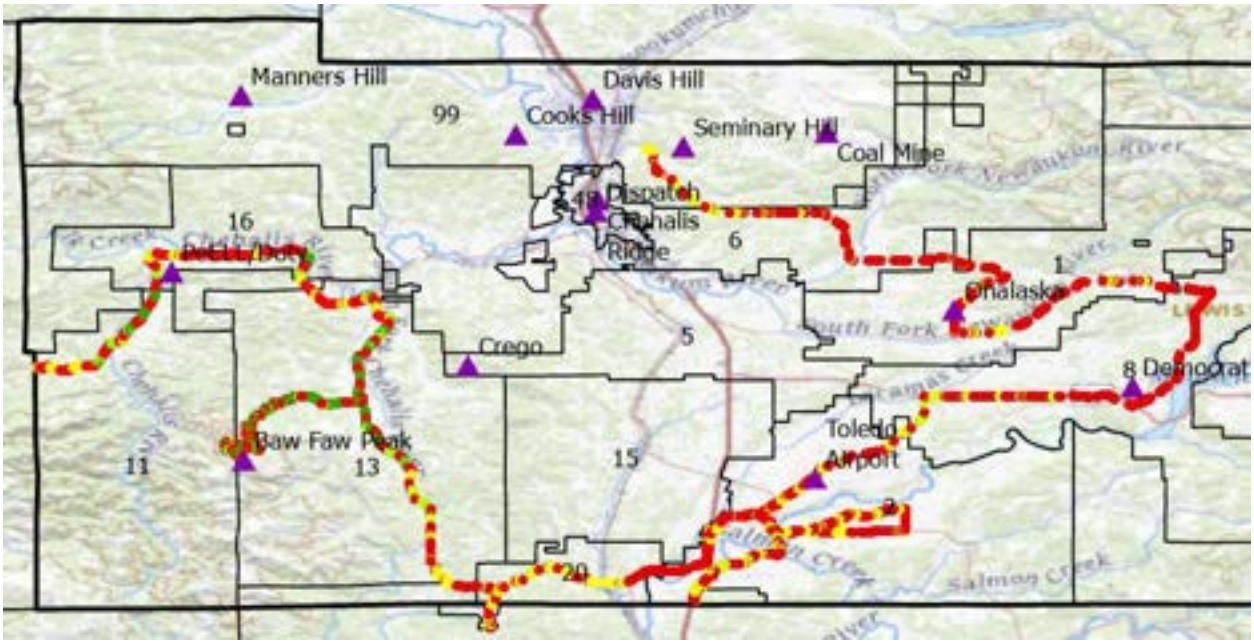


Figure 12: Recorded Signal Level Data from BawFaw

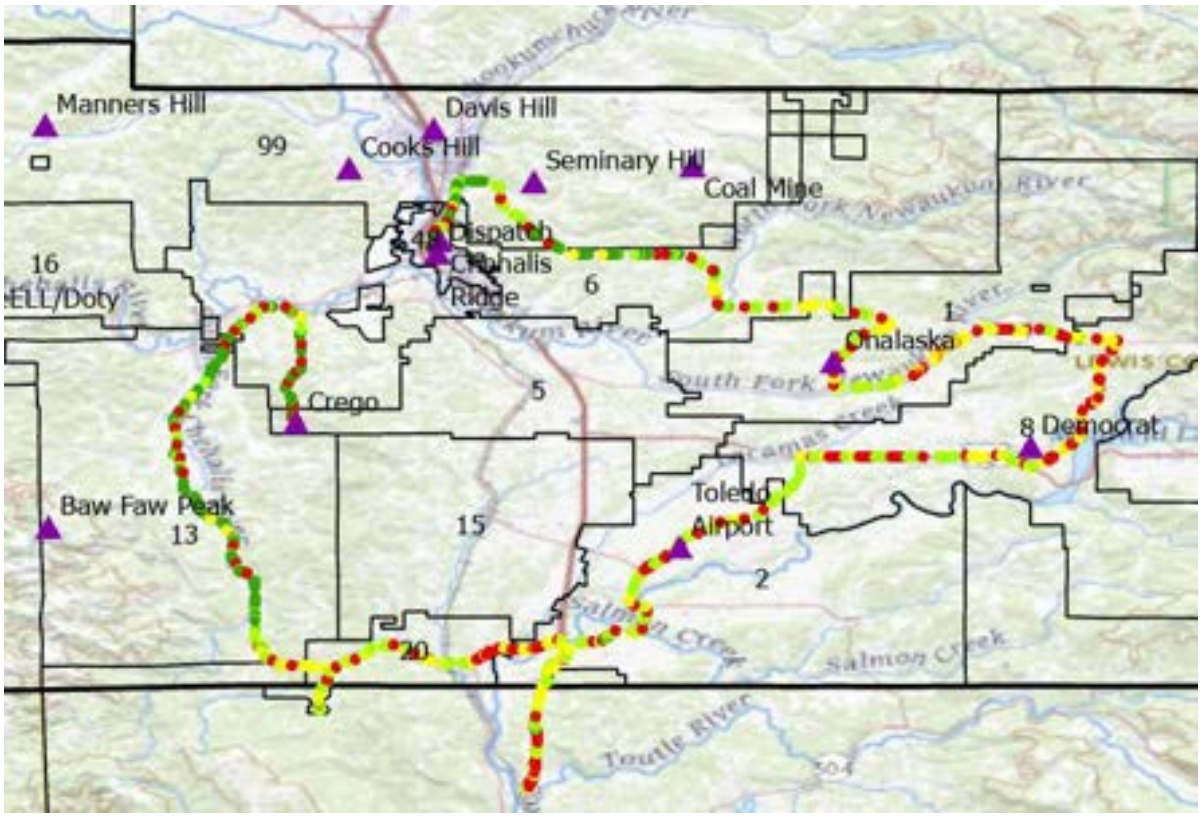


Figure 13: Recorded Signal Level Data from Crego

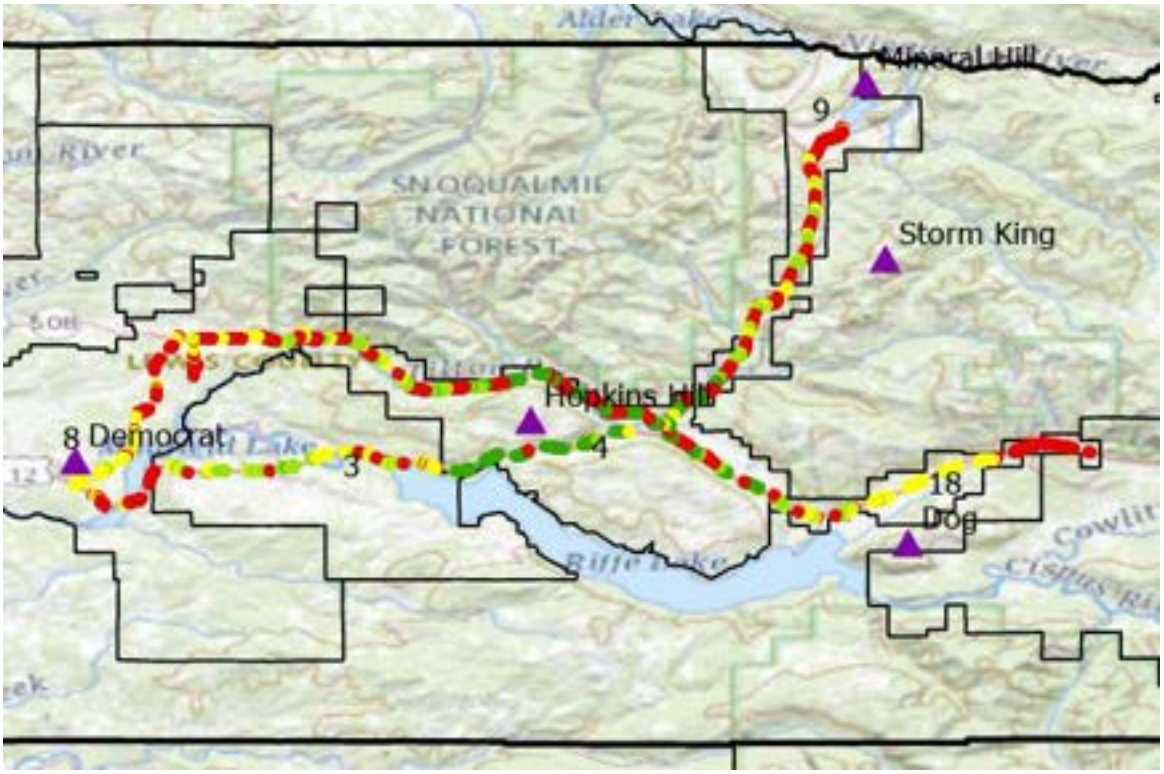


Figure 14: Recorded Signal Level Data from Hopkins

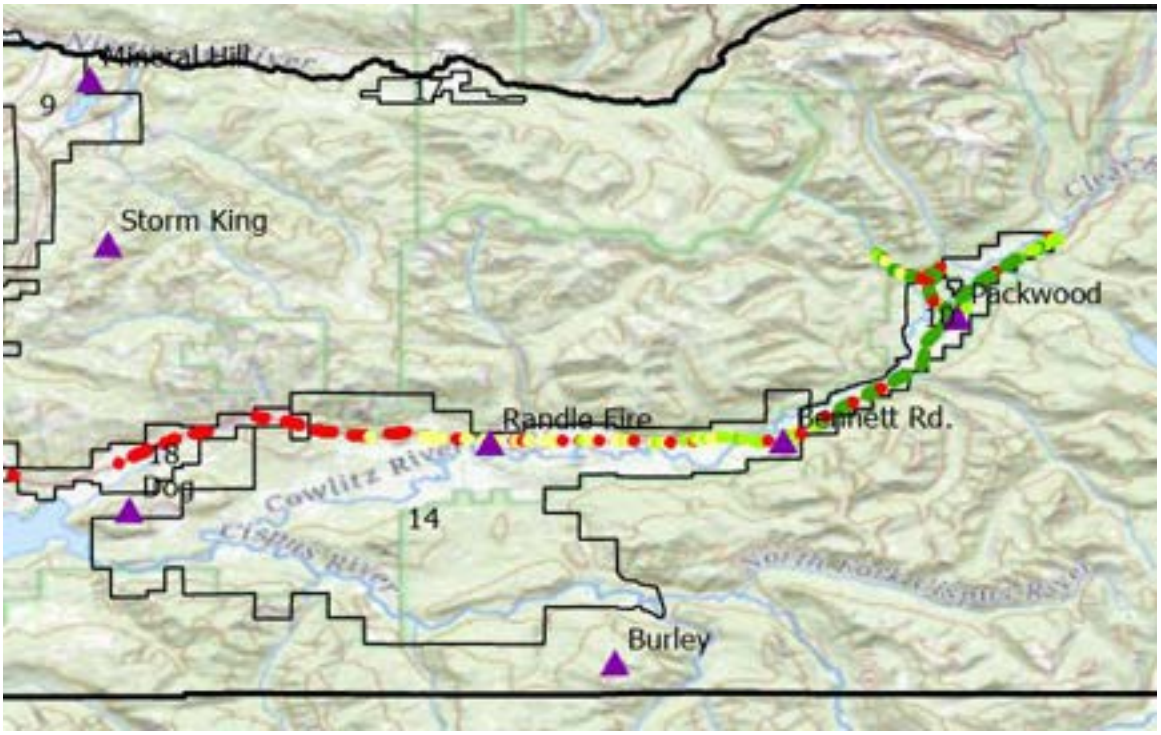


Figure 15: Recorded Signal Level Data from Packwood

SYSTEM FEEDBACK FROM USERS

Identifying the objectives and needs of the public safety communications system stakeholders is key to establishing requirements for radio system enhancement solutions. Technology selections and investments are best driven by the user community to ensure that the next generation radio network satisfies their unique communications needs, and likewise considers fundamental financial and governance objectives. During the on-site visit to Lewis County, the Televate team conducted interviews and informal discussions with technical, end user, management and systems operations staff regarding the system's operation and performance. Discussions focused on a range of topics including current systems capabilities and gaps, interoperability requirements, and the condition of existing and new infrastructure assets. A radio user survey form was also made available for those stakeholders that did not have the opportunity to attend in person interviews.

Detailed notes from the on-site interviews are included in *Recommended Next Steps*

Televate recommends Lewis County proceed in the following manner to implement the recommendations provided in this report.

Consider Recommendations and Direction and Coordination

The County should review the recommendations provided in this report, provide feedback and update plans as necessary. Additionally, the County should engage additional stakeholders from the County's first responder community to solicit input on the recommended direction and achieve consensus on the approach. Once consensus on the preferred approach is achieved, Televate recommends that the County begin the coordination activities with its communications partners, including RFA, WSDOT, and others as necessary to implement the recommended improvements.

Develop a Comprehensive Frequency Plan As Soon As Possible

Co-channel interference on the main fire frequency is one of the most critical issues currently faced by County first responders. It is essential that the County address this issue as soon as possible. To do so, Televate recommends the following short-term actions:

Perform coordination on potential new frequencies

A number of potential alternative and additional frequencies suggestions are provided in this report. Televate recommends the County work with a licensed frequency coordinator to perform coordination services on selected frequencies to determine what frequencies can be licensed by the County and to move forward with the licensing process. The usable frequencies should then be combined as candidate frequency pairs to create repeated channels.

Evaluate available frequencies from a combining/multicoupler perspective

Once the collection of new frequencies is identified and candidate repeater pairs are created, it is suggested that the County identify groups of frequency pairs that can be easily combined at a common site. The groups that the County should consider include:

- East simulcast cell group:
  - Fire East repeater pair
  - LCSO East repeater pair, and
  - Public Works East repeater pair.
- West simulcast cell group:
  - Fire West repeater pair

- LCSO West repeater pair, and
- Public Works West repeater pair.

Identify new Fire West frequency and begin using ASAP

The process described above will identify a candidate repeated frequency pair for the Fire West system. Televate believes that the County should begin using this frequency as soon as possible, even if the other recommended enhancements are not addressed until a later time. Elimination of the interference currently experienced on the 154.1900 frequency may be worth the additional effort of reprogramming radios with this new frequency, even if radios will need to be programmed again at a later date.

Allocate Funding for the Project

It is Televate's understanding that the County intends to utilize identified ARPA funding in addition to a source of grant funding in support of this project. It is recommended that the County confirm these allocations in the amounts available to support this project. In order to implement all enhancements, the currently identified ARPA and grant funding may not be sufficient to support the entire project. Therefore, since additional funding, above and beyond the currently identified allocations may be required for this project, it is recommended that the County develop a plan to address the potential for additional costs. Potential options for addressing this may include:

- Identifying additional funding to cover potential additional costs
- Scaling back or phasing in the improvements over several years, or
- Working with partner agencies to identify additional funding.

Additionally, since the timing for the funding may vary by source, it is recommended that the earliest available funds be allocated toward the portions of the project that are likely to have the longest lead time for implementation, including the facilities updates and the extensive microwave connectivity.

Develop a Long-Term Public Safety Communications Strategy

In addition to these near-term improvements, Televate recommends the County also consider additional improvements to further enhance the public safety communications within the County. Considerations may include:

- Upgrading law enforcement user radios for P25 capability to support encryption and location services
- Adding additional site infrastructure to further improve coverage in key areas
- Upgrading additional site infrastructure to support digital communications for improved coverage with existing sites, and
- Considering a regional consortium with neighboring counties to share resources and improve regional communications.

Establish a Procurement Strategy and Develop a Procurement Specification

Once the final project direction has been established and the funding strategy is in place, Televate recommends that the County develop a procurement strategy for the project, and as required, a procurement specification to define the project and solicit proposals. Televate would be happy to assist the County further with establishing this strategy and documentation.

Consider Dispatch Improvements

In addition to the radio enhancements recommended in this report, Televate recommends that the County perform an internal dispatch assessment to consider potential improvements to dispatch operations and to address comments received from stakeholders. Some areas that could be investigated include:

- A staffing analysis to determine the optimal number of dispatch operators required for the current call volume and a means to achieve this level
- A review of and potential update to the current dispatch processes regarding call handling and interaction with the first responders – this should include communications with the first responder agencies to solicit their input as well as inform them on the dispatch processes and challenges that exist
- Consideration of a patching policy to facilitate communications between the east and west systems/channels when necessary
- A review of and potential update to the current dispatch training processes to better enable consistent call handling and response, and
- An evaluation of an Automated Voice Dispatching (AVD) system to ensure consistent volume and voice quality.

Appendix A: On-Site Interview Notes. A summary of the key findings from the in-site interviews and survey results has been provided in Table 1 in the executive summary portion of this report.

The primary issues that surfaced during interviews and also in the survey results was the need for better coverage and problems due to disruptive radio channel interference. Coverage issues plagued most of the agencies, except for those that work primarily in the Cities of Chehalis and Centralia. However, even for these agencies, larger buildings such as the big “box” stores (Walmart, Home Depot, etc.) still cause problems.

Interference is a major concern with most of the County fire agencies. All agencies that still utilize Fire 1 (154.1900) commented on the interference from outside the County, mostly from Mason County. Televate was able to confirm the assertion that Mason County is operating a site on 154.1900 at high power. Our research of FCC records did reveal a City of Shelton call sign KNFF591 in Mason County which is licensed at an Effective Radiated Power (ERP) of 350W. Televate performed a contour analysis of that license to determine its potential impact. Figure 16 below shows the location of the City of Shelton site and the predicted service (Blue) and interference (Red) contours based on the license information. It can be seen that the predicted interference contour intersects a very large portion of Lewis County and confirms the reason behind the significant interference problems experienced on Fire 1.

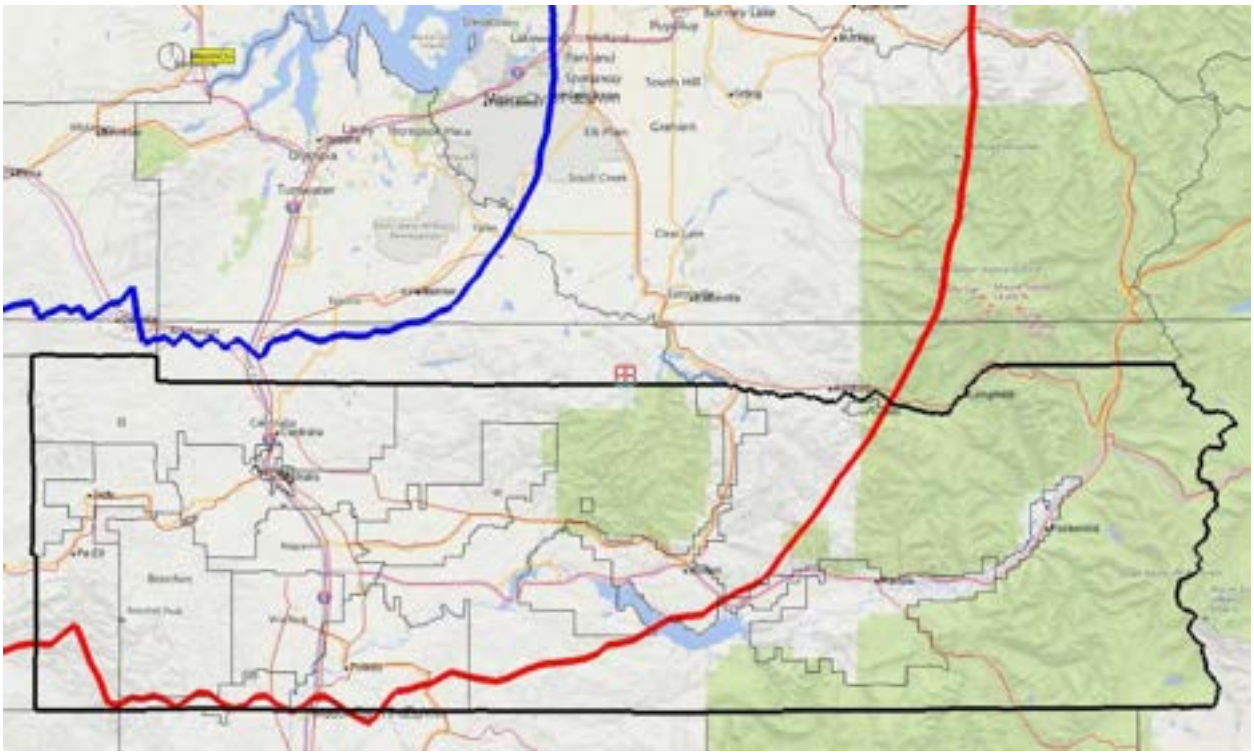


Figure 16: City of Shelton License KNFF591 Service (—) and Interference (—) Contours

In addition to documenting significant findings from the system research and stakeholder meetings, Televate developed a list of key requirements that should be addressed by the system enhancements. These key system requirements are summarized in Table 4.

Category	Key System Requirements
Overall Functionality and Coverage	• An alternative to the main fire frequency (154.1900) must be identified and implemented to resolve the interference issues • Fire system coverage must be improved in key areas in both the eastern and western portions of the County ○ Additional vehicular repeaters can provide a short-term improvement • Law Enforcement system coverage must be improved in key areas in both the eastern and western portions of the County
Site Connectivity	• It is critical to implement a modern microwave system to support digital signaling and robust connectivity between sites
Dispatch Operations	• Implementing a repeater pair for the primary fire channel to facilitate direct communications between field users and eliminate the need for dispatch to repeat traffic would be a significant improvement

Radio Programming, TAC channels and Interoperability	• Additional TAC channels should be incorporated into a common radio template • Additional repeated channels should be incorporated if available • Key interoperability channels (such as DNR) should be incorporated into the radio templates • Fire radio templates should be programmed to a common standard
Features	• A key enhancement would include the capability for future support of digital communications to support encryption and location tracking of radios for law enforcement
Operations and Maintenance	• Ensure a sustainable, fault-tolerant network, including redundant power at the sites and redundant backhaul • Implement a full suite of remote monitoring, alarm/fault management capabilities • Implement consistent system service and maintenance procedures • Fire radio batteries are very old and should be replaced
General	• Implement the most cost-effective, yet beneficial system upgrade • Plan for a system that is financially sustainable

Table 4: Key Requirements

RECOMMENDATIONS FOR IMPROVED PUBLIC SAFETY COMMUNICATIONS

Based on the needs assessment, survey results, and detailed discussions with stakeholders, Televate developed a number of recommendations for the County to consider which will provide improved communications. For the recommended improvements, Televate approached the process by considering the east and west portions of the County. This approach was taken due to several considerations, primarily:

- The geography of the County lends itself to an east/west approach as it is extends more than 90 miles east to west, while being approximately 25 miles north to south
- The Lewis County Sheriff's Office using an east and west approach
- A single County simulcast cell would be impractical to deploy due to the extended site separation that would occur between east and west sites. A large site separation significantly increases the chance of internal system interference known as Time Delay Interference (TDI), which occurs when areas within the coverage boundary receive signals from multiple sites, but at noticeably different times. An example of potential interference areas from a simulcast cell utilizing sites in both the east and west portions of the County is shown in Figure 17, where the red areas indicate areas of likely TDI interference. These issues can largely be avoided by utilizing separate simulcast cells in the east and west.

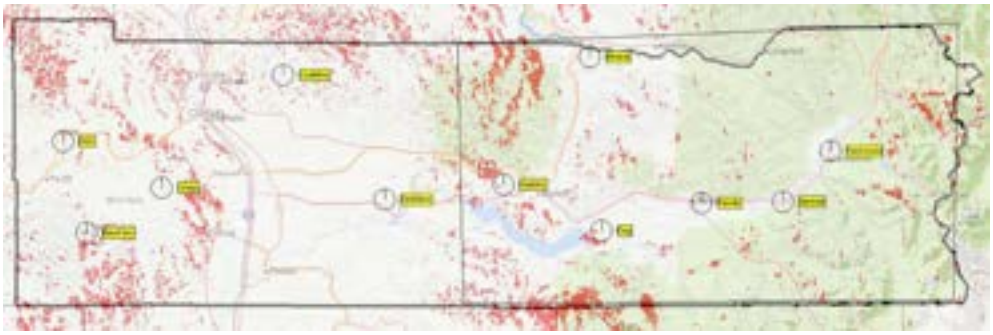


Figure 17: Potential TDI Interference from sites in both East and West

With the East/West approach, the recommendation is for the fire districts to be broken down in this manner:

- East: Fire Districts 4, 9, 10, 14, 17, 18
- West: Fire Districts 1, 2, 3, 5, 6, 8, 11, 13, 15, 16, 20.

Geographically, this grouping is shown in Figure 18, where the East districts are shown in red, and the West districts are shown in green. In addition to these groupings, it is assumed that the RFA communications system remains separate.

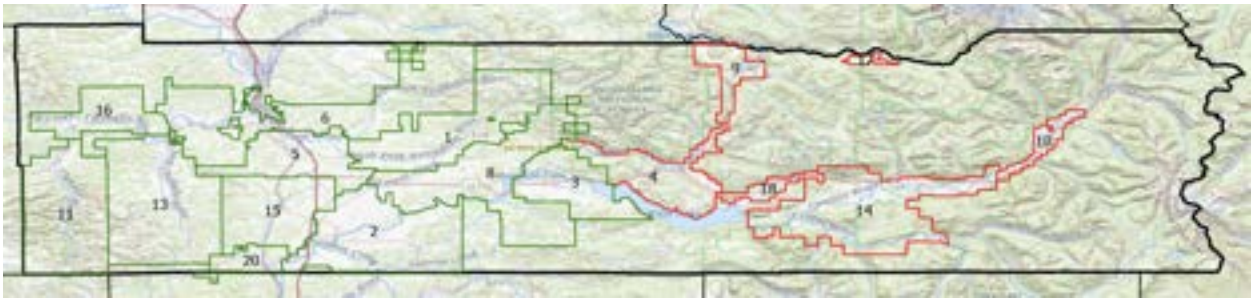


Figure 18: Fire District Recommended East/West Grouping

Neighboring districts that work together regularly, such Fire Districts 3 and 4 that fall in different regions may raise some concern with the east/west approach. However, these concerns can be addressed through appropriate operational procedures such as ensuring that these districts have the East and West primary channels and they enable scanning of both channels, and also that they use the same TAC channel.

In general, Televate recommends Lewis County maintain operations in the VHF frequency band and continue to operate analog conventional radio systems. This approach will permit the County to maintain interoperability with neighbors and partners, as well as utilize much of their existing equipment while implementing targeted enhancements designed to improve coverage and enhance operations. Additionally, Televate recommends that the infrastructure improvements proposed (including microwave, RF repeaters and receivers) be capable of supporting migration to digital P25 operation at a later date to enable further operational improvements such as encryption for law enforcement and location services. Specific recommended improvements for each of the existing systems are provided below.

System Enhancement Recommendations

Fire System East:

The goals for the enhanced Fire System in the east is to improve coverage and reliability without using the solar-powered sites as the primary assets. To achieve these goals, the following changes/additions are recommended:

- Implement transmit/receive sites at Hopkins, Mineral Hill, Dog, Randle Fire, Bennett, and Packwood in a simulcast cell
- Convert Storm King to a receive only site and add Burley as receive only as well
- Utilize the current repeated frequency pair used in the east (155.8050/156.1050), or a suitable replacement based on additional frequency analysis, and
- Ensure all new infrastructure is digital (P25) capable.

A graphical view of the recommended new configuration is shown in Figure 19.

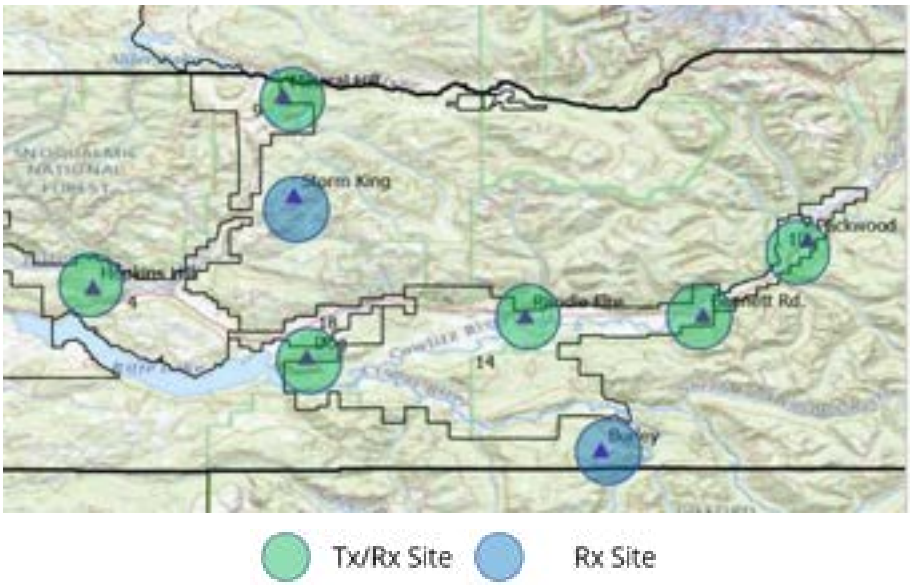


Figure 19: Lewis County Fire System East Recommended Configuration

Fire System West:

To improve communications performance for the fire system in the west, the following changes/additions are recommended:

- Implement transmit/receive sites at BawFaw, Crego, Doty, Coal Mine, and Democrat (new tower) in a simulcast cell
- Maintain receive sites at Cooks, Onalaska (new tower), and Toledo
- Eliminate the relay/receive site at the Fire District 11 station (The Doty site covers this area
- Utilize a new repeated frequency pair based on the frequency analysis provided in this report, and
- Ensure all new infrastructure is digital (P25) capable.

A graphical view of the recommended new configuration is shown in Figure 20.

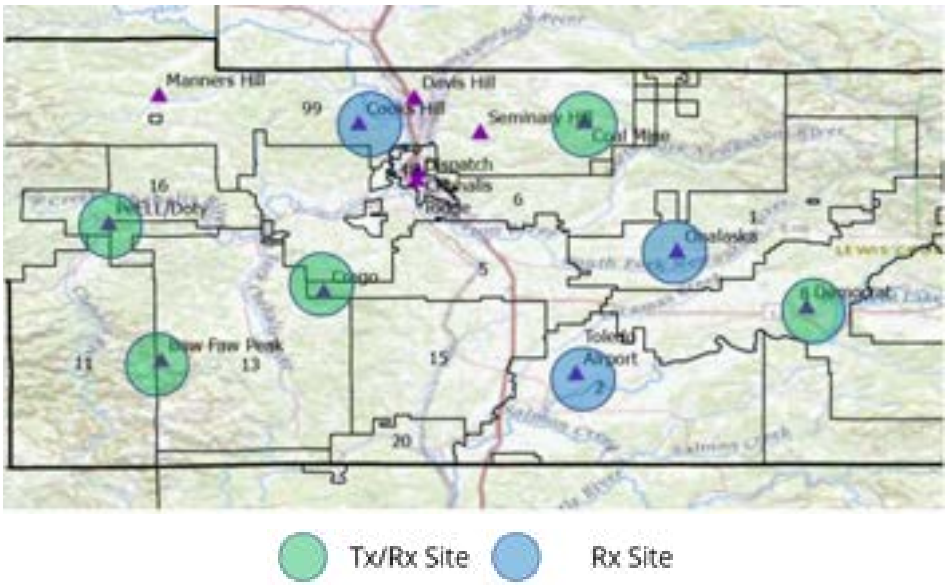


Figure 20: Lewis County Fire System West Recommended Configuration

RFA City System:

The RFA system that supports the fire departments for Chehalis and Centralia appears to be working well and no configuration changes are recommended at this time. However, if needed, additional vehicular repeaters can be purchased to address current coverage problems within buildings.

A diagram of the existing configuration was provided earlier in Figure 3.

RFA District 12 System:

Similarly, the RFA District 12 System appears to be working well and no configuration changes are recommended at this time. However, if needed, additional vehicular repeaters can be purchased to address current coverage problems within buildings.

A diagram of the existing configuration was provided earlier in Figure 4.

Fire Paging System:

The paging system that supports all fire agencies within the County appears to be working well at this time. However, given that the fire agencies in the east currently utilize the base transmit/mobile receive

voice frequency 155.8050 MHz for paging and additional sites are recommended for the east voice system, utilizing this same method and frequency will improve the paging performance in the east.

In the west, the paging system currently uses different sites than the recommended updated voice system, as it supports paging for RFA as well as other County fire districts. Therefore, in order to not disrupt the current paging system in the west, it is recommended that this system remain unchanged at this time. However, it is noted that an additional site (Coal Mine) is currently being added to the paging system in the west, which will improve paging performance in that area.

City Police Departments (PDs) System:

The City PDs System that supports the police departments for Chehalis and Centralia appears to be working well and no configuration changes are recommended at this time. However, it is recommended that all infrastructure (repeaters, receivers, comparators, microwave equipment) be upgraded to current manufacturer equipment and enabled to support digital (P25) operation. Additionally, if needed, additional vehicular repeaters can be purchased to address current coverage problems within buildings.

A diagram of the existing configuration was provided earlier in Figure 6.

LCSO System East:

The recommendation for the LCSO System in the east mirrors that for the Fire System as this recommendation provides the best coverage using existing sites and it is preferrable to maintain equivalent coverage for first responder agencies. The following changes/additions are recommended:

- Implement transmit/receive sites at Hopkins, Mineral Hill, Dog, Randle Fire, Bennett, and Packwood in a simulcast cell
- Convert Burley and Storm King to receive only sites
- Utilize a new repeated frequency pair based on the frequency analysis provided in this report, and
- Ensure all infrastructure is digital (P25) capable.

A graphical view of the recommended new configuration is shown in Figure 21.

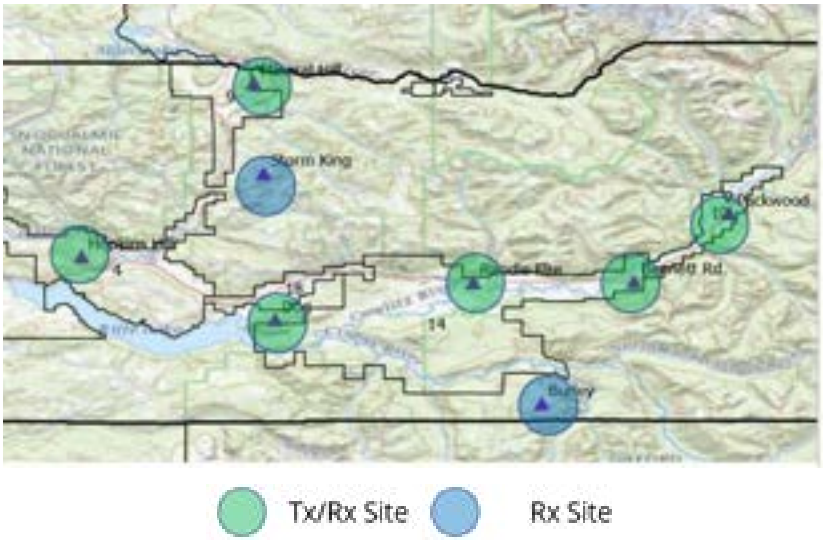


Figure 21: LCSO System East Recommended Configuration

LCSO System West:

Similar to the east systems, it is recommended that for the most part, the LCSO System West mirror the configuration of the Fire System in the west. However, in addition to the previously proposed west simulcast cell, an additional repeater for LCSO is recommended at Manners Hill. For clarification, this site is not recommended for the Fire agencies in the west since this area is currently covered and supported by the RFA system. The following changes/additions for the LCSO System West are recommended:

- Implement transmit/receive sites at BawFaw, Crego, Doty, Coal Mine, Democrat (new tower), and Manners Hill in a simulcast cell
- Maintain receive sites at Toledo and implement new receive sites at Cooks and Onalaska (new tower)
- Eliminate the receive site at Davis Hill (Cooks Hill covers this area)
- Utilize the current LCSO repeated frequency pair (155.6250/156.0300), or a suitable replacement based on additional frequency analysis, and
- Ensure all infrastructure is digital (P25) capable.

A graphical view of the recommended new configuration is shown in Figure 22.

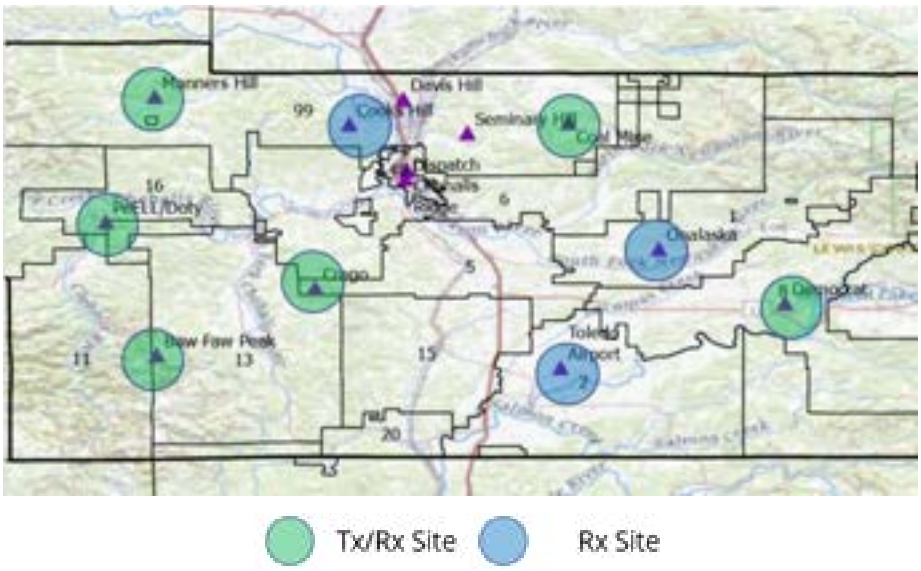


Figure 22: LCSO System West Recommended Configuration

Public Works:

In order to maintain equivalent coverage for the fire, law enforcement and public works personnel, it is recommended that the public works system also be expanded in the east and west utilizing the same east and west simulcast cells as proposed above in Figure 21 and Figure 22. This will equate to adding an additional channel to each of these simulcast cells to support public works.

Predicted coverage for each of the revised system configuration recommendations are provided in Appendix C: Proposed System Predicted Coverage.

Site Usage Summary

A summary of the proposed site usage based on the recommended system configurations described above is provided in Table 5.

Site	Fire System East	Fire System West	RFA City System	RFA District 12 System	Fire Paging	City PD System	LCSO System East	LCSO System West	Public Works
BawFaw		T/R						T/R	T/R
Bennett	T/R						T/R		T/R
Burley	R						R		R
Chehalis Ridge						T/R			
Coal Mine		T/R		T/R	In process			T/R	T/R
Cooks		R	R	T/R	T			R	R
Crego		T/R	R	T/R	T			T/R	T/R
Davis									
Democrat		T/R						T/R	T/R
Dispatch			T/R	R					
Dog	T/R				T		T/R		T/R
Doty		T/R						T/R	T/R
Hopkins	T/R						T/R		T/R
Manners				T/R	T			T/R	T/R
Mineral	T/R						T/R		T/R
Onalaska		R						R	R
Packwood	T/R				T		T/R		T/R
Peterman									
Randle Fire		T/R					T/R		T/R
Seminary Hill			T/R	R		R			
Storm King	R						R		R
Toledo		R			T			R	R

Table 5: Recommended Site Utilization

County Microwave and Backhaul Network:

A major portion of the Countywide system upgrade is expected to be the microwave network. The current system utilizes some existing County-owned links, in addition to T1 connections over partner links. A simulcast-based system will require robust inter-site connections and precise timing.

Additionally, the new microwave system must be capable of supporting both native Time Division Multiplex (TDM) and native Ethernet/IP traffic to support modern digital communications. For existing links that utilize partner microwave, Televate recommends the County work with their partners to ensure that the existing links can support the new system requirements, and/or provide upgrades to the equipment as necessary.

The recommended backhaul network configuration for the east utilizes the following configuration:

- Maintaining/upgrade existing links:
  - Crego to Dog
  - Dog to Bennett
  - Bennett to Packwood
- Incorporating new links:
  - Democrat to Hopkins
  - Hopkins to Peterman (site to be used for microwave relay)
  - Peterman to Dog
  - Peterman to Mineral, and
  - Dog to Randle Fire.

A diagram of the configuration is shown in Figure 23. It is important to note that the recommended microwave network is not proposed in a loop configuration. While a loop is generally preferred, the rugged terrain of this region makes a loop configuration extremely difficult and costly. However, the recommended configuration does include two separate paths to connect to the Dog site, which provides redundancy for links to the other east sites. Also, the microwave spur links are recommended to be implemented in a "hot-standby" configuration to maximize reliability.

It is also important to note that all proposed microwave links have been verified via an electronic terrain path profile. These path profiles are included in Appendix D: Proposed Microwave Link Path Profiles (From Terrain Database). All planned links must ultimately be verified by a physical path survey prior to implementation.

Connections to Storm King and Burley are recommended to remain as RF connections (via control stations), as these sites are solar powered only and cannot support a microwave connection. However, due to the recommended use of these sites as receive only, this type of connection should be adequate.

Figure 23: Lewis County Recommended East Backhaul Network

The recommended backhaul network configuration for the west utilizes the following configuration:

- Maintaining/upgrade existing links:
  - Crego to Courthouse
  - Crego to Coal Mine
  - Crego to Manners
  - Cooks to Coal Mine
  - Seminary Hill to Cooks
- Incorporating new links:
  - Manners to Doty
  - Manners to BawFaw
  - BawFaw to Toledo
  - Toledo to Democrat
  - Crego to Democrat
  - Democrat to Onalaska
- Additional recommended links (via fiber as microwave is not possible)
  - Courthouse to Cooks.

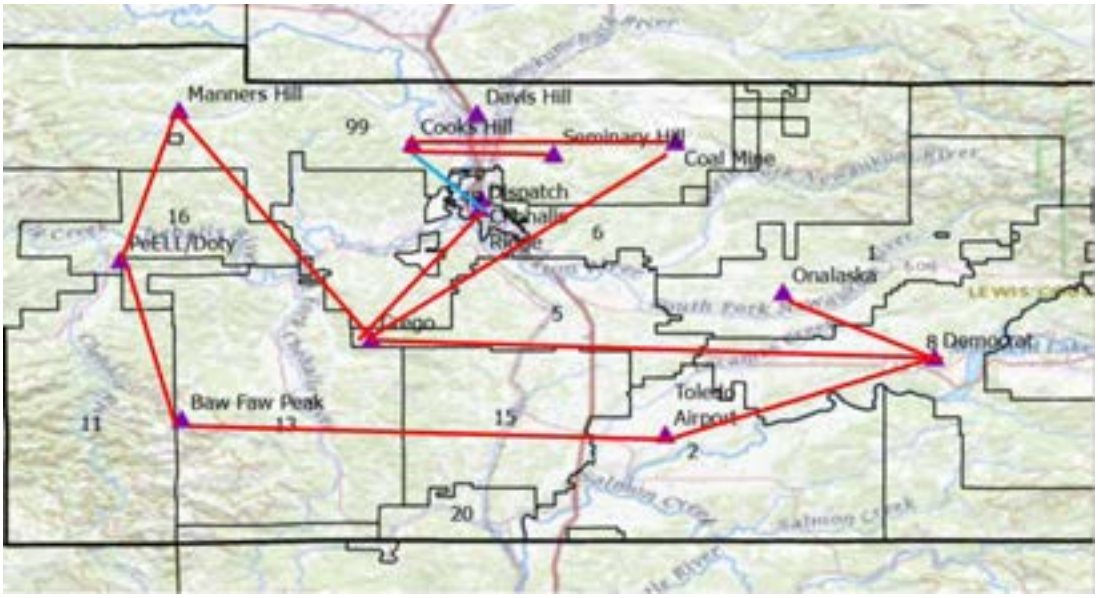
A diagram of the configuration is shown in Figure 24. The recommended configuration incorporates two loops for redundancy, namely:

- Loop 1: Manners, Crego, Democrat, Toledo, BawFaw, Doty
- Loop 2: Crego, Coal Mine, Cooks, Courthouse

In addition to those loops, the following spur links are part of the recommended configuration:

- Cooks to Seminary Hill, and
- Democrat to Onalaska.

Since the spur links are not part of either loop, the microwave spur links are recommended to be implemented in a “hot-standby” configuration to maximize reliability.



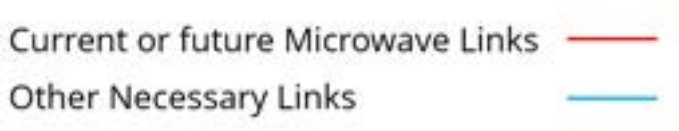


Figure 24: Lewis County Recommended West Backhaul Network

Televate notes that the proposed link between Manners Hill and Doty is indicated as questionable using the electronic path profile analysis, and previous experience by the County indicates it may not be reliable. If this path is not feasible, Doty can be alternatively accessed through a spur link from BawFaw, and a variation of Loop 1 can be implemented by closing the loop via a link from BawFaw to Crego. A diagram of this alternate configuration is shown in Figure 25.

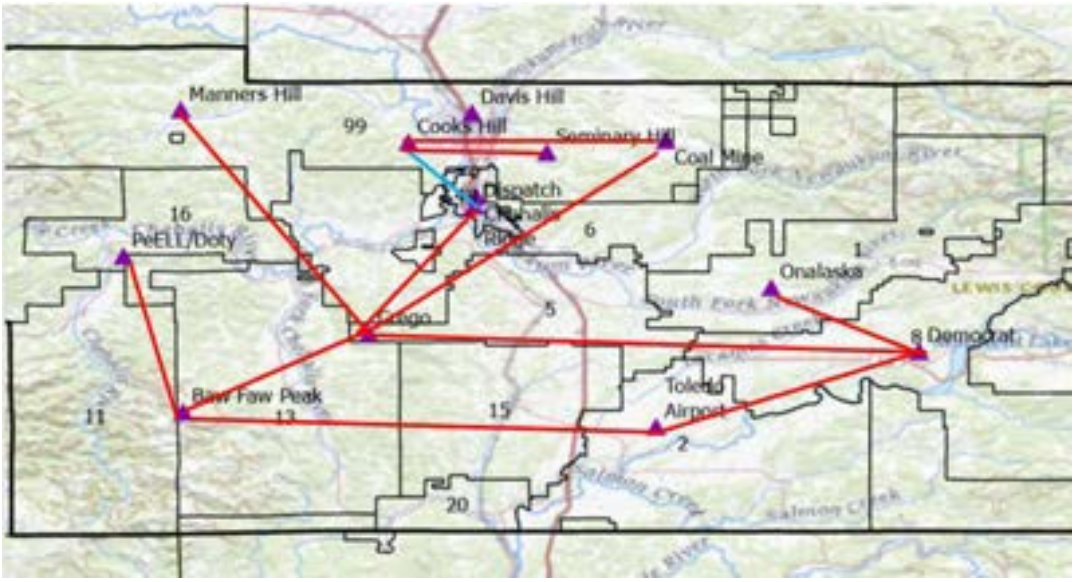


Figure 25: Lewis County Recommended West Backhaul Network (Alternate)

Site Facility Requirements

In order to support the system recommendations developed in this report, some new site development and facility upgrades will be required. The recommendations presented in this report will require the site development shown in Table 6.

Site Name	Area	Recommended Development	Purpose/Improvement
Democrat	Fire District 8 area	Either a new tower and site are to be developed to support the County's needs, or space must be leased on one of the existing towers (3 potentials)	Improved coverage in the central/western positions of the County, including Fire District 8. While a current site exists in this area, it is only a temporary site with an antenna attached to a house.
Doty	Pe Ell	Either a new tower and site are to be developed	Improved fire system coverage in the western portion of the County and to

		(potentially use abandoned tower) to support the County's needs, or space must be leased on the existing tower	replace the Fire District 11 station receive/repeater site
Mineral	Mineral	Lease/share space on the existing WSDOT tower and in the existing equipment shelter	Improved coverage in the Mineral area and the replacement of Storm King as a primary site
Onalaska	Onalaska (Fire District 1)	Construct a new tower of at least 100'	A taller tower will provide better coverage in this area and the capability for a microwave connection to Democrat
Peterman	Central County south or Morton	Lease/share space on the existing tower and in the existing equipment shelter	To facilitate microwave connectivity to Mineral
Randle Fire	East part of County, Fire District 14	Tower enhancement	A tower extension or new tower may be required to support a microwave connection

Table 6: Potential Additional Site Development

In addition to the new site development, additional site facility upgrades will be required to support the enhanced systems. These upgrades are anticipated to include the new towers or site colocations described above, as well as potential tower strengthening/remediation to support additional loads, new equipment shelters, new equipment power systems (DC Plant), and new generators. The anticipated needs for each site, based on on-site surveys and feedback from County personnel, are included in Table 7.

Site	New Tower	Tower Remediation	New Shelter	New DC Plant	New Generator	Microwave End Points
BawFaw		1	1	1		2
Bennett				1		2
Burley				Battery Upgrade		
Chehalis Ridge				1		1
Coal Mine		1		1		2
Cooks				1		2

Crego		1		1		5
Davis						
Democrat	1		1	1	1	4
Dispatch						2
Dog		1		1		4
Doty		1	1	1	1	2
Hopkins		1		1		2
Manners		1		1		2
Mineral		1				1
Onalaska	1			1	1	1
Packwood				1		1
Peterman		1		1		3
Randle Fire		1		1		1
Seminary Hill						1
Storm King				Battery Upgrade		
Toledo				1		2

Table 7: Recommended Site Facility Enhancements

Frequency Analysis

New and/or different frequencies will also be necessary to effectively implement the recommendations presented in this report. A number of potential new frequencies that may be useful for the County were identified either by the County or others from previous work. These frequencies are listed in Table 8.

Frequency (MHz)	Current Usage
151.1075	No current site license in Lewis County – planned for one of five new simplex TAC channels
153.9275	No current license in Lewis County - Only current WA license in Spokane
153.9950	No current license in Lewis County - Only current WA licenses in Spokane and Chelan County – planned for one of five new simplex TAC channels

154.2875	No current site license in Lewis County – planned for one of five new simplex TAC channels
154.8600	No current license in Lewis County - Licenses in Benton and King Counties
154.9875	No current license in Lewis County
155.0625	No current license in Lewis County
155.3925	No current site license in Lewis County – planned for one of five new simplex TAC channels
155.4000	No current license in Lewis County
155.4900	No current site license in Lewis County – planned for one of five new simplex TAC channels
155.9325	No current license in Lewis County
155.9925	No current license in Lewis County
156.0000	No current license in Lewis County - Licenses in Columbia, Pend Oreille, Island, King, Kittitas, Okanogan, Yakima County
156.2250	No current license in Lewis County - Licenses in Skagit, Mason
159.3150	No current license in Lewis County - Licensed by WA Dept. of Natural Resources in several places – Mason County is closest

Table 8: Potential New Frequencies

These candidate frequencies were evaluated further to determine their applicability for use with the County's recommended new system configurations. The recommended configuration will require the following new or reused frequency pairs, at minimum:

- Fire East repeater pair (Currently 155.8050/156.1050)
- Fire West repeater pair
- LCSO East repeater pair
- LCSO West repeater pair (Currently 155.6250/156.0300)
- Public Works East repeater pair (Currently 155.1000/155.7450)
- Public Works West repeater pair
- Paging West (Currently 155.7150)
- RF receive link from Storm King and BawFaw for Fire, and
- RF receive link from Storm King and BawFaw for LCSO.

The frequencies currently used for the RFA systems and City PDs system are not anticipated to change.

The three channels in the east and the three in the west (and potentially other frequencies based on site) will each be combined using an RF combiner/multicoupler for support by a single transmit and single receive antennas. Therefore, it is preferable that the chosen frequencies for these channels have sufficient separation to allow efficient combining, without significant combiner loss.

In order to determine applicability for the recommended configurations, an FCC license search was performed for the candidate frequencies where a co-channel search was performed within 70 miles of the site locations to be licensed. In general, if there are no co-channel licensees within 70 miles of the proposed sites, the frequency can be licensed at that site. If co-channel licensees are present within 70 miles, the frequency may still be able to be licensed, but an engineering study and contour analysis will be required to ensure acceptable performance without the risk of interference. Table 9 shows the results of the co-channel studies for the candidate frequencies that were evaluated.

Candidate Frequency (MHz)	East System Co-Channels within 70 Miles (Hopkins, Mineral, Packwood)	West System Co-Channels within 70 Miles (BawFaw, Coal Mine, Democrat)
151.1075	None	None
153.9275	None	None
153.9950	WPMG928	WPMG928
154.2875	None	None
154.8600	KOH888, WPIT540, WPQF424, WQTD257	KOH888, WNZN460, WQTD257
154.9875	None	WRBY483 (70.5 mi.)
155.0625	WPYT650	WPYT650
155.3925	WQUR851	WQUR851
155.4000	11 Active Licenses	Did not search
155.4900	KTS776, WPBV445, WQCE971, WXY382	KTS776, WPBV445, WQCE971, WXY382
155.9325	WQWX932	None
155.9925	None	None
156.0000	KCJ932, KDP304, KXV380, WPYL588, WQWP397	KCJ932, KDP304, KXV380, WPYL588
156.2250	KNCY702, WNDZ708, WNIG952, WPAF993, WPAF745	KNCY702, WNDZ708, WNIG952, WPAF993
159.3150	WNUS280	WNUS280

Table 9: Co-Channels of Candidate Frequencies

Due to the mountainous terrain environment in and around Lewis County, it is Televate's opinion that many of the above frequencies can be used by Lewis County without causing or experiencing significant interference, even though some show co-channel licensees within 70 miles. Also, the best frequency selection may require repurposing some of the frequencies currently utilized or planned in the County. The decision as to what specific frequencies are best to use will require further analysis and frequency coordination activities, which is recommended as a next step and should be performed prior to proceeding with the system enhancement in this report.

Cost Estimate of Proposed Recommendations

Televate developed a detailed cost model to estimate the capital and recurring costs anticipated to develop and maintain the recommended system configurations. All cost estimates are based on the specific components and upgrades required at each site within the system, as well as Televate's previous experience with equipment and site construction costs.

Capital Costs

A significant portion of the project costs will include the site facilities upgrades, as well as development of the redundant microwave connectivity between the sites, which may include:

- Site development, civil services and tower construction for new radio sites
- Upgrade costs for existing sites including any required tower remediation to accommodate additional antenna loads
- Equipment shelters as necessary
- Redundant power sources, including UPS/batteries and generator, and
- Primary and redundant site backhaul/interconnection.

These estimated costs for these activities are provided below on a site-by-site basis.

Radio Site Facility	Facility Upgrade and Connectivity Cost Estimate
BawFaw	$242,000
Bennett	$132,000
Burley	$9,600
Chehalis Ridge	$72,000
Coal Mine	$182,000
Cooks Hill	$132,000
Crego	$362,000
Democrat	$677,000
Dog	$302,000
Doty	$257,000
Hopkins	$182,000
Manners	$182,000
Mineral	$110,000
Onalaska	$437,000
Packwood	$72,000
Peterman	$242,000
Randle Fire	$122,000

Seminary Hill	$60,000
Storm King	$9,600
Toledo	$132,000

Table 10: Facilities Cost Estimate by Site

In addition to the site development costs, the County will incur additional project costs for the radio site equipment and installation costs for the enhancements described in this report. The cost estimate for this portion of the project includes:

- Manufacturer's costs for all infrastructure and core equipment for all system enhancements
- Design and engineering services and FCC licensing
- Construction and installation services
- Project management services, and
- Vendor oversight and quality assurance services.

The capital cost estimate to complete the full project implementation of the specific system enhancements included in this report was provided to County emergency personnel under separate cover.

Operating Costs

The annual operating cost estimate for the recommendations described in this report (not including County labor) are based on typical recurring costs associated with maintaining public safety radio systems, and are expected to include equipment maintenance costs, site maintenance costs, network monitoring, etc. An estimate for these costs is provided in Table 11.

System Component	Annual Cost Estimate
Annual Lease/Site Maintenance	$185,000
Annual Software and Licensing (Core and RF)	$180,000
Annual Software and Licensing (Microwave)	$45,000
Proactive Spares/Preventive Maintenance	$44,000
Network Monitoring	$20,000
Project Total	**$474,000**

Table 11: Cost Estimate of Annual Maintenance

RECOMMENDED NEXT STEPS

Televate recommends Lewis County proceed in the following manner to implement the recommendations provided in this report.

Consider Recommendations and Direction and Coordination

The County should review the recommendations provided in this report, provide feedback and update plans as necessary. Additionally, the County should engage additional stakeholders from the County's first responder community to solicit input on the recommended direction and achieve consensus on the approach. Once consensus on the preferred approach is achieved, Televate recommends that the County begin the coordination activities with its communications partners, including RFA, WSDOT, and others as necessary to implement the recommended improvements.

Develop a Comprehensive Frequency Plan As Soon As Possible

Co-channel interference on the main fire frequency is one of the most critical issues currently faced by County first responders. It is essential that the County address this issue as soon as possible. To do so, Televate recommends the following short-term actions:

Perform coordination on potential new frequencies

A number of potential alternative and additional frequencies suggestions are provided in this report. Televate recommends the County work with a licensed frequency coordinator to perform coordination services on selected frequencies to determine what frequencies can be licensed by the County and to move forward with the licensing process. The usable frequencies should then be combined as candidate frequency pairs to create repeated channels.

Evaluate available frequencies from a combining/multicoupler perspective

Once the collection of new frequencies is identified and candidate repeater pairs are created, it is suggested that the County identify groups of frequency pairs that can be easily combined at a common site. The groups that the County should consider include:

- East simulcast cell group:
  - Fire East repeater pair
  - LCSO East repeater pair, and
  - Public Works East repeater pair.
- West simulcast cell group:
  - Fire West repeater pair
  - LCSO West repeater pair, and
  - Public Works West repeater pair.

Identify new Fire West frequency and begin using ASAP

The process described above will identify a candidate repeated frequency pair for the Fire West system. Televate believes that the County should begin using this frequency as soon as possible, even if the other recommended enhancements are not addressed until a later time. Elimination of the interference currently experienced on the 154.1900 frequency may be worth the additional effort of reprogramming radios with this new frequency, even if radios will need to be programmed again at a later date.

Allocate Funding for the Project

It is Televate's understanding that the County intends to utilize identified ARPA funding in addition to a source of grant funding in support of this project. It is recommended that the County confirm these allocations in the amounts available to support this project. In order to implement all enhancements, the currently identified ARPA and grant funding may not be sufficient to support the entire project. Therefore, since additional funding, above and beyond the currently identified allocations may be required for this project, it is recommended that the County develop a plan to address the potential for additional costs. Potential options for addressing this may include:

- Identifying additional funding to cover potential additional costs
- Scaling back or phasing in the improvements over several years, or
- Working with partner agencies to identify additional funding.

Additionally, since the timing for the funding may vary by source, it is recommended that the earliest available funds be allocated toward the portions of the project that are likely to have the longest lead time for implementation, including the facilities updates and the extensive microwave connectivity.

Develop a Long-Term Public Safety Communications Strategy

In addition to these near-term improvements, Televate recommends the County also consider additional improvements to further enhance the public safety communications within the County. Considerations may include:

- Upgrading law enforcement user radios for P25 capability to support encryption and location services
- Adding additional site infrastructure to further improve coverage in key areas
- Upgrading additional site infrastructure to support digital communications for improved coverage with existing sites, and
- Considering a regional consortium with neighboring counties to share resources and improve regional communications.

Establish a Procurement Strategy and Develop a Procurement Specification

Once the final project direction has been established and the funding strategy is in place, Televate recommends that the County develop a procurement strategy for the project, and as required, a procurement specification to define the project and solicit proposals. Televate would be happy to assist the County further with establishing this strategy and documentation.

Consider Dispatch Improvements

In addition to the radio enhancements recommended in this report, Televate recommends that the County perform an internal dispatch assessment to consider potential improvements to dispatch operations and to address comments received from stakeholders. Some areas that could be investigated include:

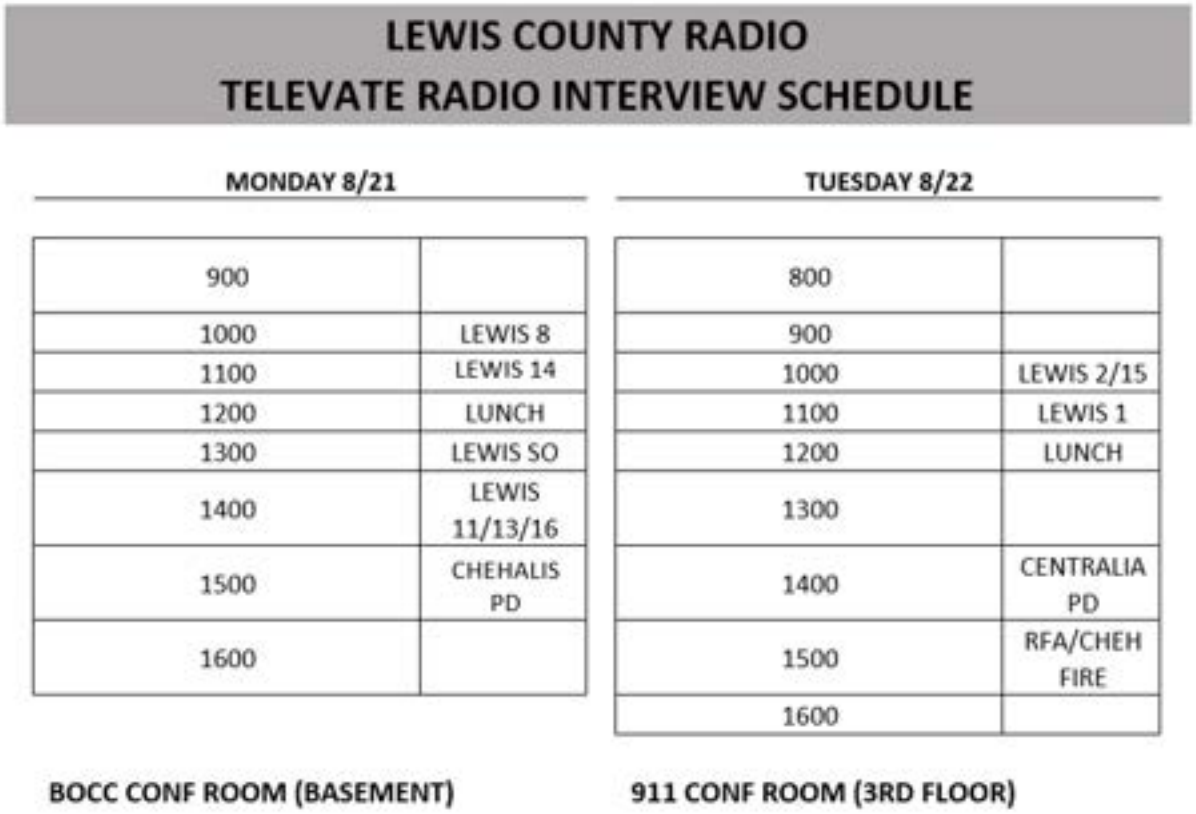
- A staffing analysis to determine the optimal number of dispatch operators required for the current call volume and a means to achieve this level
- A review of and potential update to the current dispatch processes regarding call handling and interaction with the first responders – this should include communications with the first

responder agencies to solicit their input as well as inform them on the dispatch processes and challenges that exist

- Consideration of a patching policy to facilitate communications between the east and west systems/channels when necessary
- A review of and potential update to the current dispatch training processes to better enable consistent call handling and response, and
- An evaluation of an Automated Voice Dispatching (AVD) system to ensure consistent volume and voice quality.

APPENDIX A: ON-SITE INTERVIEW NOTES

The interview schedule followed during the on-site visits is shown in Figure 26.



LEWIS COUNTY RADIO
TELEVATE RADIO INTERVIEW SCHEDULE

MONDAY 8/21	
900	
1000	LEWIS 8
1100	LEWIS 14
1200	LUNCH
1300	LEWIS SO
1400	LEWIS 11/13/16
1500	CHEHALIS PD
1600	

BOCC CONF ROOM (BASEMENT)

TUESDAY 8/22	
800	
900	
1000	LEWIS 2/15
1100	LEWIS 1
1200	LUNCH
1300	
1400	CENTRALIA PD
1500	RFA/CHEH FIRE
1600	

911 CONF ROOM (3RD FLOOR)

Figure 26: Stakeholder Interview Schedule

Jennifer Libby-Jones and Justin Stennick

- Fire Departments
  - Lewis County, Chehalis, Centralis and Riverside (RFA)
- Mike Kytta is the fire chief of RFA (Riverside Fire Authority). Have their own trunked radio system – Fire Two dispatch
  - 155.715 paging channel to alert
  - 4-site simulcast
  - Could their network become part of the countywide network?
  - We now have 5 simplex channels – all not yet programmed into county radios
    - 3 dedicated to fire
    - 1 designated for law
    - 1 designated for all other agencies
  - Fire believes that all in-building fire radio comms need to be recorded
    - OSHA requirement to be on tac channel interior during a fire
  - 154.190 is the fire dispatch channel – however, this channel is co-channel with two nearby counties

        - Mason County has a tall site using this frequency and it is highly interference prone
- The FDs use Zone A which is common for all FDs
- XTS/XTL 5000 radios purchased for FDs in 2007 via a grant
    - Old fire radio batteries – many need to be replaced – possible use of grant funding? Purchase new radio batteries?
- Countywide radio network improvements need to be implemented
    - What new radio technologies to consider?
    - Need a near, mid-, and long-term plan for radio network/equipment
    - $7.3M in funding available now – assessing the introduction of a 0.2% sales tax to increase the available radio network budget
        - $2.8M spent by the end of 2024
        - $4.5M spent by 2026, designated for spending by the end by 2023
    - Backhaul network is at risk, a new plan is required
        - Designate for Phase 1 allocation?
    - New GTR radios required
    - The Burley site is 18 miles off of the road and is running on solar power
    - Hwy 12 coverage is essential
- Primary needs – Justin and Jen
    - Radio technology upgrades
        - Sufficient funding in Phase 1 to design a conventional simulcast radio network – leverage the RFA network and expand where possible?
    - Microwave network upgrades – network connectivity is essential
    - Radio spectrum upgrade – eliminate fire dispatch channel interference - no backup channel for the law
        - Phase 1 replacement of the fire dispatch channel
        - Identify law backup channel
    - We can always buy new radios later
    - We're familiar with Simulcast but do we have sufficient budget and frequencies?
    - Jenn
        - Plan focused on near term, mid-term, or long-term radio plan

Fire Districts 3 and 8

- Attendees
    - Chiefs McDaniel (FD 8)
    - Chief Doug Fosburg (FD 03)
- When visiting the sites, you will learn about their condition
- When leaving Morton and hitting the lakes, you are in FD3 and FD8
- The Democrat site sits in my districts commissioner's garage
    - Update the Democrat radio site in Phase 1?
- What are your thoughts on transitioning to a digital communications channel?
    - State patrol has migrated to digital, and we cannot talk with them
    - My education on digital is limited (FD3)
- Narrowbanding created radio comm issues
- On a major incident scene – we typically monitor 3-frequencies
    - RedNet

        - RedNet appears to be a tac channel at 153.830 MHz
    - Countywide dispatch
    - Working frequency channels are those owned by the district
    - Fire channels are being recorded
        - Fire 1
        - Fire 2
        - VTAC 11 – used to communicate with helicopters
        - RedNet also being recorded – in certain areas
    - The Democrat site needs a complete redo
    - Mason County interference is common on FD Channel 1
        - Similar call signs in play as well
    - Relaying through dispatch is common occurrence
    - Getting away from 154.190 is critical
        - County radio dept
    - Very happy with the new radios
- Key needs
    - Need to be able to communicate on scene from our portable radios back to dispatch
        - Limited vehicular repeaters, Pyramid's that do not facilitate auto shut off to manage interference
            - Phase 1 purchase of vehicular repeaters?
        - Old radios are being used
            - Phase 1 purchase of new radios?
        - Operating budget is very limited
- Interoperability with DNR is required
    - Further investigation required to determine how to fix – could be simple radio programing
    - DNR operates multiple VHF sites and frequencies throughout the state – need to identify the required sites and freqs.
- Dispatchers would benefit if there were additional dispatch channels
- Using "I Spy Fire" (iSpyFire, Inc.) and "BRYX" (Station Alerting System & Software for First Responders | Bryx) as smartphone app fire comms
- Need to talkaround on occasions due to inability for dispatch channel to be free
- Not using MDC's due to cellular coverage issues
- Adventure medics are providing back ambulance service and using the FD3 radios
- FD3
    - 30 portables
        - CDM50 mobile radio
        - XTL-1500 portables
        - HT 1250 portables
        - Two Icom radios
        - One Pyramid repeater
- County needs to support comms
    - Two repeated channels
    - Eliminate the 154.190 freq.

    - East, west and central channels
    - Channels need to be recorded
- Perhaps 25% down on their respective volunteers

Fire District 14

- Chief Jeff Jacques
- Eastern side of the county
- Respond into the federal forest area, clear into the adjacent county
- Coverage issue in the southern sections of the county
- Cispus (town and river) areas in the forest not well covered
- Using the Pyramid VRS which is working well
- Difficulty in talking back to a new repeater site
    - Phase 1 remote receive radio site requirement
- Added several new repeater sites
- Radio
    - APX7500 radios
    - Bendix King
    - XTL2500
- Friends in Pierce County who have donated radios
- Interop primarily with FD 10 and FD 18, WA-DNR (RedNet) and the Fire Service (freqs. programmed in radios)
- Hope that we never go digital – WASP use digital – listening in on WASP and their comms are poor
- Assistance from the County radio shops
    - Plenty of support from the county radio shops
    - County committee was meeting every two months, now not meeting as frequently – need to get this group back together and add in radio comms agenda
        - Requirement to reignite these meetings
- The 5-new radio tac channels are not well coordinated and not programmed into law enforcement radios – can be beneficial if programmed and support an SOP
    - Develop common fire radio fleetmap and program all radios
- Use of cell phone to communicate with law enforcement
    - T-Mobile and US Cellular service is limited – US Cellular has some backup power
- County Public Works has a radio site as well that needs to be updated
    - Could not identify this radio license?
- Top requirements
    - Complete buildout of countywide dispatch channel, just not possible
    - Getting off of 154.190 beneficial but not necessary since they have licensed a new dispatch channel
        - Have licensed 156.105 – main dispatch in FD14 area
            - FCC Callsign WPIU343 (LEWIS COUNTY FIRE PROTECTION DISTRICT NO 14) (radioreference.com)
            - Multiple sites and VHF freqs. licensed – need to determine ability to integrate into countywide radio network

        - At Packwood and the FD 14 fire station
        - FD14 need to be higher
    - Wondering why the county has not moved off of 154.190
  - More towers to expand coverage of the 156.105
    - Is this frequency licensable for an East site dispatch channel?
  - Radio users are qualified at using their radios

County Sheriff Meeting

- Wes Rethwill, Rick Van Wyck, Captain Ben White, Chief Engleburtson
- Radio issue has been in play for years, and is finally being addressed
- 42 sworn officers
- Using federal funds to update the radio network
- Long term concerns also need to be defined
- 100% lack of support of infrastructure - no capital investments being made in the infrastructure
- No stakeholder money available to invest in infrastructure – now that we have federal money, we can invest to update
- Trying to set the law rate for LE and Fire, currently at 70/30%. Recommendations to change to 75/25
- Suggest we meet with County Sheriff's operations guild and sergeants – Televate to schedule meeting with these gentlemen
  - Deputy Dan Reardon – Operations Guild
  - Sgt. Jeff Godbey (Spoke via phone on 10/5/23)
- Coverage
  - Anywhere near power lines is a comms issue
  - East End
    - Packwood
    - Along the pass for portable and mobile
    - Mineral area (P/M)
    - NW portion of the county
  - State agency also uses the county radio network in some geographic areas
  - 1-deputy on duty per 12 hours shift – Mossyrock bridge to pass on the East End
  - West end, Mossyrock Bridge to County end
  - No available repeated tac channels except of the LEARN channel
    - New tac channels have been licensed – has the sheriff programmed them into radios?
  - There is also a DES channel – Channel 8 that is recorded
  - VTAC11 is also usable for incidents
- Familiar with digital radio – can we afford it?
- Radio encryption is required – no coverage impact over a P25 digital network

Fire Departments 11 and 13 representing 16

- Gwen Turner and Miles Burmeister
- The biggest issue is that the radio network is old, expensive to upgrade
- Lots of "blind spots" – no portable coverage where needed

- Inability to communicate back – uplink limitations
- Justin is top notch
- Interference from 154.190 – needs to be replaced – issue with Mason County
- District 11 has a private radio tower and frequency
- Greg Peterson programed the radio repeater for FD11
- Paging
    - Most of the time the paging is good
    - Occasionally there is a "ghost" page, could be an operator error?
    - Minitor 5 and 6 Moto pagers
    - No pager issues that we have experienced
- Hwy 5 in the canyon is a coverage issue
- FD 11 also needs to talk with Pacific County to the west
- Rider Wood is in Cowlitz County but part of FD 20
- Interop with the sheriff and DNR and public works
- Have to use the cell phone when radio coverage in unavailable – US Cellular – recently changed towers and the coverage declined
- Ambulance Consortium Group – have an agreement with AMR for emergency medical
    - Does AMR use the county's radio network? What impacts if county institutes changes (freqs, sites, simulcast)
- Challenges with outbound radio comms from the fire station
- Coverage issue in the Weyerhaeuser forest area in the SE portion of FD 11 = Weyerhaeuser may have radio sites – Miles Burmester offers to talk with Weyerhaeuser to find out more about their towers in this area
- Radios
    - XTS1500
    - HT
    - Kenwood
    - No budget for new radios
    - HT is a better radio
- Top requirements
    - Highly reliable radio coverage – 100%
    - New Fire dispatch channel
    - Get the word out when necessary – no coverage in the white area
    - Systems need to work better
    - Similar county access within and with neighbors
    - Common radio templates and frequencies for all radios
- Radio committee has not met in over one year
- Need uniformity in how we talk with one another and with dispatch

Chehalis PD: Randy Kaut

- New radio tower now providing better coverage
- Recently installed new tower
- In-building coverage may still be an issue at Walmart, Home Depot, all of the big box stores

- Secondary channel on a tower that we are leasing and since they are not needed, should be abandoned
- Mobile and portable radios working fine
- Total of 12 vehicles and 18 sworn
- City may be expanding into Napavine
- Shared freq with Centralia – can be an issue with chatter over the main dispatch channel
    - New repeated tac channels for PD?
- Have secondary repeated channel, however not sufficient dispatchers to cover
- Wish list
    - Go to digital which adds capabilities
    - Encryption
    - Location
    - Individual officer radio comms
- We generally do not talk with the sheriff
- We generally do not talk with city fire, have capabilities but do not use it
- Political side of the issue is that the city is paying for only one site and not the countywide radio network – why should they pay for the coverage for all
- Radios
    - XTS-1500
- Radio committee should be reinstated and the chief or deputy chief will participate
- Primary goals
    - Cost of fulfilling the wish list
    - System is functional
- Dispatchers are understaffed and doing the best they can with what they have

FDs 2, 5, 13, and 15

- Chief Underdahl FD15 (Winlock), Chief Dorothy of FD2 (Toledo), Greg of FD5 (Napavine)
- Greg: 25 years in Lewis County – new radio, narrowbanding funding and experience,
- HT1250 is my favorite radio
- Frequently our radio transmission cannot be heard
- Issues with 154.190 – first change to be made
- Building coverage issues
- 20 minutes status check when we are on scene
- Use RedNet when necessary
- VTAC11 is also used for air to ground comms
- Have TAC channels now that have not been implemented – plan in development - will use in place of VTAC11
- Countywide use of fire manual – Greg to provide to Dom
- Wish list
    - New dispatch channel – Mason County interference needs to go
    - Repeated channel configuration
    - Second repeated tactical channel countywide
    - Program in new talkaround TAC channel

- What is Cowlitz system doing?
  - They can talk over their portable radio throughout the network
- Toledo site not providing expected coverage improvements
  - Toledo site includes Fire 1 and RedNet receive
- Expand portable radio coverage

Fire District 1

- Chief Brad Flexhaug – 32 years working in the county
- Portable radio is XPR-3500
- General impressions of the radio network
  - Having been here 30+ years, his expectations have been set
  - Dispatchers need better training
    - Some are too quiet
    - Dispatcher protocols not being followed
    - Not using the correct radio sites – talks about toning out of the Democrat site
    - Use I SPY FIRE
    - East end of district not served by the Crego site
    - What challenges do the dispatchers have? Would like to know so that the district fire fighters adjust their comms accordingly
    - Route 508 is the main road through the district
      - Cannot directly communicate with state patrol
  - Rarely need to speak with neighboring counties
  - Go to RedNet when on scene
  - Poor coverage in the fire stations
    - Poor paging in fire stations – main in Onalaska
  - The school might also be a poor coverage building – not responding there often
- Wish list
  - Transition away from 154.190 – reality is that we could migrate to a freq. that is still probably interference prone
  - New base station in the eastern portion of the district
    - This is our challenge, may be able to convert the Onalaska site
    - New site on Hurricane Ridge where the windmills are located
  - Review a few calls with dispatch to assess quality and areas for improvement
  - Have 13 apparatus and would prefer to have a VRS on at least two vehicles

Lewis County PSAP Manager - Liz

- 25 years of dispatching and now as Ops Supervisor
- Can hear Mason County, which is 100 miles away
- Fire 1 is a major problem – interference related
- RFA is the busiest fire station
  - Not sufficient staff to cover RFA
- Good if the East End could hear the West End, or have the ability to listen and communicate
- FIRE 2 includes RFA, AMR and Station 48 (Chehalis fire)
- 8-positions, minimum of 3-positions working, but we also do 2-positions

- Recommendations that 24 telecommunicators are required, we have 9 positions filled, and a budget for 20 – difficult to hire staff
    - Working 4 10-hour shifts, often 4 12s, we pay OT for all hours worked when only 2-telecommunicators are on site
    - Phase 1: Expand efforts/create incentives/pay raise, whatever to hire and retain additional dispatch staff – can the grant be leveraged to hire new staff if there is insufficient budget?
- We do relay radio messages, but not frequently – did not know that we relay this often
    - Reconsiders and agrees that dispatch relays info for fire depts
- Fire fighters always call in the know what's going on with events – we have no time to talk with them when we are on an incident
    - Suggest that fire depts have CAD access to view events and to stop from calling into dispatch
- I love ISPY, however, the chiefs call in and wants to know why I Spy informed them of an event that was not the event? Well, the original entry that I SPY relayed was modified.
- More pagers, do not rely on I SPY
- Rules for recording
    - We use Equature for recording and it works well
    - Hold recordings for 6-months
    - VTAC11 is recorded
- We can hear RedNet, not being recorded, but better check
- If responders say Mayday, we are listening and responsive,
- Reviewing options to use Metal Myrtle voice automated dispatching assistance – I SPY offers one, however Motorola will over charge to integrate it into their Spillman CAD product
- Wish list
    - Auto dispatch
        - Phase 1 implementation?
    - Like the idea of an East and West dispatch dispatching zones and will likely have to maintain RFA
        - Phase 1: Can we do an East and West dispatch channel and combine RFA into the West dispatch zone?
    - Repeated dispatch
    - Mason County interference eliminated
        - Taking care of Mason will result in more free time for the dispatchers, it will reduce the number of calls from fire chiefs

Centralia PD

- Chief Tracey Denham
- 32 years of LE, 5 as PD chief
- Share a dispatch channel with Chehalis
    - Backup car-to-car backup freq.
- New site working much better
- Davis Hill and Cooks Hill RX sites need to be upgraded
    - Phase 1 activity? What is required to upgrade these RX sites?

- Thinking that the city is charging us $250,000 annually, which we think is too hard
    - Calls for service, keystrokes data entry into RMS
    - Other PDs were cheating to pay less (MDT searches)
    - Requested that any increase equal across the board
    - 45% calls for service, # of officers, population
    - The Deltaworx model was not good
    - Recommendations to split 75/25% (PD to FD)
    - All PDs are paying
    - Policy for the PSAP
    - Huge distrust for the Lewis County
- The hospital is poorly covered
    - Delivery
    - ER
    - ICU
- Walmart may be still not covered since the new site was installed
- PD is not covered well, but it could be related to a new cell site located
- Typically, we do not talk with FD, we would communicate with them through dispatch
- Thurston just upgraded their radio network and donated their radios to the PD
- 29 officers with 35 vehicles (all have radios) 40 portables
- Features
    - Location of the officers (on push to talk)
    - Encryption
        - We use DEA radios
- The LERN statewide LE network radio network is not performing (WA Mutual Aid (Washington) Scanner Frequencies and Radio Frequency Reference (radioreference.com))
    - Need to investigate if the LERN network is still functional – 155.370 MHz – appears to be talkaround? WA_CEMP_ESF2_Appendix 1_10.25.2019
    - State patrol is supposed to monitor LERN

Chehalis Fire Dept and RFA

- Kevin Anderson Deputy Fire Chief, Mike Kytta (RFA), Captain Casey McCarthy, Adam Albright (Chehalis)
- 20 years doing our own thing
- More sites were required to deliver needed coverage
- 4 RX/TX and 6 RX sites in RFA, separate system for the cities with 2 TX/RX and 2 RX
- Topography is extremely challenging to serve
- Auxiliary back up network: 2 radio sites
- One repeated pair on each site
- Coverage
    - In building coverage poor in most Chehalis buildings into box stores not reliable
    - Use Pyramid in most vehicles (have lights on the dashboard that lights up when the VRS in in operations – use voice paging and I SPY
- Replaced all mobiles and portables in the last year
    - New radios and batteries have improved marginal coverage areas

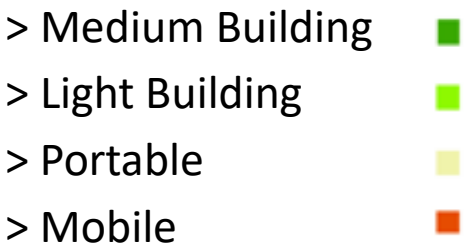
  - APX-6000XE portable radios
  - APX-1500 mobile radios
- Funding the radio network is a priority for fire district funding
- Provide letters of operations to neighboring jurisdictions to use the RFA network
- Chehalis Ridge site should be considered for the RFA system
- Accounts for 55% of the call volume
- Boat load of licenses that we are protecting – might be able to share a frequency
  - Phase 1: What freqs. might be available for countywide use?
- Keep the communications open with all chiefs – they should be engaged
- Chiefs need to have skin in the game
- Dispatch fees do not cover the radio network – the people need to know the facts
- Chief Lonny Gobel of FD 10 – need to visit with him to get him involved
- **Dispatch needs to speak more directly**
  - One male dispatcher is very clear
  - Thurston is now using Medal Myrtle – should talk with them
- Kluge of MW out there, some licensed and unlicensed
  - All 4.9 GHz for RFA sites
  - MLC are used
  - Wind and ice storms occur to the MW dish
- What about dispatch back up operations?
- What about the back-up fire radio paging at BawFaw
  - Ross McDowell

APPENDIX B: CURRENT SYSTEM PREDICTED COVERAGE

A detailed propagation simulation was developed to further analyze coverage and to predict performance from various site constellations for an enhanced system. The simulations utilize the EDX SignalPro™ application, which is a standard propagation tool employed by Public Safety to model the system elements and to predict coverage by incorporating industry standard propagation algorithms in addition to terrain and land use databases. Once the initial simulation was developed, the recorded data from the signal testing was factored into the SignalPro™ application to calibrate the model and improve its accuracy.

The propagation simulation was further developed to predict where the system would provide a voice quality (Delivered Audio Quality (DAQ)) of at least 3.4 per typical public safety standards. The minimum Channel Performance Criteria (CPC) required for a DAQ level of 3.4 for an analog narrowband (12.5 kHz) voice system was derived using the information from Table A-1 of TSB-88[1]. The TSB-88 report serves as the public safety LMR network design industry standard.

The propagation model predicts coverage for a mobile radio, as well as a portable radio worn on the hip on street (outdoors) and within buildings up to a specific dB signal loss value for both outbound (dispatch to field) and inbound (field to dispatch). The results for the simulation at this level of voice quality for the following conditions, for each of the analyzed county systems are provided in the figures on the following pages.



[1] TIA Telecommunications System Bulletin TSB-88.1-C: Wireless Communications Systems Performance in Noise and Interference Limited Situations - Part1: Recommended Methods for Technology Independent Performance Modeling: February 2008.

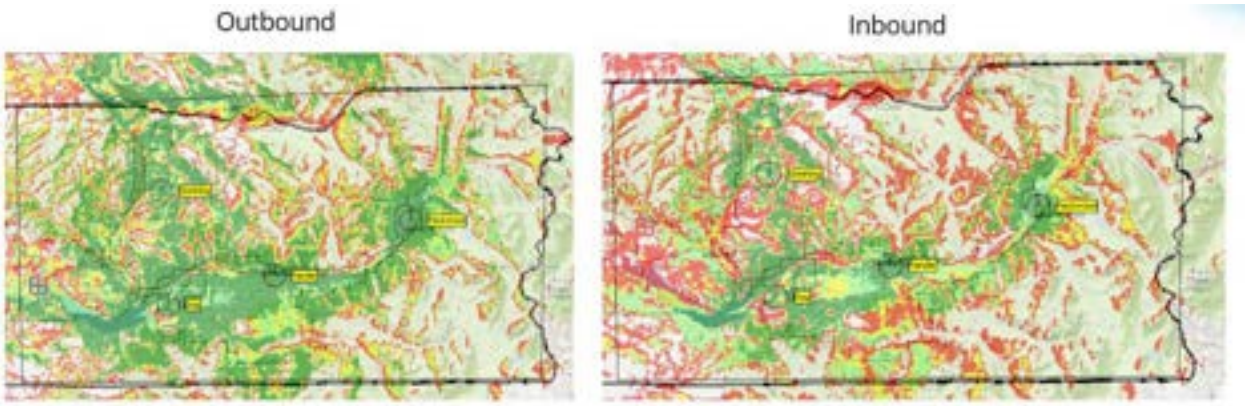


Figure 27: Fire System East Current Coverage (Simulated)

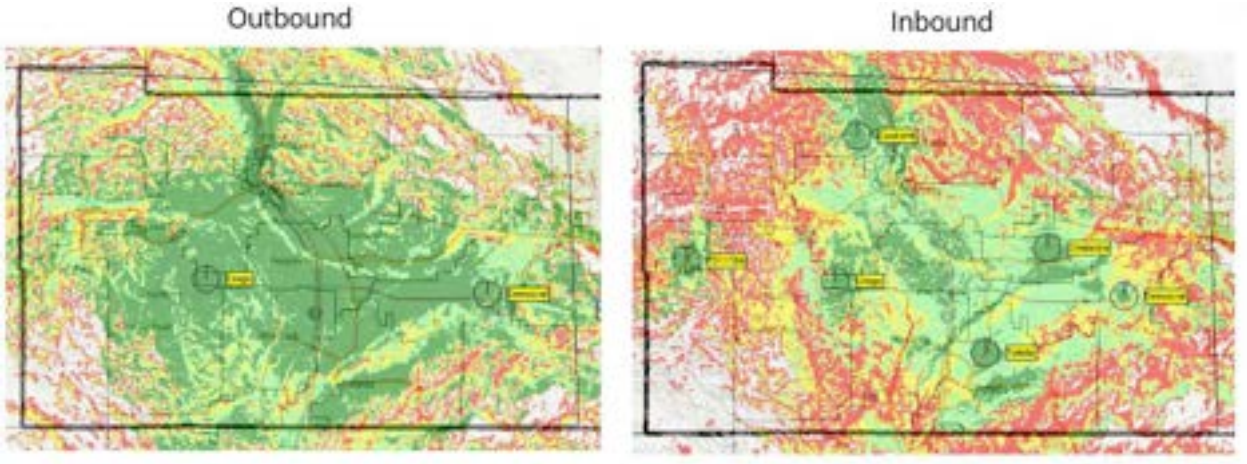


Figure 28: Fire System West Current Coverage (Simulated)

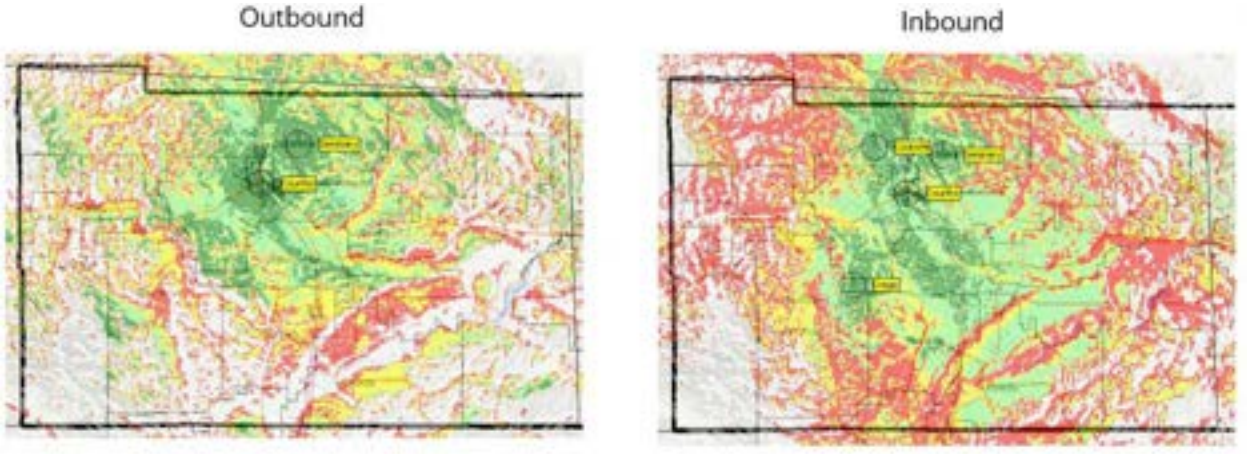


Figure 29: RFA City System Current Coverage (Simulated)

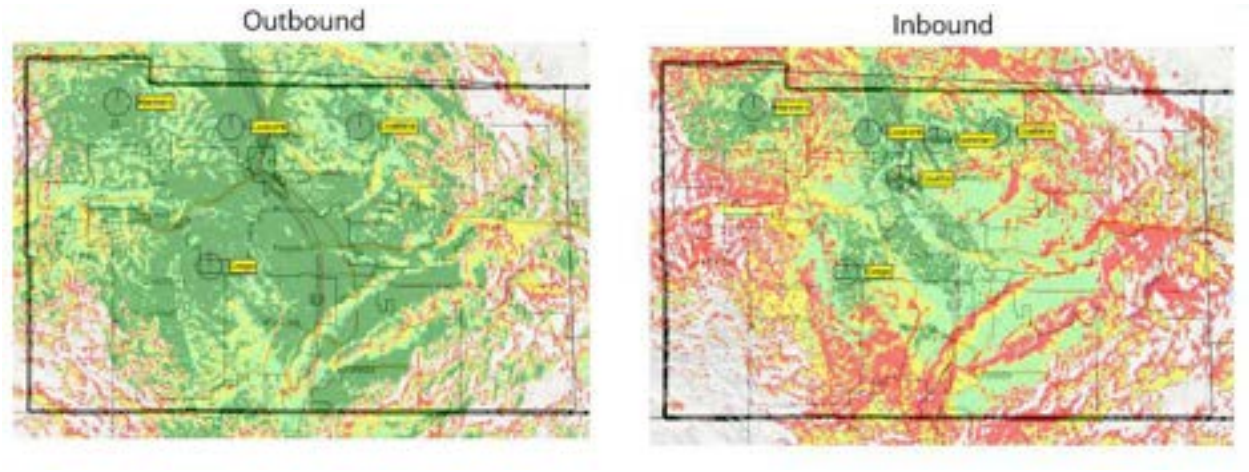


Figure 30: RFA District 12 System Current Coverage (Simulated)

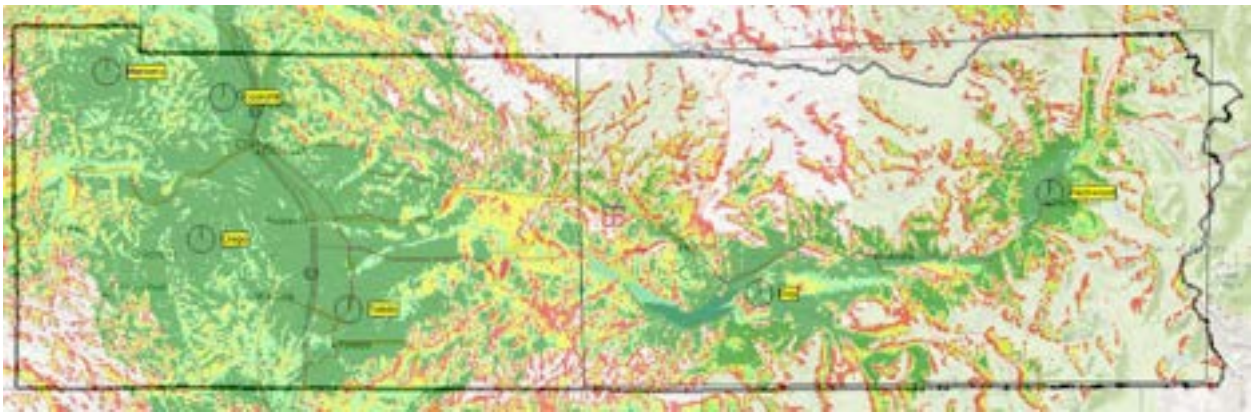


Figure 31: Paging System Current Composite Coverage (Simulated)

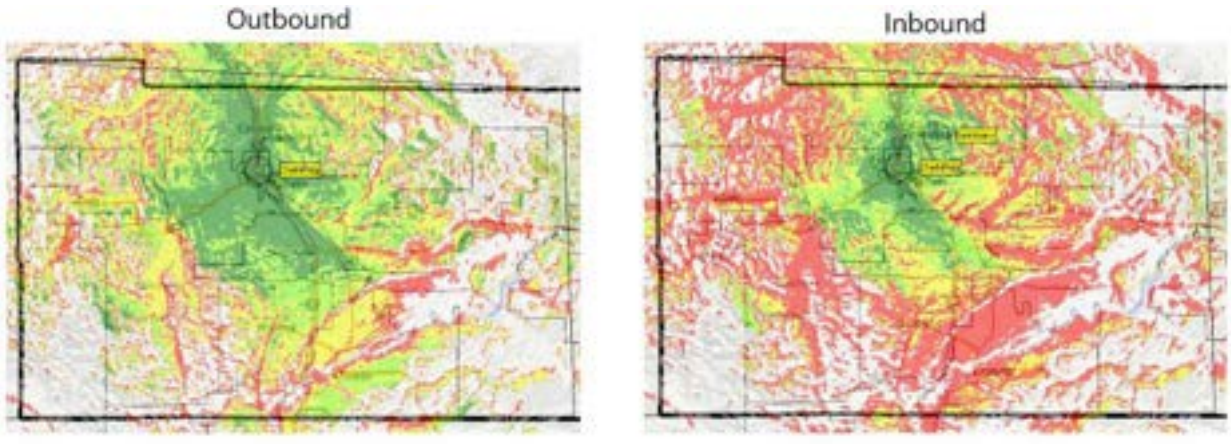


Figure 32: City PD System Current Coverage (Simulated)

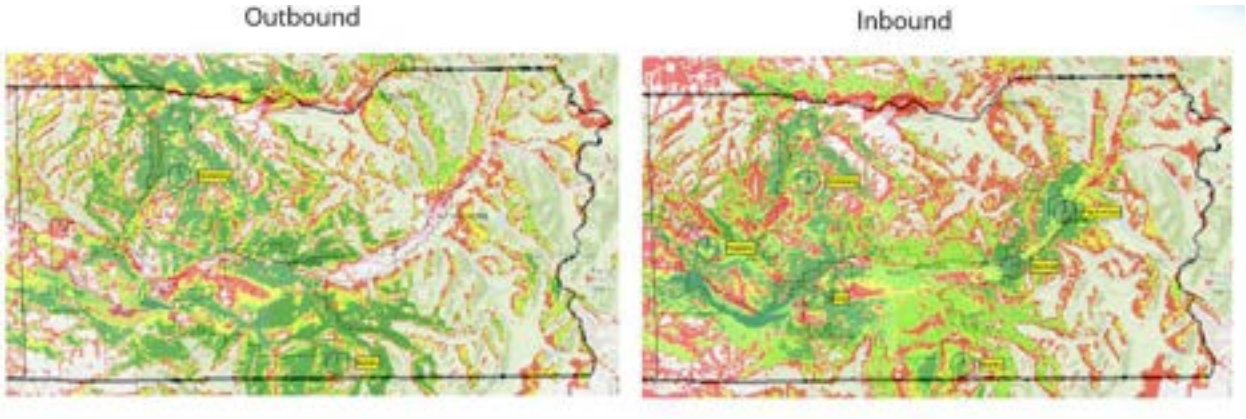


Figure 33: LCSO East System Current Coverage (Simulated)

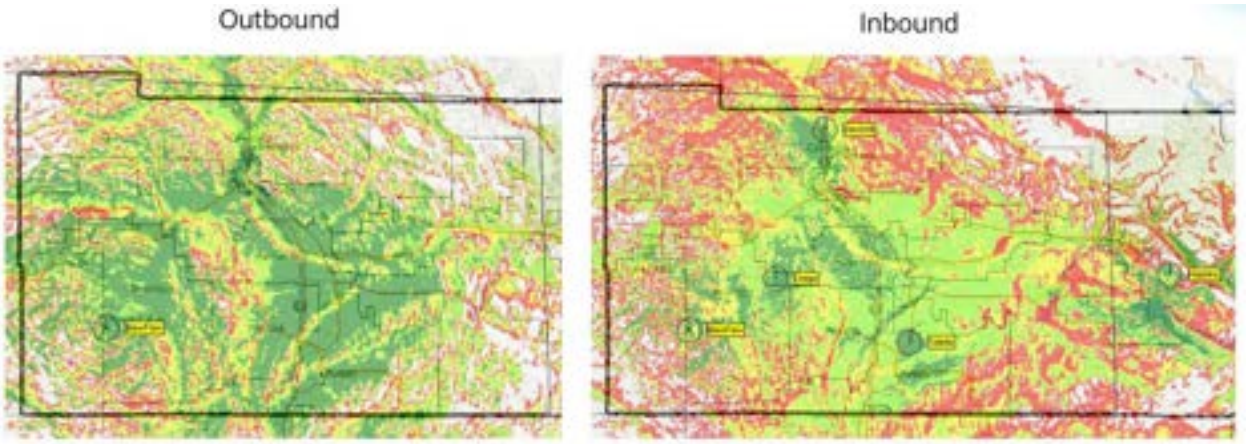


Figure 34: LCSO West System Current Coverage (Simulated)

APPENDIX C: PROPOSED SYSTEM PREDICTED COVERAGE

A detailed propagation simulation was developed to further analyze coverage and to predict performance from various site constellations for an enhanced system. The simulations utilize the EDX SignalPro™ application, which is a standard propagation tool employed by Public Safety to model the system elements and to predict coverage by incorporating industry standard propagation algorithms in addition to terrain and land use databases. Once the initial simulation was developed, the recorded data from the signal testing was factored into the SignalPro™ application to calibrate the model and improve its accuracy.

The propagation simulation was further developed to predict where the system would provide a voice quality (Delivered Audio Quality (DAQ)) of at least 3.4 per typical public safety standards. The minimum Channel Performance Criteria (CPC) required for a DAQ level of 3.4 for an analog narrowband (12.5 kHz) voice system was derived using the information from Table A-1 of TSB-88[2]. The TSB-88 report serves as the public safety LMR network design industry standard.

The propagation model predicts coverage for a mobile radio, as well as a portable radio worn on the hip on street (outdoors) and within buildings up to a specific dB signal loss value for both outbound (dispatch to field) and inbound (field to dispatch). The results for the simulation at this level of voice quality for the following conditions, for each of the analyzed county systems are provided in the figures on the following pages.

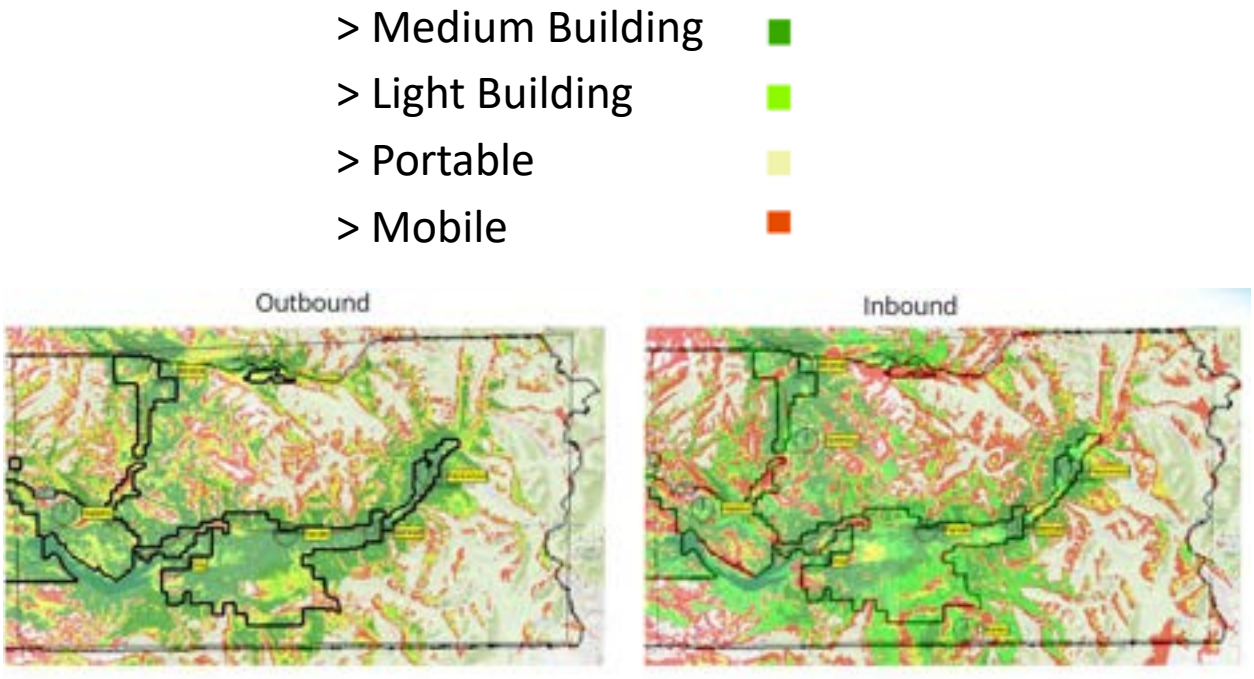


Figure 35: Proposed Fire System East Coverage (Simulated)

[2] TIA Telecommunications System Bulletin TSB-88.1-C: Wireless Communications Systems Performance in Noise and Interference Limited Situations - Part1: Recommended Methods for Technology Independent Performance Modeling: February 2008.

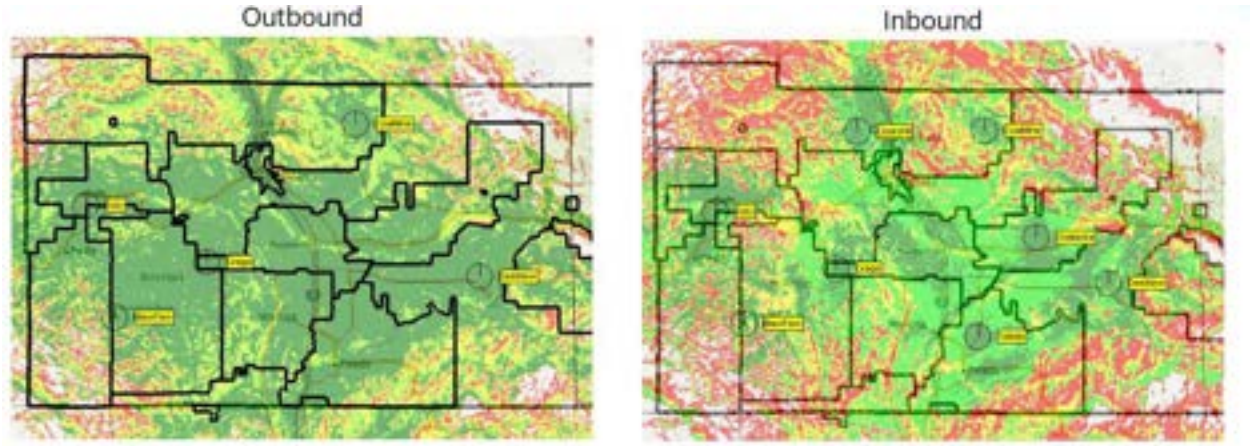


Figure 36: Proposed Fire System West Coverage (Simulated)

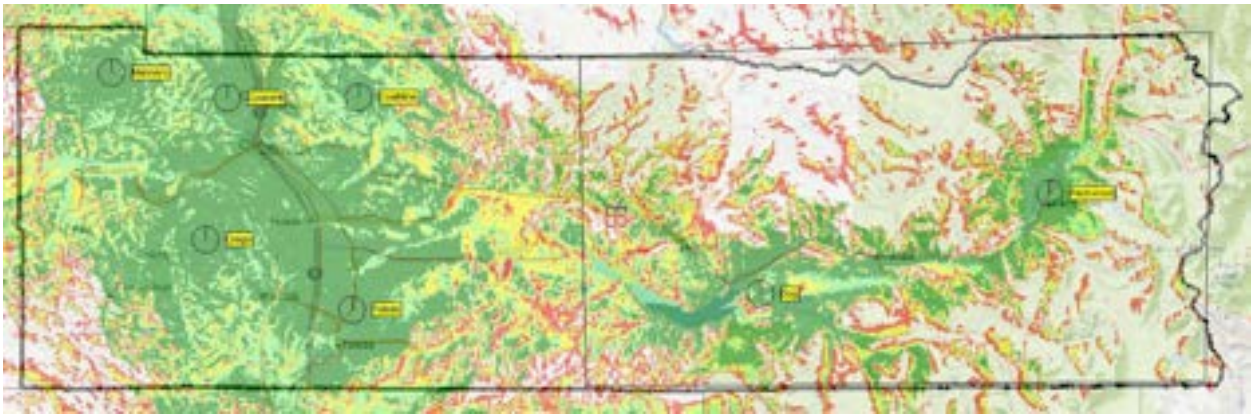


Figure 37: Paging System Composite Coverage – Current + Coal Mine (Simulated)

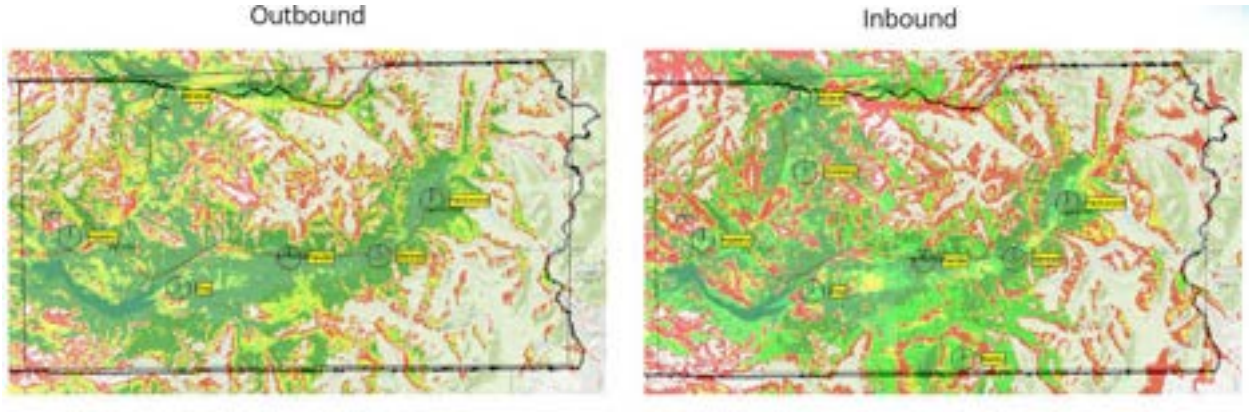


Figure 38: Proposed LCSO East System Coverage (Simulated)

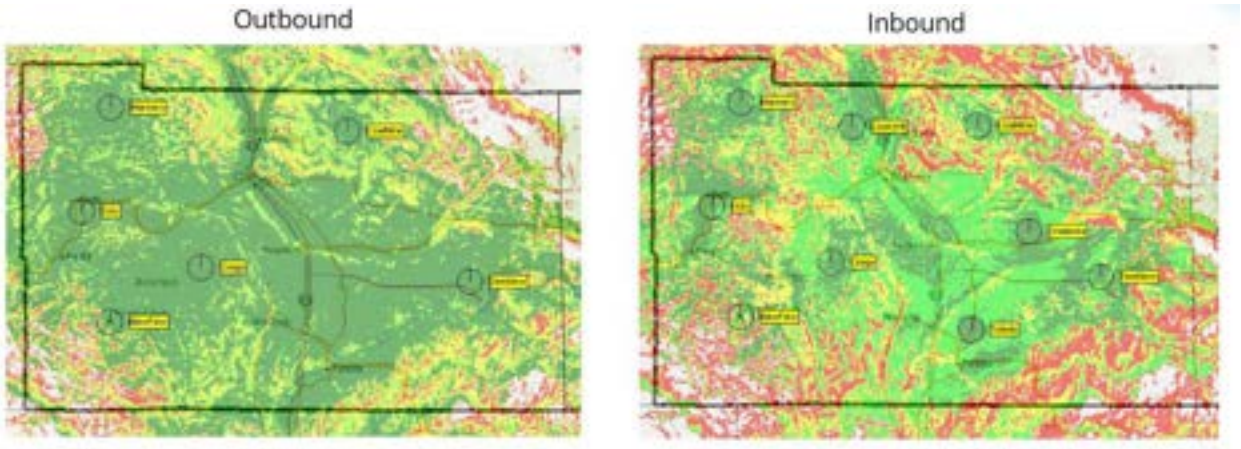


Figure 39: Proposed LCSO West System Coverage (Simulated)

APPENDIX D: PROPOSED MICROWAVE LINK PATH PROFILES (FROM TERRAIN DATABASE)

Figure 40: Democrat (90 ft.) to Hopkins (90 ft.) Path Profile

Figure 41: Hopkins (90 ft.) to Peterman (100 ft.) Path Profile

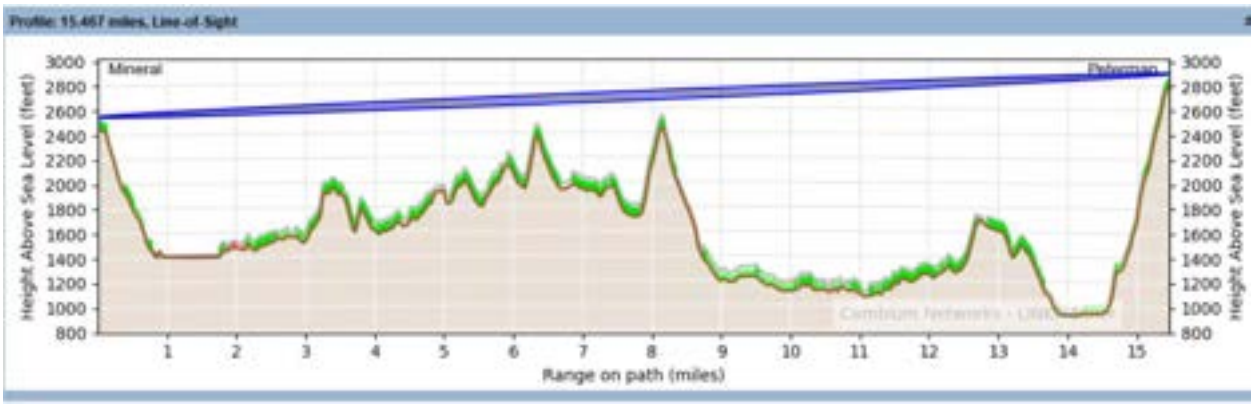


Figure 42: Mineral (90 ft.) to Peterman (100 ft.) Path Profile

Figure 43: Dog (90 ft.) to Peterman (100 ft.) Path Profile

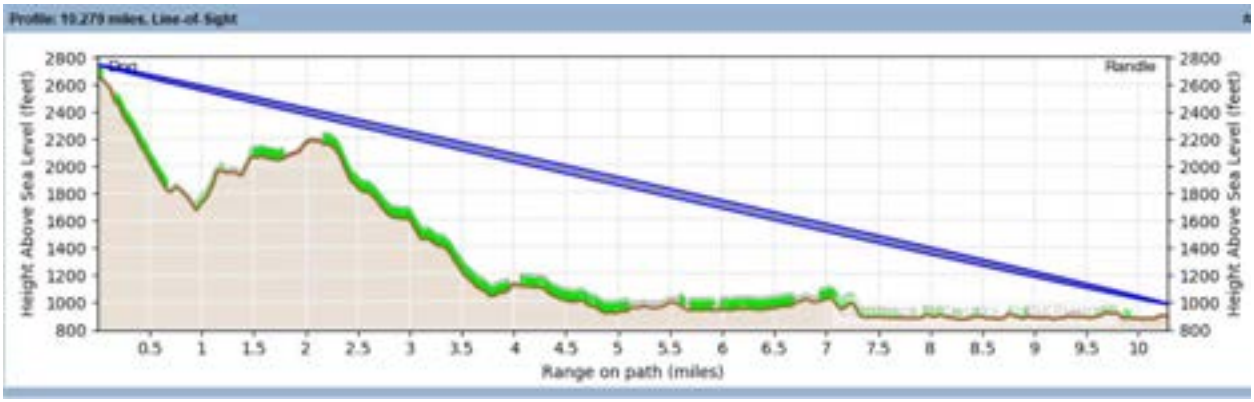


Figure 44: Dog (90 ft.) to Randle (90 ft.) Path Profile

Figure 45: Onalaska (90 ft.) to Democrat (90 ft.) Path Profile

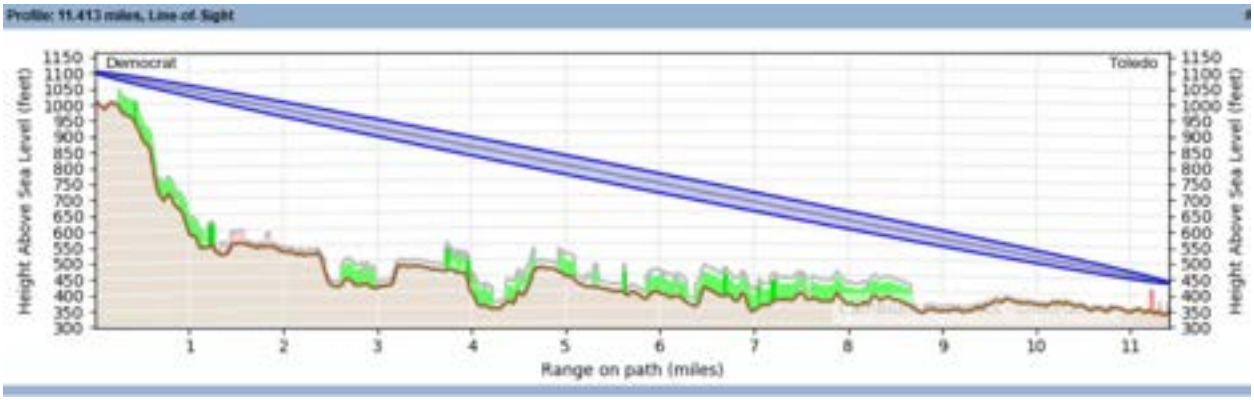


Figure 46: Democrat (90 ft.) to Toledo (90 ft.) Path Profile

Figure 47: BawFaw (90 ft.) to Toledo (90 ft.) Path Profile

Figure 48: BawFaw (90 ft.) to Doty (100 ft.) Path Profile

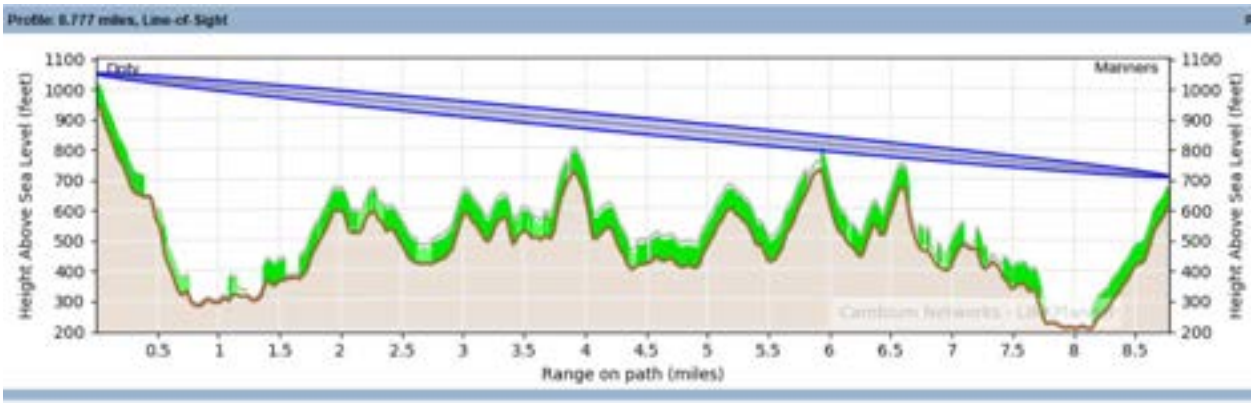


Figure 49: Doty (100 ft.) to Manners (100 ft.) Path Profile

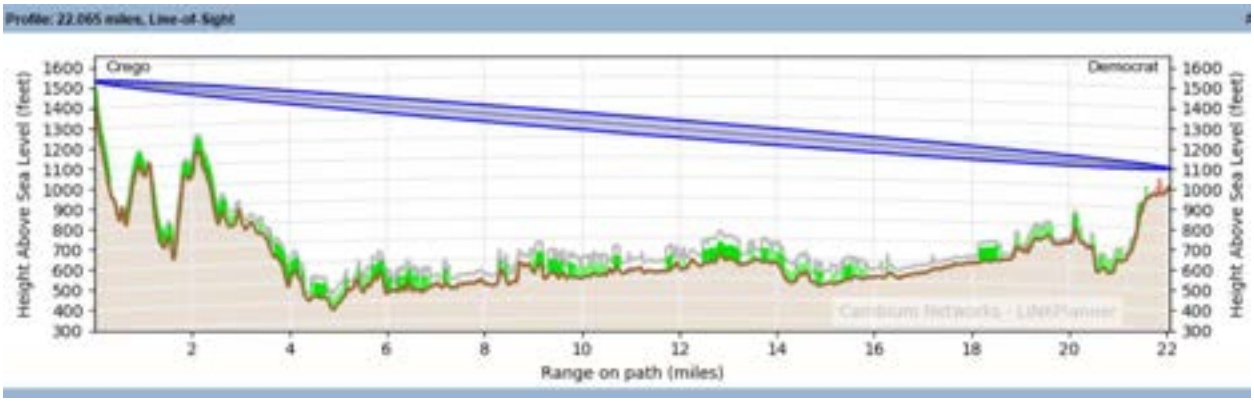
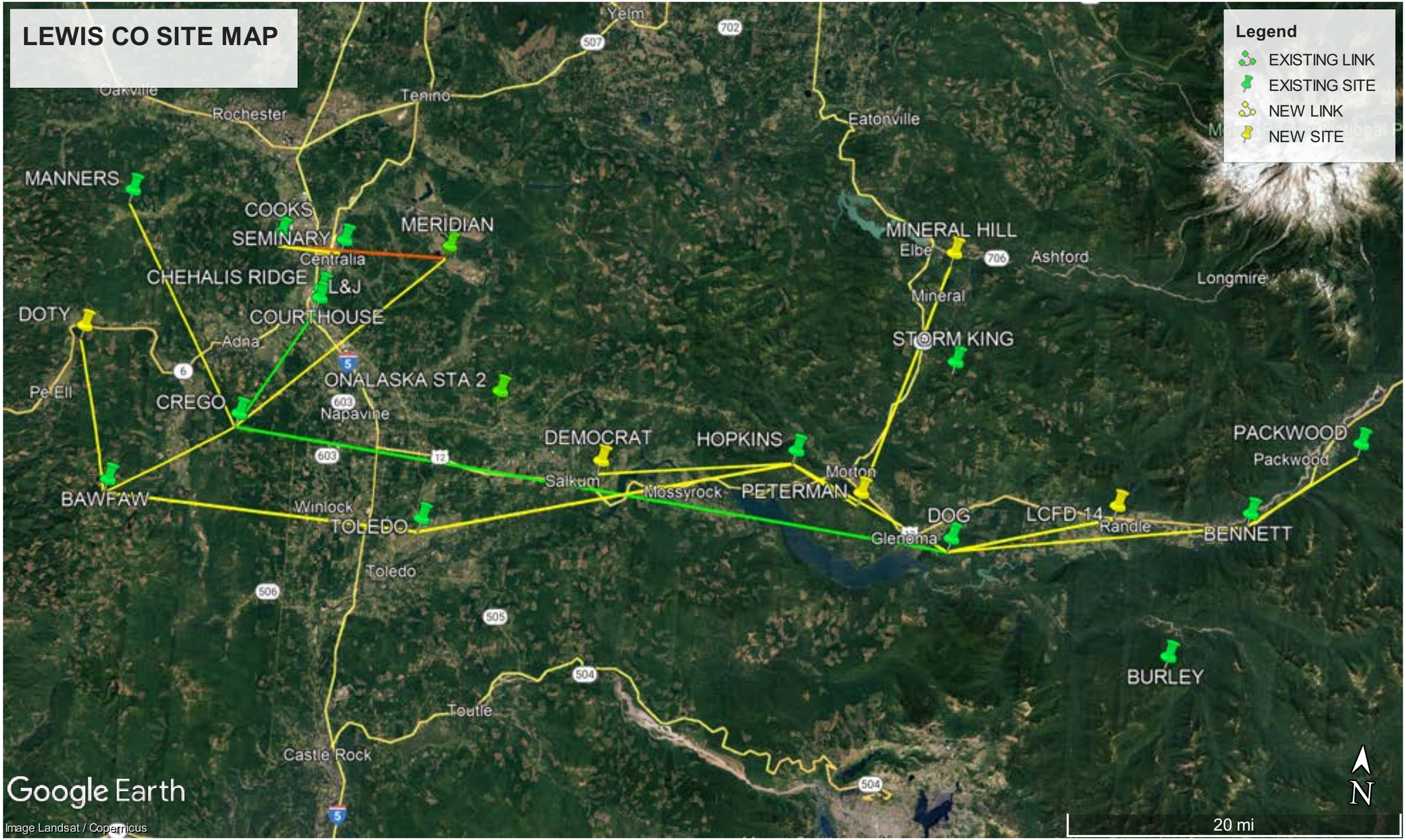


Figure 50: Crego (90 ft.) to Democrat (90 ft.) Path Profile


LEWIS CO SITE MAP
Legend
EXISTING LINK
EXISTING SITE
NEW LINK
NEW SITE
Yelm
Tenino
Rochester
Eatonville
MANNERS
COOKS
SEMINARY
MERIDIAN
Centralia
CHEHALIS RIDGE
L&J
COURTHOUSE
DOTY
Adna
Pe Ell
CREGO
ONALASKA STA 2
Napavine
MINERAL HILL
Elbe
Ashford
Longmire
Mineral
STORM KING
DEMOCRAT
HOPKINS
Salkum
Mossyrock
PETERMAN
Morton
PACKWOOD
Packwood
BAWFAW
Winlock
TOLEDO
DOG
Glenoma
LCFD 14
Randle
BENNETT
Toledo
Toutle
Castle Rock
BURLEY
Google Earth
Image Landsat / Copernicus
N
20 mi

Lewis County

REQUEST FOR PROPOSAL

FOR

PUBLIC SAFETY RADIO EQUIPMENT AND SERVICES RELATED TO AMERICAN RESCUE PLAN ACT (ARPA) FUNDS

RFP TRACKING NUMBER 2024-RFP-023

Addendum 1 issued February 29, 2024

This Addendum # 1 to the Request for Proposal for Public Safety Radio Equipment And Services Related To American Rescue Plan Act (Arpa) Funds is issued on February 29, 2024.

Summary of changes

- RFP submission deadline extended to April 19, 2024 and adjustment of subsequent milestone dates following submissions.
- Site Visits added April 2-3, 2024.

The following section has been updated and changes have been highlighted:

Section 1. RFP Timeline

The Request for Proposal timeline is as follows:

	Date
Request for Proposal Issuance	February 13, 2024
Question Submissions – if allowed Due Date	March 6, 2024 by 5 pm Pacific
Question Response Due Date	March 15, 2024 by 5 pm Pacific
Site Visits*	April 2 and April 3, 2024
Request for Proposal Due Date	April 19, 2024 by 5 pm Pacific
Review Team's Selection of Top Proposer	May 1, 2024
Contract Negotiations Preparation Period and/or Work Commencement Anticipated Dates (dates subject to contract approval)	Begin May 14, 2024

***Site Visits**

- Site Visits will be held across two days with visits being split between the East and West sites. To see all sites, both days will be required.
- RSVP to justin.stennick@lewiscountywa.gov to attend the site visits. Please indicate how many people will be attending.
- Some sites may be unavailable due to weather conditions and/or accessibility issues.
- County staff vehicle space may be limited; if bringing your own vehicle, 4WD and high clearance may be required. The County is not responsible for any damage to privately owned vehicles for travel related to site visits.
- The County will not reimburse for any travel expenses related to the attendance of site Visits.
- Site Visit meeting location will be the Old Historic Courthouse at 351 NW North St, Chehalis, WA 98532 @ 0800 April 2nd and April 3rd, 2024.

LEWIS COUNTY COMMUNICATIONS SITE INFORMATION

BAWFAW/BOISTFORT PEAKFORT PEAK

BAWFAW/BOISTFORT PEAK

SITE NAME:	BAWFAW
SITE OWNER:	WEYERHAEUSER
ADDRESS:	PeELL McdONALD RD CURTIS, WA 98538
COORDINATES:	46°29'16.49°N 123°12'51.90°W
TOWER INFO:	UNKNOWN
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR AND DC BATTERY BACKUP
CLIMATE CONTROL:	NONE
ADDL INFORMATION:	SITE IS LEASED AND IMPROVMENTS WILL REQUIRE OWNER APPROVAL. CURRENT GROUNDING DOES NOT MEET GROUNDING STANDARDS BUT WILL BE UPGRADED.
CURRENT USAGE:	LEWIS COUNTY SHERIFF REPEATER FIRE PAGE BACKUP REPEATER

BENNETT ROAD

BENNETT ROAD

SITE NAME:	BENNETT
SITE OWNER:	LEWIS COUNTY
ADDRESS:	11606 US HWY 12 RANDLE, WA 98377
COORDINATES:	46°32'6.48N 121°46'8.47W
TOWER INFO:	MICROFLECT MODEL 72-S960-120 120FT BUILT 2005. EXTERIOR CABLE TRAY PROVIDED AND GROUDING AT SITE.
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR AND DC BATTERY BACKUP
CLIMATE CONTROL:	WALL MOUNT AC UNIT
ADDL INFORMATION:	DUE TO BUILDING SIZE, SPACE IS VERY LIMITED.

COOKS HILL

COOKS HILL

SITE NAME:	COOKS HILL
SITE OWNER:	RIVERSIDE FIRE AUTHORITY
ADDRESS:	3715 COOKS HILL ROAD CENTRALIA, WA
COORDINATES:	46°42'54.73"N 123° 1'28.96"W
TOWER INFO:	MICROFLECT 700 SER 120FT
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR AND DC BATTERY BACKUP
CLIMATE CONTROL:	NONE
ADDL INFORMATION:	SITE IS OWNER BY RIVERSIDE FIRE AUTH WITH SPACE AGREEMENT WITH RFA.
CURRENT USAGE:	FIRE 1 RECEIVER REDNET RECEIVER FIRE PAGE TRANMITTER RFA SYSTEM

CREGO HILL

CREGO HILL

SITE NAME:	CREGO HILL
SITE OWNER:	CENTRALIA SCHOOL DISTRICT
ADDRESS:	END OF CREGO HILL ROAD
COORDINATES:	46°33'16.81"N 123°3'29.19"W
TOWER INFO:	UNKNOWN
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR AND DC BATTERY BACKUP
CLIMATE CONTROL:	NONE
ADDL INFORMATION:	SITE IS LEASED THROUGH CENTRALIA SCHOOL DISTRICT
CURRENT USAGE:	FIRE 1 TRANSMITTER SHERIFF TRANSMITTER REDNET TRANSMITTER VTAC 11 TRANSMITTER FIRE PAGE TRANSMITTER PUBLIC WORKS TRANSMITTER

DOG MTN

DOG MTN

SITE NAME:	DOG MOUNTAIN
SITE OWNER:	WASHINGTON STATE DOT
ADDRESS:	ANDERSON RD GLENOMA, WA
COORDINATES:	46°33'16.81"N 123°3'29.19"W
TOWER INFO:	MICROFLECT Q30 30'
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR AND DC BATTERY BACKUP
CLIMATE CONTROL:	DUCTLESS AC UNIT
ADDL INFORMATION:	SITE AGREEMENT WITH WSDOT
CURRENT USAGE:	FIRE 1 TRANSMITTER SHERIFF RECEIVER REDNET TRANSMITTER VTAC 11 TRANSMITTER MICROWAVE TO CREGO

HOPKINS

HOPKINS

SITE NAME:	HOPKINS HILL
SITE OWNER:	LEWIS COUNTY
ADDRESS:	SHORT ROAD, MORTON, WA
COORDINATES:	46°33'16.81"N 123°3'29.19"W
TOWER INFO:	MICROFLECT 72-S960-120 120FT
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR
CLIMATE CONTROL:	NONE
ADDL INFORMATION:	SITE OWNED AND MAINTAINED BY LEWIS COUNTY
CURRENT USAGE:	FIRE SK TRANSMITTER SHERIFF EAST AND WEST RECEIVER PUBLIC WORKS REPEATER

MANNERS

MANNERS

SITE NAME:	MANNERS
SITE OWNER:	RIVERSIDE FIRE AUTHORITY
ADDRESS:	MANNERS HILL RD, ROCHESTER, WA
COORDINATES:	46°44'30.29"N 123°13'5.84"W
TOWER INFO:	120FT LATTICE WORK UNKNOWN MANUFACTURER
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR, DC BATTERY BACKUP
CLIMATE CONTROL:	YES
ADDL INFORMATION:	SITE OWNED AND MAINTAINED BY RFA. LEASE AGREEMENT FOR SPACE USE.
CURRENT USAGE:	RFA SYSTEM FIRE PAGE TRANSMITTER

MERIDIAN

MERIDIAN

SITE NAME:	MERIDIAN
SITE OWNER:	RIVERSIDE FIRE AUTHORITY
ADDRESS:	TRANS ALTA COAL MINE
COORDINATES:	46°42'59.71"N 122°48'30.88"W
TOWER INFO:	MICROFLECT 700 SERIES 90ft
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR, DC BATTERY BACKUP
CLIMATE CONTROL:	YES
ADDL INFORMATION:	SITE OWNED AND MAINTAINED BY RFA. LEASE AGREEMENET IN PLACE FOR FUTURE USE.
CURRENT USAGE:	

MINERAL

□

□

MINERAL

SITE NAME:	MINERAL
SITE OWNER:	TACOMA POWER
ADDRESS:	MINERAL HILL RD MINERAL, WA
COORDINATES:	46°44'36.80"N 122°10'5.14"W
TOWER INFO:	UNKNOWN
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR
CLIMATE CONTROL:	YES
ADDL INFORMATION:	SITE OWNED AND MAINTAINED BY TACOMA POWER. LOOKING TO LEASE SPACE FOR FUTURE USE.
CURRENT USAGE:	

PACKWOOD

PACKWOOD

SITE NAME:	PACKWOOD
SITE OWNER:	RADIO STATION
ADDRESS:	USFS 1260 ROAD
COORDINATES:	46°36'8.49"N 121°38'12.75"W
TOWER INFO:	WATER TOWER
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	DC BATTERY BACKUP
CLIMATE CONTROL:	NO
ADDL INFORMATION:	SITE LEASED
CURRENT USAGE:	EAST FIRE TRANSMITTER SHERIFF RECEIVER

PETERMAN

PETERMAN

SITE NAME:	PETERMAN
SITE OWNER:	TACOMA POWER
ADDRESS:	P1300 POWER SERVICE ROAD
COORDINATES:	46°31'44.91"N 122°15'51.07"W
TOWER INFO:	UNKNOWN MFG 130FT LATTICE WORK
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR
CLIMATE CONTROL:	YES
ADDL INFORMATION:	SITE LEASE FOR FUTURE USE
CURRENT USAGE:	

RANDLE FIRE

RANDLE FIRE

SITE NAME:	RANDLE FIRE
SITE OWNER:	LCFD 14
ADDRESS:	9978 US-12, RANDLE, WA 98377
COORDINATES:	46°32'2.06"N 121°56'17.71"W
TOWER INFO:	ROHN 25 70FT
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	GENERATOR
CLIMATE CONTROL:	YES
ADDL INFORMATION:	
CURRENT USAGE:	FIRE EAST TRANSMITTER

TOLEDO

TOLEDO

SITE NAME:	TOLEDO
SITE OWNER:	LEWIS COUNTY
ADDRESS:	5239 JACKSON HWY TOLEDO, WA 98591
COORDINATES:	46°28'35.13"N 122°48'59.75"W
TOWER INFO:	UNKNOWN MFG 70FT (ESTIMATED) LATTICE TOWER
SITE POWER:	UTILITY AC POWER
BACKUP RESOURCES:	DC BATTERY BACKUP
CLIMATE CONTROL:	YES
ADDL INFORMATION:	UNKNOWN AGE TOWER OR ANY ADDL INFO CO-LOCATED WITH AIRPORT LIGHTING CONTROLLER
CURRENT USAGE:	FIRE 1 RECEIVER SHERIFF RECEIVER PUB WKS RECEIVER REDNET RECEIVER FIRE PAGE TRANSMITTER

ADDITIONAL SITE PICTURES

BAWFAW

PUBLIC SAFETY RADIO EQUIPMENT AND SERVICES

RESPONSE FOR:

LEWIS COUNTY

May 9, 2024

Presented by
Jason Kester
Wireless System Sales Representative

Day Wireless Systems
39 International Way
Longview, WA 98632

(503) 310-1401
jkester@daywireless.com

DAY WIRELESS SYSTEMS

www.daywireless.com
30 Offices in Six
Western States
200+ Tower Locations

May 9, 2024

Jennifer Libby-Jones
Director of 911 Communications
Lewis County

Dear Ms. Libby-Jones,

Day Wireless Systems is pleased to offer the following response to Lewis County's request for Public Safety Radio Equipment and Services Related to the American Rescue Plan Act (ARPA) Funds. We have extensive experience providing Public Safety radio systems, FCC licensing, antenna installation, system integration, and tower work and would be pleased to partner with Lewis County on this project.

This proposal includes the following:

- System Design and Engineering of a Public Safety-Grade Radio System
- Equipment, Labor, and Materials
- Warranty and Maintenance
- Training and Support for Lewis County Technical Staff and Users

Day Wireless has earned our customer's trust, safeguarding 911 communications for nearly every county in Oregon and SW Washington. With centuries of collective knowledge and experience, we stand poised to confront head-on the distinctive challenges Lewis County presents. Our commitment to public safety is both long-standing and unwavering. The Day Wireless team operates 30 offices in the west and has active projects in 31 countries across the globe. Our Longview regional office is supported by Area Service and Sales professionals, our Engineering and Design team, and our Operations departments. Customers of Day Wireless benefit from the personal attention of our local service shop, along with the full backing and expertise of hundreds of employees of the organization. Our mission is to support your mission.

Day Wireless intends to pay Prevailing Wage rates as of 5/9/2024, agrees that the pricing listed below is valid for 90 days from date of proposal, and fully complies with all listed project requirements with the exception of sections 4.3.1 and 12.5.8, which comply with clarifications provided in the section marked "Response to Attachment A." For additional information please reach out to me by telephone at (503) 310-1401 or email at jkester@daywireless.com. For contracting concerns, please email contracts@daywireless.com. We look forward to working with you on this important communications project.

Sincerely,

Jason Kester
Wireless System Sales Representative
Day Wireless Systems

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EXECUTIVE SUMMARY

Lewis County (The County) is home to stunningly diverse geography from Mount Rainier National Park to the Cowlitz River to Mount Saint Helens. The natural beauty that creates such a draw for tourism and land preservation also creates a unique challenge for the first responders that serve the residents of this area in law enforcement, fire, and EMS. The County has been allocated Federal ARPA funding to improve functionality and interoperability of their radio services systems and has prioritized the replacement of their current communication system.

Day Wireless Systems understands the key concerns outlined in both the Televate report and in this RFP. We've partnered with Motorola Solutions, the largest and most successful public safety company in the world, to address some of the following requests:

- Need for enhanced coverage and communication throughout the County
- Prime site expansion to geographically diverse locations in the East and West portions of the County
- Provide comparators the ability to maintain channels in the event of equipment, chassis, or site outage
- Facilitate patching between East and West systems channels when necessary
- Potential for Dispatch to have audio patching functionality for enhanced interoperability with neighboring counties, organizations, and state agencies
- Software upgradable system for future APCO P25 capability with a seamless environment from system to console to user.
- Comprehensive alarm management and reporting solutions integrated with Motorola MCC consoles and stand-alone MCN server
- Improved communications capabilities and feature sets at Dispatch
- Leverage existing Motorola MCC consoles, Motorola CAD, and Motorola call handling investment to provide enhanced functionality with connection into the RF infrastructure
- Ability to enable features such as the emergency button in the Motorola MCC console system in concert with the proposed RF solution
- Future software enablement and integration into network topologies allowing encryption, status updates, inbound / outbound PTT ID's, and individual call capabilities
- Hardware and software maintenance services

Day Wireless Systems is one of the largest Wireless Services Specialists in the Western US, and we've deployed hundreds of radio systems and microwave networks over the last 55 years. Locally, the County can be assured that we have plenty of resources available, including:

- Nearest facilities located in Longview and Lacey, WA.
- Other nearby offices include Vancouver, WA, Milwaukie, OR, and Portland, OR
- 45+ technicians in the area for support with access to hundreds of regional technicians
- Engineering, Tower, Licensing, and Project Management teams

- Support from Motorola Solutions and other manufacturer partners

The proposed systems would be installed, optimized, and tested by certified radio frequency technicians from the Day Wireless Longview office and surrounding region. As one of the largest Wireless Services Specialists in the Western United States, we are uniquely positioned and highly qualified to handle all aspects of this project, including but not limited to: system design, configuration and installation, and ongoing maintenance and support.

Our clients trust our team to support their mission-critical operations for life. Before, during, and after deployment Lewis County can measure the success of this project not only via budget alignment, but through our professional and positive impact on your daily operations. We will be here in the moments that matter to ensure your safety, success, and satisfaction with this important investment.

Special pricing has been included in this proposal based on the long-standing relationship between Lewis County, Day Wireless, and Motorola in the form of the following discounts in the pricing proposal:

- Existing Motorola CAD Customer Discount
- Existing Motorola Call Taking Customer Discount
- Existing Motorola Console Discount
- Day Wireless Existing Customer Loyalty Discount

QUALIFICATIONS

HISTORY OF THE COMPANY

Day Wireless Systems, a DBA of Day Management Corporation, is a premier provider of wireless solutions for voice, data, and video. The company designs, installs, and supports systems for government, public safety, healthcare, commercial, and education customers.

Day Wireless Systems Headquarters

Founded in 1969, the company is based in the Portland, Oregon, area and now operates from 30 locations in six western states. We have more than 400 employees including nearly 300 technical staff made up of engineers, senior technicians, and skilled installers. The company is privately held and led by third generation family members. Day Wireless Systems is affiliated with Reliance Connects, a provider of telephone, cable, and Internet services with operations in Oregon and Nevada.

Day Wireless Systems is one of the largest wireless service organizations in the country and a major provider of the leading brands in wireless system applications. We are one of the largest wireless integrators in the Western United States.

Day Wireless Systems serves its customers throughout the West from 30 locations in six states.

When you call Day Wireless, you get answers. Whether you are seeking a Motorola Two-Way Radio System or need solutions for your complex communication challenge, we can help. Dedicated to service excellence and technical innovation, the experts at Day Wireless Systems are ready to solve problems.

Our average employee has been with us over eight years, so you can be confident we have the know-how and ability to solve your toughest challenges. We know that culture matters and proudly trace our company heritage over one hundred years to the founding of Estacada Telephone in 1905, and Day Wireless since 1969.

REGIONAL OFFICE PROFILE

Serving the Southwest Washington area is the Longview regional office of Day Wireless.

The Longview service center holds the highest technical service status awarded by Motorola – Service Elite Specialist. We must adhere to this rigorous standard of technical and customer service to maintain the highest levels of Motorola systems certification.

39 International Way
Longview, WA 98632
Phone: 360-423-3690

CERTIFIED SERVICE CENTER

MOTOROLA SOLUTIONS
Service Elite Specialist

The Day Wireless Longview office adheres to the business practices of the Electronics Technician Association (ETA) for high standards of technical ability, business operations, ethics, safety and customer service. It means clean, organized, and professional technical spaces and service vehicles.

Our Longview regional office is supported by Area Service and Sales professionals, our Engineering and Design Team, and our Operations departments. Customers of Day Wireless benefit from the personal attention of a local service shop and with the full backing and expertise of the overall company.

ENGINEER AND INVOLVED STAFF QUALIFICATIONS

The following staff members will be assigned to this project:

SPENCER SALLEY- LONGVIEW SERVICE MANAGER

Spencer Salley is a two-way communications specialist with a focus in Commercial and Public Safety systems and prides himself on his skills as a Certified Service Manager and Customer Service Specialist. He is a graduate of Western Business College with a degree in Accounting and Business Management and has led multiple projects in Washington, including a large casino and hotel and a county-wide 911 dispatch project.

JAMES SMITH- PORTLAND ASSISTANT SERVICE MANAGER & SENIOR SYSTEMS TECHNICIAN

James originally trained in 1987 as a Ground Radio Repairman in the U.S. Marine Corps and progressed to a Radio Technician, Data/Communications Maintenance Officer, and eventually to a Signal Officer with the Army Reserve. Here he worked on a number of highly technical projects including trunking systems, subscriber fleets, hospital and base paging systems, and ancillary-use devices for vehicle upfitting. Since leaving active duty, James has worked for several communications companies including Motorola, and was the Senior IT Technician for the City of Fort Worth in Texas. In this role, he oversaw the design, build, cutover, and maintenance of their P25 system. James is a member of several

professional affiliations, including the Electronics Technician Association, Veterans of Foreign Wars, Signal Corps Regimental Association, State Guard Association of the U.S., Military Officers Association of America, and the Texas State Guard Association.

Awards, Affiliations, and Certificates: ETA Senior Certified Electronics Technician, ETA Computer Service Technician, FCC General Radiotelephone Operator w/ Radar Endorsement, APCO Radio Technician, Motorola APX Subscriber Professional, Motorola MR Project Manager, VESTA NG911 I&M Administration, Motorola ASTRO25 IV&D Radio System Administrator, Motorola ASTRO25 Master Site Maintenance, Motorola ASTRO25 Repeater Site Maintenance, Motorola ASTRO25 Simulcast Site Maintenance, Motorola ASTRO25 IV&D K/L/M Core Install Technician, Motorola LTE Technical Associate

JASON ROSS- RADIO TECHNICIAN JOURNEYMAN

Jason Ross specializes in telecommunications work including tower construction and modification. He has over 10 years of extensive expertise in fiber optics, structured wiring, battery plants, microwave backhaul systems, two-way radio systems, radio networking, and RF systems. He was an integral member of a large 10g fiber backhaul project consisting of microwave backhaul, fiber, and PTMP wireless internet for 60 sites.

CHRIS FRALEY- SENIOR SERVICE TECHNICIAN

Chris Fraley has over 25 years of radio communications experience. He has experience in 911/ dispatch center support, conventional and digital repeater systems, and project management for system implementations.

Awards, Affiliations, and Certificates: Networking Essentials Motorola Communications Equipment, Astro 25 IV&D, K/L/M Core Install Technician

AARON ANDRUS- LOW VOLTAGE TECHNICIAN

Aaron Andrus has extensive experience in multiple bands of satellite communications and NIPR and SIPR networks. He has also been responsible for the installation, maintenance, and operations of HF, VHF, and UHF radio systems.

JOHN MARXMILLER- INSTALL TECHNICIAN JOURNEYMAN

John Marxmiller has over 35 years of experience as a radio technician starting as a radioman in the US Navy. He has worked for Chevron, GTE, and Verizon before coming to Day Wireless 17 years ago.

Awards, Affiliations, and Certificates: FCC-General Radiophone Operator License

IAN GAMBLE- RADIO TECHNICIAN JOURNEYMAN

Ian Gamble has more than a decade of experience in the installation and maintenance of LMR systems and products including component-level repair of two-way radios. He also has an extensive background in Whelen Emergency Warning Sirens, computer repair, networking, software engineering, and electrical engineering.

Ian has been immersed in radio from childhood, but also pursued a career in software engineering and systems administration before joining the family business at their local radio shop. He has successfully created complicated repeater systems with geographical and connectivity challenges and has even reverse-engineered equipment to the bespoke needs of a single customer.

Awards, Affiliations, and Certificates: Moducom E911 Installer, Motorola Commercial Radio Technical Associate, Motorola Professional Radio Technical Associate, Motorola P25 Technical Associate

RON NAMHIE- SENIOR SYSTEMS INSTALLER

Ron served eight years in the United States Air Force, gaining valuable experience in telecommunications cable and antenna installation and maintenance. Upon his return to civilian life, he worked for two years as a telecommunications contractor for AT&T.

Joining Day Wireless Systems in 1991, he has worked on a wide variety of projects, including an 800 MHz network Project for Clackamas County; installing consoles, antennas, and towers; aligning and optimizing antennas; installing in-vehicle computers and mobile data terminals (MDTs) for Clackamas County; installing lights, sirens, and radios in federal vehicles; installing total packages for Multnomah County vehicles; and installing base stations and bi-directional antenna (BDA) systems.

He is certified as an installer and tower climber and holds Oregon Low-Voltage License 1334 LEB.

MATTHEW MORRISON- SENIOR TECHNICAL ADVISOR

Expertise

- Microwave systems
- Simulcast systems
- Console systems
- ASTRO 25
- RF and IP integration
- Subscriber radio equipment installation and troubleshooting
- RF Systems design and installation
- System troubleshooting and repair
- Antenna systems installation and repair

Awards, Affiliations, and Certificates

- ETA/CET
- APCO
- ComTrain

Education

Numerous industry and factory training courses.

BIO

As a Senior Technical Advisor, Matthew Morrison provides Day Wireless Systems with a versatile set of technical skills.

Matthew has over thirty years of experience as an RF technician, eighteen with Day Wireless Systems. He is an ETA and APCO Certified Public-Safety Radio Technician.

Matthew is experienced in the installation and troubleshooting of RF systems, microwave, IP networks, subscriber radio equipment, and antenna systems. He is skilled in systems design, installation, integration, implementation, IP and TDM transport.

JEREMY HAGERMAN- SENIOR RF TECHNICIAN

Expertise

- Simulcast systems
- Console systems
- ASTRO 25
- RF and IP integration
- Subscriber radio equipment installation and troubleshooting
- RF Systems design and installation
- System troubleshooting and repair
- Antenna systems installation and repair
- PC/Server configuration / Networking / Routing

Awards, Affiliations, and Certificates

- ETA/CET
- FCC GROL

Education

Numerous industry and factory training courses.

BIO

As a Senior RF Technician, Jeremy Hagerman provides Day Wireless Systems with a versatile set of technical skills.

Jeremy has over twelve years of experience as an RF technician, eight with Day Wireless Systems. He is an ETA Certified Senior Electronics Technician and holds an FCC General Radio Operators License, along with other FCC operator class licenses. He is ETA/CET certified in all levels of ASTRO 25 systems installation, maintenance and system administration, as well as IP Based simulcast.

Jeremy is experienced in the installation and troubleshooting of RF systems, subscriber radio equipment, and antenna systems. He is skilled in systems design and installation, networking and routing.

JEFF SPRINGER- AREA SERVICE MANAGER

Expertise

- Mobile upfitting
- AC & DC Electrical application
- OSHA Compliance
- Safety practices
- Project Management
- Radio Systems
- Microwave Systems
- Subscriber Radios
- 911 PSAP Phone Systems

BIO

Jeff has a tremendous skill set in radio systems, microwave systems, dispatch consoles, 911 PSAP, mobile electronics, mobile radios, vehicle upfitting, and project management.

Jeff has been the in communications business for a combined 22 years. In 1995 Jeff took over as a shop manager in Sparks, NV for Sierra Electronics. There he managed a large service and installation team. He also worked one on one with customers to develop communications systems for public safety. In 2011 Jeff moved to Oregon and started working at Auto Additions as a mobile upfitting account manager.

In 2013 Jeff took over as the Salem Shop Manager for Day Wireless. He took over a team of 16 technicians, sales, and office staff. Since then, he has built the Salem shop to be one of the Leaders in the communications. He has developed professional relationships with Police, Fire and other Emergency personnel in Oregon, Washington, and California.

Jeff has continued to grow in leadership with Day Wireless and is currently the Oregon and Southwest Washington Area Service Manager. The team of 85 in the OR-SWW Area are very successful in implementation of projects large and small.

CODY HUNTER – OREGON CONSTRUCTION MANAGER

Expertise

- Tower Erection and Installation
- Antenna System Installation
- Microwave Installation
- Safety Management

Awards, Affiliations, and Certificates

- Alcatel Microwave
- Andrews Connector
- Anritsu SiteMaster Line Sweep
- Lift and boom operation
- RF Site Safety
- CPR/First Aid
- Tower Climbing
- Com Train Tower Rescue

BIO

Cody manages the Oregon construction team for Day Wireless Systems, operating out of our Milwaukie, Oregon office.

He has 13 years of communications site and tower construction experience. Cody has worked in all aspects of tower construction from starting as a tower technician, then working as a crew lead and now managing our Oregon team.

His duties including all aspects of tower construction projects, along with grounding and microwave/antenna installation and optimization. In order to provide the best possible service, Cody maintains numerous technical and factory certifications related to site application.

Cody's experience is broad in scope and scale; he has managed and constructed sites ranging from a single tower worth $100,000 to full turn-key site builds worth $1,000,000. He has participated in the execution of construction builds, multiple site microwave and antenna installations. Cody's expertise is frequently sought, and his job walks are an essential part of planning RFP responses, system designs and project bids.

NICK KENNON- ASSISTANT CONSTRUCTION MANAGER – OREGON

Expertise

- Grid and Halo Grounding
- Quality Control
- Safety Management

Awards, Affiliations, and Certificates

- Anritsu PIM and Line Sweep Certified
- Lift Operation
- Heavy Equipment Operation
- CPR/First Aid Certified
- Tower Climbing Certified
- Com Train Tower Rescue Certified
- Competent Rigging Certified
- OSHA 10 Certified

BIO

Nick has been at Day Wireless for over 12 years. He started as the head of building maintenance and repair before transitioning to our construction division where he was trained as a tower climber. His quality workmanship, professionalism, and skill quickly moved him up to being a crew lead. He is now the assistant manager for our Oregon construction division.

Nick has a wide knowledge of tower construction, installation and maintenance. He has been involved in numerous county projects over the years and is currently leading the county-wide upgrade project for Washington County, among others.

ROGER TAY – SENIOR TELECOM SYSTEMS ENGINEER

Expertise

- System Architecture Design
- Analog and Digital RoIP
- IP Networking
- RF Systems Design
- Radio Dispatch Consoles
- E911 Telephony Systems
- NICE and Verint Audio Logging
- Radio Data Applications

Awards, Affiliations, and Certificates

- CompTIA Network+

Education

- Bachelor of Science Electrical and Computer Engineering
  University of Illinois at Chicago

BIO

Roger Tay has worked in the communications industry since 2008. Early work concentrated in system staging, configuration, and optimization. His tasks progressed from post-sale systems implementation to pre-sales systems design, working with internal sales and business teams to qualify the customer with the most appropriate solution.

Roger carries extensive knowledge in public safety Land Mobile Radio Systems, Dispatch Consoles, Enhanced 911 networks, and Outdoor Coverage prediction. He also has exposure in IP Network planning, and Data Applications including GPS, Unit Tracking, and Network Monitoring.

He has trained and mentored team members in basic radio concepts, common architectures, and industry specific applications. Roger provided supplemental education in ways of the business and how the company aligns with customers, vendors, and partnered firms in the marketspace.

Experience

- SOUTHERN CALIFORNIA GAS COMPANY (SOCAL GAS): FULL RF SYSTEM
  Roger served as the System Design Engineer for this project consisting of 131 Avtec consoles and 94 Motorola repeaters across 41 radio sites in Southern California.

- ADAMS SHERIFF'S OFFICE DISPATCH
  Roger served as the System Design Engineer for this project consisting of a K2 redundant core and MCC 7500 dispatch system. Day Wireless was the manufacturer's representative for Motorola.

EXPERIENCE, WORK SAMPLES, AND REFERENCES

Day Wireless Systems is proud of our 55-year history providing mission critical public safety solutions in the west. We highly value our 34-year history providing equipment and services for Lewis County and its many user agencies.

In addition to our extensive history with Lewis County, we work with hundreds of public safety clients to provide turnkey LMR systems and solutions. Day Wireless is the largest wireless integrator in the west, integrating Land Mobile Radio into complete technology ecosystems for public safety.

We've included some of our local client references and other information below for your review.

EXPERIENCE

Day Wireless has many years of experience engineering, installing, and maintaining VHF Simulcast systems across the west. These systems include both analog and digital P25 networks.

While there are many companies that sell simulcast solutions, these systems can be complex and unique. Day Wireless is highly experienced in troubleshooting and resolving simulcast timing issues, which can be challenging in these types of system deployments. Our clients trust our technical expertise, and our attention to detail in delivering these solutions in a successful manner.

Our team has extensive experience working in Lewis County and its LMR sites, systems, and user groups. While this RFP doesn't reference consoles, we believe our current role as your dispatch console vendor will lend itself to further efficiencies in this project (and future projects).

CUSTOMER REFERENCES & WORK SAMPLES

We invite Lewis County to reach out to our references listed below for additional information and their experience partnering with Day Wireless Systems.

Riverside Fire Authority (Lewis County, WA)
Four site VHF Motorola analog simulcast system within Lewis County, utilizing Motorola GTR8000's, MLC8000s, and Motorola subscriber radios.

Captain Casey McCarthy
Riverside Fire Authority
Centralia, Wa 98531
360-736-3975 Office
www.riversidefire.net

Stevens County, WA Sheriff
Seven site standalone repeater upgrade and migration to 4ch VHF Analog Simulcast Public Safety network, comparator integration into MCC7500 console system, 48vdc Plant w/ Battery and DC Distribution, Microwave network migration from TDM circuits with channel bank to native IP with ring protection. Earlier phase transitioned all sites from multi-duplexer channels to site VHF TX Combiner/ RX Multicoupler.

Undersheriff Loren Erdman
(509) 684-5296
lerdman@stevenscountywa.gov

Pend Oreille County, WA Sheriff
Five site VHF Motorola Vote Scan system and P25 repeater upgrade, integration into MCC7500 console system, Microwave migration from fractional TDM to native IP with L2 managed network.

Steve West- 911 Director
(509) 447-3151
swest@pedoreille.org

Skamania County, WA Radio System
Designed, Implemented, and currently maintained Emergency Responder 3-site analog UHF simulcast radio system with dispatch consoles, subscribers, and base stations.

Skamania County Sheriff
Summer Scheyer
509-427-9490
summers@co.skamania.wa.us

Hood River County, OR Radio System
Replacement of Emergency Responder VHF analog simulcast radio system with dispatch consoles, subscribers, and base stations.

Hood River County Sheriff
Matt English
541-386-2711
menglish@hoodriversheriff.com

Hood River 911 Director
Erica Stolhand
541-387-4070
estolhand@hoodriversheriff.com

City of Salem, OR P25 Radio System
Replacement of emergency responder analog radio system with P25 Phase 2 Simulcast Trunking System, Dispatch Consoles, Subscribers, Base Stations. Ongoing infrastructure maintenance.

City of Salem
Melvin Peterson
503-932-0859
mpeterson@cityofsalem.net

WCN P25 Radio System Upgrade
Replacement of emergency responder analog radio system with P25 Phase 2 Simulcast Trunking system, dispatch consoles, subscribers, base stations. Cutover occurred and analog system now being removed from sites.

Ron Polluconi
WCN Technical Services Manager
(WCCCA, C800 Group, Newberg)
Comm. Systems Manager
ORRC Region 2 Director
KJ7IY
rpolluconi@wccca.com
mobile – 503-502-8506

Thurston County, WA 911
Replacement of Thurston Co 911 System. RF Sites FNE equipment, remove and replace core system with new Astro Core, remove and replace all subscriber units with new APX style radios.

Thurston 911 Communications
David Taylor
360-704-2736
david.taylor@tcomm911.org

City of McMinnville, OR Analog Simulcast to P25 Simulcast Upgrade
Replacement of emergency responder analog radio system with an analog simulcast system, followed by an upgrade of the Law analog system to P25 simulcast encrypted conventional.

City of McMinnville
Matt Scales
503-434-2358
Matt.scales@ci.mcminnville.org

METHOD OF APPROACH

Day Wireless Systems understands the mission-critical nature of Lewis County's public safety radio system. We've developed a comprehensive method of approach for Lewis County's radio system project that will ensure your satisfaction and continued success.

Our team has extensive experience in simulcast technologies, both on projects led on Day Wireless contracts for rural markets, and as an Elite Service partner of Motorola Solutions for large metro projects. We understand the unique coverage challenges of rural counties and their reliance on public safety communications in areas where cellular coverage is nonexistent.

In our approach, we're proposing industry-leading Motorola Solutions equipment in a thoughtful manner that accomplishes improved system redundancies and value as requested in your RFP.

Our method of approach process, timelines and overview has been further expanded upon in Appendix I.

PROJECT OVERVIEW

Lewis County is replacing its aging radio communication system and requires a new complete public safety-grade solution. Our solution includes the following elements:

- Engineering with support from Motorola Solutions and Day Wireless Systems engineers
- Complete system design to address the RFP requirements
- FCC frequency allocation research with our fully staffed FCC licensing department
- Installation and implementation services from experienced, qualified senior technicians
- Project management from qualified and experienced project managers
- Cutover, system testing and completion services
- Comprehensive training program supported by Motorola Solutions and Day Wireless Systems
- Competitive pricing on top-rated public safety equipment and services
- Overall extreme value, functionality, and reliability to Lewis County

We believe our 55 years of experience in public safety radio systems lends itself to the success of your project. There are several key challenges that Day Wireless is uniquely qualified to address. These challenges include FCC frequency allocation research, site implementation, and antenna systems design. To resolve these challenges, we've spent countless hours researching your system to ensure our design methods are sound and will be successful.

The Day Wireless Systems team is both excited and prepared to assist Lewis County in providing a top-quality public safety grade communication solution that will successfully function for many years to come.

COLLABORATION & CLIENT ENGAGEMENT

Day Wireless Systems is committed to ongoing and lifetime client relationships with Lewis County and its system users. Throughout this project you can expect clear communication and engagement to ensure your full satisfaction and success. Our communication plan will be established during the initial kickoff call scheduled upon project award. The Day Wireless team will be present alongside Lewis County every step of the way- delivering top-quality, on-time, and on-budget work. Our passion is beyond implementing a single system project – but to be your public safety communications provider for life. We intend to earn that privilege through high-quality communications and client engagement.

TECHNICAL SOLUTION

Complete details on our proposed solution can be found starting at page 25.

The proposed system offers a solution in response to Lewis County's request in parallel with Televate's report recommendations. County line geography has necessitated prime sites that respectively serve the East and West areas of the County's fire and law enforcement communications. These East and West systems will operate as their own simulcast "cells," designed to cover the roadways and population centers as described in the bid. A single, countywide cell will serve the County's Public Works, Operations, and paging for Fire with a single prime site.

Furthermore, the overall system architecture has been curated with a combination of Motorola Solutions G-Series conventional infrastructure and third-party site support in GPS time synchronization, network backhaul, DC power, and channel interface to the incumbent Motorola Solutions MCC 7500E dispatch console. It should also be noted that the existing GTRs can be reconfigured to act as compatible spares to our solution, allowing Lewis County to repurpose this existing equipment if desired.

OUTLINE OF APPROACH

Step 1: Project Kickoff – Detailed below
Step 2: Refine Project Plan - Detailed below
- Step 2a: Communications Plan - Detailed below
- Step 2b: Project Management - Detailed below
- Step 2c: Quality Assurance / Quality Control - Detailed below
- Step 2d: Implementation & Cutover Plan - Detailed below
- Step 2e: Cost Management Plan - Detailed below
- Step 2f: Quality Management Plan - Detailed below

Step 3: Training Plan – Detailed below
Step 4: System Acceptance – Detailed below
Step 5: Ongoing maintenance & support options - Detailed below

PROJECT KICK OFF

Upon receiving the Notice to Proceed (NTP), the Day Wireless Systems' project manager shall schedule a meeting to review and update the Project Management Plan which is a compilation of the following plans:

- Responsibility Matrix: Illustrates who is responsible to complete what task.
- Scope Plan: Defines in greater detail how the work will be completed.
- Schedule Plan: Defines the baseline schedule, what and how changes can be made to the base line.
- Testing Plan: Defines what tests must be executed, how and when The Project Management Plan is considered a living document. As the project progresses, more detailed information may necessitate a change or addition to the plan. All changes will be reviewed prior to implementation updated electronic copies will be submitted to the team.

THE PROJECT PLAN

The purpose of this plan ensures we perform the project in a timely and successful manner by defining how the project is executed, monitored, controlled, and closed. Upon award of the Project DWS will initiate the drafting of this plan. It shall be completed and approved during the Design Phase of the project. This document shall be considered a living document as it will change over time as more information becomes available to the project. The Project Plan is comprised of several plans specifically:

COMMUNICATIONS PLAN

The purpose of this plan is to set the communications framework for this project. It will serve as a guide for communications throughout the life of the project and will be updated as communication needs change. This plan identifies and defines the roles of persons involved in this project. It also includes a communications matrix which maps the communication requirements of this project. An in-depth guide for conducting meetings details the communications rules and how the meetings will be conducted, ensuring successful meetings. A project team directory is included to provide contact information for all stakeholders directly involved in the project.

PROJECT MANAGEMENT

Day Wireless Systems will minimize costs to Lewis County to implement this project by using our experienced radio technicians, tower climbing ability, and the experience of our quality control lead to reduce the time required to achieve what Lewis County is requesting.

Day Wireless Systems does not anticipate issues or conflicts in the performance of this project. However, if issues do arise, we will immediately inform Lewis County and work quickly and collaboratively to resolve the issue.

To ensure the quality-control standards Lewis County requires, Day Wireless Systems' quality control lead will inspect and approve the installation and configuration after installation to verify performance.

In addition, a formal Acceptance Test Plan will be completed upon award. A checklist of items to test will be prepared and a representative from Lewis County and Day Wireless will conduct the test together. Upon completion of the ATP, the system will be considered accepted, and a project completion certificate will be signed.

QUALITY ASSURANCE/ QUALITY CONTROL

Day Wireless Systems is committed to providing top-tier customer service with high levels of quality assurance. To achieve those ends, we are pleased to be able to provide tremendous depth in the number of skilled managers and technicians with talents that can be made available to Lewis County as needed to meet deadlines.

To support this project:

- We will assign a team composed of a project manager, a field supervisor, certified installers, and system integration technicians.
- This group will work in concert with the assigned staff from Lewis County as needed to execute this project.
- A project kickoff session will finalize the Statement of Work, project deliverables and schedule.
- Provide regular progress reports to the customer
- Produce final deliverables as agreed
- Close out the project

SYSTEM IMPLEMENTATION METHODOLOGY

Our method of approach process, timelines and overview has been further expanded upon in Appendix I.

COST MANAGEMENT PLAN

The purpose of this Plan is to ensure the project stays on budget:

- DWS will use Earned Value Management System to verify Cost Performance Index is within +/- .2 of budget goal.
- DWS will provide regular project status reviews to management.
- The Project Manager will be responsible for managing and reporting on the project's cost throughout the duration of the project. Responsible for accounting for cost deviations and presenting the Project Sponsor with options for getting the project back on budget.
- Documents to be used:
    - Implement cost adjustments or corrective actions such as the Change Order Request (COR)

QUALITY MANAGEMENT PLAN

The purpose of this process is to develop a reasonable and appropriate method for an objective review of how well the project is following the projects' plans and controls to deliver the requested product and meet the standards of the Manufacturer and Projects Sponsor's oversight requirements.

- Is to provide a sequence of steps that will enable the Reviewer to detect areas of insufficiency in the project's plan and processes, as well as insufficiency in the project's ability to carry out the plan.
- Includes recommendations for improvement for each QA finding ensures that quality is the responsibility of each team member.
- Provides target-specific documents such as Motorola R56 site inspection checklist, manufactures acceptance test requirements, manufactures installation guidelines.

TRAINING PLAN

Our proposal includes two key training plans for the County Maintenance team. The first is a classroom training conducted by Motorola trainers. For convenience, this class will be held for up to 12 technicians and conducted at a location of Lewis County's choosing. This is an on-site training program for (3) Days.

The second included training is a hands-on, two-day field class conducted by a Day Wireless Systems Technician. This approach will provide an opportunity for the Lewis County technicians to get on the radio sites and be guided by the Day Wireless System Technician on best practices for the maintenance of the radio system.

More information on our comprehensive training plan is located within this response at the section titled "Training".

SYSTEM ACCEPTANCE

A formal Acceptance Test Plan will be completed upon award. A checklist of items to test will be prepared and a representative from Lewis County and Day Wireless will conduct the test together. Upon completion of the ATP, the system will be considered accepted, and a project completion certificate will be signed.

ONGOING MAINTENANCE & SUPPORT

While it is our understanding that the Lewis County Public Safety Radio System will be maintained by the County's technicians, additional on-going support and maintenance packages are available. These packages are customized to each client, and may include Tier II and Tier III-level services, 24 hour / 365 day response, and more. Please let us know if these services may be of interest to you.

VALUE PROPOSITION

After thoroughly studying Lewis County's current needs, we've provided a turn-key solution that provides fantastic value to the County, both now and well into the future. Our solution is revolutionary in the industry as we've combined top-tier Motorola Solutions equipment and systems resiliency with separated prime sites for greater redundancy. Our solution maximizes existing hardware, software, and infrastructure investments to create additional opportunities for enhanced functionality and cost savings. These examples include feature sets and capabilities that may be realized at dispatch with the existing MCC 7500e consoles.

We've delivered a solution that addresses the County's key concerns including coverage, reliability, resiliency, monitoring, ongoing maintenance & support, and overall superior function. Day Wireless Systems operates 30 offices in six states. These locations become part of your resource network when you choose us to be your public safety communications partner. From hundreds of technical employees to our FCC Licensing department, Professional Tower Construction teams, Safety division, Rentals, Sites Real Estate division and more… we're dedicated to offering our clients a full solution to their communication challenges.

We work hand in hand with our clients and their chosen consultants to provide best-in-class solutions. Our careful and thoughtful approach will also assist in meeting your budget goals for this project.

Day Wireless is more than a design and installation contractor – we are your long-term community partner in public safety. Our mission is to support the safety and security of your employees and community members.

METHOD OF APPROACH CONCLUSION

In summary, we've invested many hours into our response to deliver the best possible solution for Lewis County and its user groups, based on the parameters of this RFP. From our frequency allocation research to antenna system design, to separating prime site locations on a Motorola system architecture… Day Wireless offers Lewis County a unique and powerful solution to meet its needs now and into the future. With our many years of expertise, we're confident that your project will be implemented on time, on

budget and with great satisfaction. Our team hopes you'll choose us for this important and exciting project.

SOLUTION OVERVIEW

The proposed system offers a solution in response to Lewis County's request in parallel with Televate's report recommendations. County line geography has necessitated prime sites that respectively serve the East and West areas of the County's fire and law enforcement communications. These East and West systems will operate as their own simulcast "cells," designed to cover the roadways and population centers as described in the bid. A single, countywide cell will serve the County's Public Works, Operations, and paging for Fire with a single prime site. In the unlikely event of backhaul disconnection, the East and West prime sites are designed to work as standalone repeater sites, covering their local areas to offer backup communications while network communications are restored.

Furthermore, the overall system architecture has been curated with a combination of Motorola Solutions' G-Series Conventional infrastructure and third-party site support in GPS time synchronization, network backhaul, DC power, and channel interface to the incumbent MCC 7500E dispatch console. It should also be noted that the existing GTRs can be reconfigured to act as compatible spares to our solution, allowing Lewis County to repurpose this existing equipment if desired.

Site RF Distribution comes from careful selection of frequencies made available from Televate's report, undergoing several Intermodulation studies, use restriction verification, and planning for sufficient spacing to allow the most cost-effective combiner system design. It should be noted that these frequencies are arranged with the presumption of FCC and nearby agency approval. Such details speaking go our frequency selection efforts are further detailed in this document.

All sites across the county are results of anticipated microwave link feasibility and estimated mobile radio coverage of requested areas as described in the bid. The proposed solution for Lewis County is based on an Analog Conventional Simulcast system. This solution consists of the following sites:

- Bawfaw/Boistfort Peak
- Cooks Hill
- Crego Hill
- Dog Mountain
- Hopkins
- Manners
- Meridian
- Mineral
- Packwood
- Randle Fire
- Toledo

Day Wireless has also included the necessary training by Motorola and DWS for Lewis County technical staff to maintain and repair the system per the training requirements listed in the scope of work detailed in sections further in this document. End User and dispatcher training has also been included in this response.

MOTOROLA SOLUTIONS CONVENTIONAL SUPPORTED FEATURES

With the proposed VHF Analog Simulcast solution being comprised of Motorola hardware, it not only provides industry-leading hardware and support, but also directly enhances the abilities of dispatch user groups to interact with field user groups. The creation of separate geographically diverse prime site locations extends the reach of the dispatch user groups and opens additional applications beyond those exclusive to the function of the simulcast system. The following table provides a list of the ASTRO®25 conventional features supported on the buyer's K2 Core. While the proposed VHF Analog Simulcast solution does not contain all of these features in this offer, it does natively include most of the analog channels' operations and MDC 1200-specific features. Additionally, it is compatible with the digital channel via an APCO 25 standard software upgrade of the provided hardware, along with any Motorola-specific ASTRO®25 network topology upgrades.

Analog Channels

- Talk and listen in analog mode
- Tone Remote Control Frequency Selection
- Tone Remote Control Monitor
- Tone Remote Control Transmit
- E & M Control
- Audio and Event Logging
- Analog Link Monitor Tone
- Analog Standalone Base Radio via 4 wire interface
- Analog Simulcast via 4 wire interface
- Analog IP Simulcast via 4 wire interface
- Analog Rx Only Sites via 4 wire interface
- Analog Multicast Site via 4 wire interface
- Inbound/outbound audio logging
- Inbound audio mute
- I/O Line Operated Busy Light Input
- Main Alternate
- Analog Sidetalk (with GRV Comparator)
- Comparator Redundancy (with GRV Comparator)

MDC 1200 Specific Features

- MDC 1200 Emergency Alarm
- MDC 1200 Remote Monitor
- MDC 1200 Call Alert
- MDC 1200 Voice Selective Call
- MDC 1200 Paging
- MDC 1200 Channel Marker
- MDC 1200 Status Update (Radio Initiated)
- MDC 1200 Status Request (Console Initiated)
- MDC 1200 Message Update (Radio Initiated)
- MDC 1200 Radio Check (Console Initiated)
- MDC 1200 Radio Disable (Console Initiated)
- MDC 1200 Radio Enable (Console Initiated)
- MDC 1200 Station Control - Transmit
- MDC 1200 Station Control - Monitor
- MDC 1200 Station Control - Frequency Select
- MDC 1200 Station Control - Repeater On/Off
- MDC 1200 Station Control - PL Select
- MDC 1200 Station Control - Wildcard I/II

- MDC 1200 Station Control - Mute Second Receiver
- MDC 1200 PTT ID (inbound and outbound)
- MDC 1200 Emergency PTT-ID (inbound)
- MDC 1200 Emergency Call
- MDC 1200 from a LOBL/Parallel/Non-Motorola console
- MDC1200 “Support Entire MDC 1200 Address Space for Radio Unit IDs"

Digital Channels:

- Talk and listen in digital clear & secure mode
- Inbound PTT ID Display (and Alias, if present)
- Outbound PTT ID on Console transmissions
- Receive Emergency Alarm from Radio
- Receive Call Alert from Radio
- Send Call Alert to Radio
- Receive Emergency Calls from Radio
- Remote Monitor
- Repeater On/Off
- Frequency Selection
- Monitor
- Voice Selective Calls (individual/private call)
- Message Update
- Status Update
- Status Request
- Radio Check
- Radio Enable/Disable

RESPONSE TO ATTACHMENT A

Fully Compliant:

- SECTION 3: Common Technical Requirements
- SECTION 5: Transport System Requirements
- SECTION 6: Site Improvements and Upgrade Requirements
- SECTION 9: Spare Components
- SECTION 11: Quality and Workmanship Requirements
- SECTION 13: Documentation Requirements
- SECTION 15: Project Closeout Requirements

SECTION 4: Radio System Specifications and Requirements	
4.2.2 The new simulcast analog VHF radio system must: (1) Operate in the VHF public safety spectrum of 150-170 MHz for current and future analog narrowband frequencies. (2) Provided system and components shall be P25 capable for future upgrade. (3) Meet the requirements of the Lewis County Communications tech team specifications. (4) Work with existing infrastructure including microwave system, dispatch console system, logging recorder, alarm systems, and Lewis County enterprise networks. If the new system proposed will not work with any part of existing infrastructure, the proposer must clearly state the reasons the systems are incompatible and provide costs to replace the components identified.	**COMPLY** 1. Future P25 capability is possible via software upgrades. Simulcast system would need optimization when system transfers to P25 operation. 2. Day Wireless Systems is proposing an IP-based solution, no TDM circuit provision required or supported without the addition of materials outside the scope of this response. 3. Our design works seamlessly with the consoles, providing integrated control of the channel from the existing consoles. It also offers an expansion of features that impact dispatchers via the cohabitation monitor and control software.
4.3.1 Seller must analyze the VHF frequencies currently held by Lewis County for use with the system and provide information to the buyer. If new frequency coordination or additional frequencies are to be added, the seller shall propose a detailed list of necessary additional resources required. The buyer will be responsible for all FCC licensing, frequency coordination, and all associated costs, although seller may propose to provide licensing services as an option. Seller must perform sufficient frequency research to determine if there is a high probability of being able to obtain all Frequency resources required by their proposed system design. Seller is responsible to develop, gain approval from Buyers Project Manager, and implement a plan to transition from existing system to the proposed replacement system.	**UNDERSTOOD** The proposed frequency list for the 'new' system has undergone a comprehensive process: 1. Compiled based on the relevant frequencies currently used by the affected user groups, referencing Televate Report – FCC Licenses_ Table 3: Lewis County Licensed Frequencies. 2. The Televate Report - *Frequency Analysis_ Table 8: Potential New Frequencies* was investigated by our FCC coordinator for application possibilities, i.e., Base and/or Mobile only licensing. 3. DWS FCC Coordination-Identification of availability of required frequency resources. 4. This new list of frequencies was then subjected to a detailed intermodulation (IM) study to determine the clearest TX and RX pairing.

	Includes a “Frequency Allocation” section for further clarification on the impact of this critical system component.
4.3.2 Seller must assume that there will be at minimum 2 standalone repeater locations to be used as a backup in the event of a catastrophic failure of the system and should account for frequency coordination accordingly.	**COMPLY** In the event of a failure, our system is designed to operate In-cabinet repeat mode. Site selections have been made to optimize the system’s automatic failure protection. Flexibility is integrated into the equipment provided, allowing for options to be determined during the detailed design review process.
4.9.4 Failure Notification - In the event of a network failure monitoring software shall emit a notification to alert communications staff of the failure. Any loss of a network component over 10 seconds should trigger notification.	**UNDERSTOOD** Failure notifications are integrated into the function and capabilities of the proposed system, allowing for the customization of alarms for both Dispatch and the technical support staff. Further documentation has been provided.
4.10.1 Coverage should be calculated based on attachment B of this document (radio system study conducted by Televate).	**UNDERSTOOD** The minimum Channel Performance Criteria (CPC) required for a DAQ level of 3.0 for an analog narrowband (12.5 kHz) voice system per Motorola. This is standard for analog conventional
SECTION 7: DC Power Interface Requirements	
7.2.10 Proposer must detail the DC power plant design requirements in their Proposal including design calculations and assumptions, operating parameters, and system technical information to fully describe the DC power equipment and system requirements.	**UNDERSTOOD** This proposed system uses the ICT Distribution Series 3 with Front Access. A dual-bus DC distribution panel designed to be used in 12-, 24- or 48-volt DC applications. This dual-bus panel can support dual-voltage inputs and mixed polarities with circuit breaker-protected outputs. Models include a secure, easy-to-use web-browser interface, which provides remote power monitoring, power control, and alarm reporting over an Ethernet link, along with SNMP support for integration into your network management system. Each bus is rated at 100A peak and provides six breaker protected outputs. Tray-rated cable has been included for cross connection to the Buyer’s DC plants. The provided units are Intelligent models which include ICT’s industry leading TCP/IP remote management and power control features, including IP-enabled remote monitoring and remote shutdown or power cycling of individual outputs, which will potentially eliminate unnecessary service call-outs. Intelligent models also come with five digital input

	contacts for site monitoring sensors, such as door, smoke, and water detection. Each input can be custom-labeled to provide descriptive email alerts. All Distribution Series 3 models feature independent Form C outputs to monitor and report alarm conditions for each bus. All models come with a 2-year warranty.
SECTION 10: Implementation	
10.2.3 Wiring of 120 and 240 VAC to the nearest distribution panel will be provided by Buyer as part of the project. A review of existing circuit drops, and available breaker positions must be conducted by Seller. All new circuit breakers in panels must be supplied by Buyer. Wiring from this distribution panel to any new equipment is the responsibility of the Seller. Proposer must identify in their proposal the number and type of AC circuits required.	**UNDERSTOOD** This proposed system is built on a 48vdc topology, few AC resources are required and only at the MCN server location.
SECTION 12: Acceptance Testing Requirements	
12.5.8 Seller is responsible for the coverage guarantee provisions, including remedial actions to be undertaken by and at Seller's expense if the coverage as depicted in the proposal plots is not met. Remedies for coverage failure must address the entire problem area(s) and not be limited to correcting a portion of the failed area. Remedies may not degrade areas of coverage previously accepted. A retest of coverage must be conducted in any area (previously failed or not) potentially affected by the remedy in order to verify the composite coverage is maintained.	**COMPLY WITH CLARIFICATION** DWS cannot provide an analog conventional radio coverage guarantee due to the complexity and variability of analog signal transmission. Analog signals are more susceptible to interference and degradation from external factors like weather and terrain, making it challenging to ensure consistent coverage. Estimated coverage maps have been included as an appendix.

SYSTEM ELEMENTS

ANALOG CONVENTIONAL SIMULCAST

When a wide geographical area requires communications throughout the system, simulcast provides a solution. Simulcast is the simultaneous broadcast of the same voice or message from multiple transmitter sites on the same frequency. Simulcast addresses the needs of users who were outgrowing their single–site radio systems. These systems provide consistent communications throughout a large city, metropolitan area, county, or even country. Because the simulcast architecture operates like a single–site system, operations are simplified, and radios are easy to use.

GTR 8000 BASE RADIO

Designed to support ASTRO 25 trunking simulcast, HPD, and P25 and analog conventional operation, GTR 8000 Base Radios offer additional design flexibility for infrastructure sites where equipment may have to be interchanged individually during a technology refresh or when used as a station replacement for Quantar™ or STR 3000 stations.

SECURESYNC® TIME SERVER

The SecureSync Time Server harnesses Safran's leading PNTPosition, Navigation, and Timing: PNT and map data combine to create the GPS service. technology into one flexible, modular platform designed to synchronize critical defense and commercial infrastructure that requires extreme reliability and security.

The SecureSync 2400 time sync server is built on a highly configurable platform to offer precisely what customers need at the lowest cost of ownership. Greater resiliency in the SecureSync grandmaster clock is available through a multi-layered approach that can leverage anti-jam antennas, Safran's complete Interference Detection and Mitigation (IDM) suite, as well as time error minimization with high performance internal oscillators. Qualified military customers are also eligible for secure military signals such as M-Code.

The SecureSync Time Server also offers embedded interference detection and mitigation to help you identify the presence of jamming and spoofing. Interference detection is a key enabler for greater resiliency in critical infrastructure, as defined in the DHS Resilient PNT conformance framework and the federal PNT Executive Order.

GRV 8000 COMPARATOR

For conventional configurations, the GRV 8000 compares and analyzes the received transmission arriving from multiple sites to create a high-quality composite message. The comparator synchronizes the outbound transmissions of sites to ensure optimal timing of each broadcast.

The GRV 8000 compares multiple received message streams on a frame-by-frame basis. The best frames are compiled into a new, high-quality message that will be transmitted for others to hear.

Migrate from analog conventional to P25 digital conventional with ease via software. Front access to hot-swap modules makes servicing the GRV 8000 hardware quick and easy. Software configuration and upgrades can be done locally or remotely. Remote access to fault management data minimizes downtime and site visits.

MCG 8000 CONVENTIONAL CHANNEL GATEWAY

The MCG 8000 gateway is a multi–purpose network communications platform that interconnects devices and networks within ASTRO 25 systems. Enhanced Conventional Channel Gateways (ECCGWs) connect dispatch operators to analog or digital conventional channels in the system. Up to 16 conventional channels can be connected to the eight analog and eight V.24 ports on an MCG 8000–based ECCGW in any mixture of analog, MDC 1200 digital or mixed mode.

In addition to the 16 channels supported on the analog and V.24 ports, the ECCGW can support up to 16 digital conventional channels through its IP port. Mixed mode channels must use a V.24 port for the digital portion.

EMR CORPORATION FILTERING EQUIPMENT

Filter-Ferrite Transmitter Combiners

EMR Filter-Ferrite Transmitter Combiners use space saving, High-Q square cavity resonators, and wideband isolators providing lower insertion loss than hybrid designs. Standard units are mounted to a 19 inch EIA rack. Multiple mounting and free standing configurations available.

Product Features:

- High-Q square cavities
- Low insertion loss
- 5 Year Warranty

Receiver Multicouplers

EMR Receiver Multicouplers allow several receivers to share a common antenna. These units include a preselector, amplifier, power supply, and power divider which effectively amplify a filtered band of frequencies to individual receivers. The power divider provides a minimum of 23 dB of port-to-port isolation, preventing signal mixing even at minimal channel separation.

Product Features:

- Rugged constructed components
- Flat gain, high performance low noise amplifier
- High compression point, Low IM generation

CTI MONITOR AND CONTROL (MCN) SOFTWARE

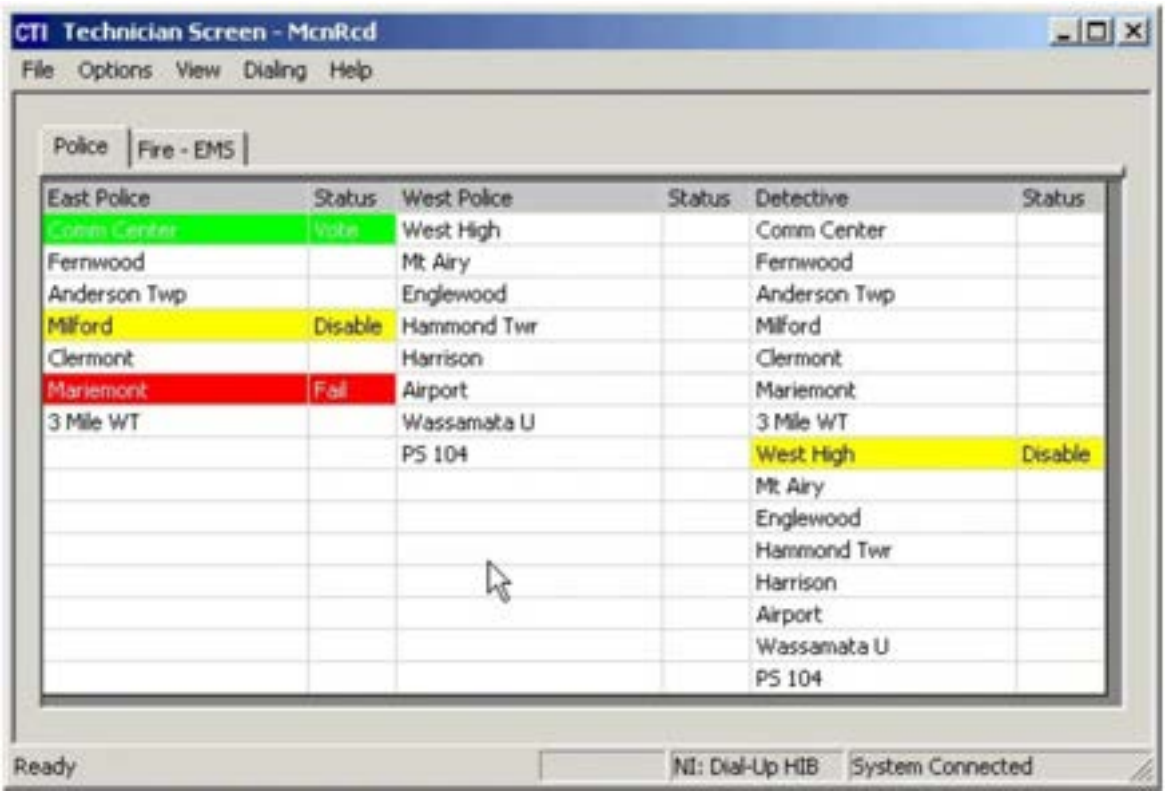
Monitoring and Controlling voting receiver systems is essential for maintaining seamless communication across wide-area networks. Remote comparator displays enhance system control and address common challenges faced by voting systems. Remote comparator displays provide real-time status information to dispatchers and technicians. Here's how they improve system control:

- **Diagnosing and Repairing Problems:** Intermittent issues can be elusive, but a remote display allows technicians to identify which receiver is selected during problematic moments. This visibility streamlines troubleshooting and accelerates repairs.

- **Efficient Receiver Management:** Technicians can disable or re-enable receivers without physically visiting the comparator location. This feature is especially useful after fixing a receiver or network line, as it allows quick verification of system operation.

USER INTERFACE

At a glance, a dispatcher or technician can determine status for any receiver in the system, or site equipment I/O. A noisy receiver can be remotely disabled, quickly allowing a system to function until maintenance can be performed.



FEATURES

- Real-Time Monitoring/Control
- Receiver Failure Alarm
- Detect Audio Problems
- Detect Interference

FUNCTIONS

- List of the fields that are accessible with the proposed configuration- 'Stand-Alone'

The following Screen shot shows the possible states for those Display Tables:

Displayed State	Meaning
Error	Undefined Status
Inactive	Comparator is Inactive (Stand-Alone comparator) (Note 4)
Main - Inactive	Main Redundant Comparator is Inactive (Note 4)
Alt - Inactive	Alternate Redundant Comparator is Inactive (Note 4)
Offline	The server cannot talk to the GRV 8000 comparator (Note1)
	Idle - No Activity
Link Disable (or "DISABLE")	Subsite is permanently disabled in CSS by disabling the IP Link to the BR/Receiver or GSLC
Disable	Disabled via MCN Server 8000, MCN Client or CSS Local Status Panel
Fail IP Link	Subsite Failed - Comparator cannot talk to BR (Note 2)
Fail Analog	Subsite Failed - Comparator cannot talk to BR (Note 2)
Rx	Voice Receive activity
Rx Data	Data Receive activity
Forced Vote	Force Vote (but not yet Voted)
Vote	Voted
Vote Data	Voted for Data
Last Vote	Last Subsite voted (**GRV LV** Display Tables only) (Note 3)

GRV 8000 Display States table

The above states are predefined in the GRV and the GRV LV Display Tables.

Note 1: The Offline state could be caused by any of the following:

- MCN server cannot talk to the GRV 8000 comparator (Bad comparator, loss of power, network problem)
- GRV 8000 IP address in the MCN System Configuration Files is incorrect.
- If the MCN server has multiple NIC cards, the wrong one may be selected.

Note 2: The Fail state could be caused by any of the following:

- The GRV 8000 Comparator cannot communicate to an IP BR.
- The GRV 8000 Comparator cannot communicate over IP to a GSLC.
- The 4-wire audio link between the Analog BR and the GSLC is disconnected.
- A BR or GSLC has lost power.

Note 3: The Last Vote indication (using the GRV LV Display table) will only be displayed when that Subsite is otherwise in the Idle state.

Note 4: If a comparator is Inactive, all its receivers will also show Inactive. Comparators before Version A7.17.2 do not support status indication. So, this feature should be disabled for those comparators. It can also be disabled if you desire to see which subsites are Disabled or Failed on an Inactive comparator.

- For Analog systems, you can also see Signal Quality bars using the GRV Tech Display Table. (This is recommended for technicians only.)

GRV Tech Display Table

The GRV Tech Display Table is provided to help technicians troubleshoot GRV 8000 IP Comparator systems. Separate screens or tabs can be set up using this Display Table for Technician use.

The GRV Tech Display Table adds more technical indicators to the display including Signal Quality indication. (The Signal Quality Metrics are audio quality indications, not RF strength or RSSI indications.) The possible states for the GRV 8000 IP Comparator Subsites (receivers) using this Display Table are:

Displayed State	Meaning
Error	Undefined Status
Inactive	Comparator is Inactive (Stand-Alone comparator)
Main - Inactive	Main Redundant Comparator is Inactive
Alt - Inactive	Alternate Redundant Comparator is Inactive
Offline	The server cannot talk to the GRV 8000 comparator (Note1)
Link Disable (or "DISABLE")	Subsite is permanently disabled in CSS by disabling the IP Link to the BR/Receiver or GSLC
Disable	Disabled via MCN Server 8000, MCN Client or CSS Local Status Panel
Fail IP Link	Subsite Failed – Comparator cannot talk to BR (Note 2)
Fail Analog	Subsite Failed – Comparator cannot talk to BR (Note 2)
Rx	Receive Signal Quality 0 (Analog GRV 8000 only)
Rx ▯	Receive Signal Quality 1 (Analog GRV 8000 only)
Rx ▯▯	Receive Signal Quality 2 (Analog GRV 8000 only)
Rx ▯▯▯	Receive Signal Quality 3 (Analog GRV 8000 only)
Rx ▯▯▯▯	Receive Signal Quality 4 (Analog GRV 8000 only)
Rx ▯▯▯▯▯	Receive Signal Quality 5 (Analog GRV 8000 only)
Rx Data	
Forced Vote	Forced Vote
Vote	Voted
Vote Data	Voted for Data
Vote	Voted (Digital)
Vote	Vote Signal Quality 0 (Analog GRV 8000 only)
Vote ▯	Vote Signal Quality 1 (Analog GRV 8000 only)
Vote ▯▯	Vote Signal Quality 2 (Analog GRV 8000 only)
Vote ▯▯▯	Vote Signal Quality 3 (Analog GRV 8000 only)
Vote ▯▯▯▯	Vote Signal Quality 4 (Analog GRV 8000 only)
Vote ▯▯▯▯▯	Vote Signal Quality 5 (Analog GRV 8000 only)
Last Vote	Last Subsite voted (Note3)

Notes 1-3: Same as for the previous table.

ALARMS

State Names & Colors
State names and colors can be custom-configured by the engineer or technician who configures the system.

Logging & Alarms:
Any of the states can be set up for logging or alarms.

- Normally, only abnormal (fail and/or disable type states will be logged or alarmed.
- Logging is simply logged in log files (and/or displayed in a Log window.)
- Alarms are "Sticky" and require the user to acknowledge them before they are cleared from the alarm window.
- Alarms can also initiate the playing of a WAV file (ex: "Receiver Failed").

Note 1: If a comparator is Inactive, all the receivers in that comparator will also show **Inactive**. Since comparators before Version A7.17.2 do not support the comparator status indication, this feature may have to be disabled for those comparators. It may also be disabled if you desire to see which subsites are **Disabled** or **Failed** on an Inactive comparator. See Removing Receiver Inactive States for details.

Note 2: This table is best used with a fixed width font (such as Courier New) so that the signal bars align. Older GRV Tech Display Tables used the vertical bar symbol (|) for SQM levels. They have been replaced by square bracket pairs ([]) for better visibility.

Note 3: This Display Table is normally not used for dispatchers. It will be too cluttered. The signal quality bars may also cause unwanted inquiries **to** the technical staff since the bars are audio quality indications rather than RF signal strength.

FREQUENCY ALLOCATION

The performance of a Very High Frequency (VHF) Public Safety system is interwoven with both positive and negative characteristics that are inherent to the band. The following details outline essential requirements and recommendations concerning frequency allocation and the impact on the critical combiners and multicouplers within your communication systems, emphasizing the significance of frequency spacing, bandwidth allocation, along with antenna system design:

COMBINER

When configuring combiners for communication systems, two critical factors demand attention: TX-TX spacing and bandwidth allocation. The minimum targeted spacing between transmit (TX) frequencies is set at 200 kHz (0.2 MHz), crucial for mitigating interference and preserving signal integrity across different TX channels. Insufficient spacing risks signal degradation and compromised system performance. Furthermore, all TX frequencies work best when they fall within 2 MHz bandwidth, or grouped together in units of 2 MHz, to ensure distortion-free transmission. Locating and securing frequencies that allow for a tighter bandwidth allocation enhances control over signal propagation, reducing interference and maintains signal quality. Maintaining a 200 kHz spacing between channels aids in mitigating signal loss and sustaining a favorable output Voltage Standing Wave Ratio (VSWR), a key indicator of signal quality.

MULTICOUPLER

Similarly, multicouplers within communication systems function optimally when we adhere to certain frequency bandwidth requirements. If all receive (RX) frequencies can be contained within approximately a 2 MHz bandwidth, or grouped together in units of 2 MHz, this decreases the potential for the RX signals to have distortion or interference. Tighter bandwidth allocation optimizes signal management and minimizes the risk of signal overlap or interference. A notable advantage with RX frequencies is their ability to be spaced as closely as 25 kHz (0.025 MHz) apart, or when required even closer. This flexibility in RX frequency spacing facilitates efficient spectrum utilization, accommodating a higher number of RX channels within the allocated bandwidth. It also offers versatility in configuring the RX frequency plan to suit specific system requirements or operational needs

In summary, adherence to the above guidelines, and when possible, treating them as specified requirements, for combiners and multicouplers is essential to optimize signal quality and system performance in communication systems. Attention to frequency spacing and bandwidth allocation enables effective management of multiple channels while minimizing interference and maximizing spectrum efficiency.

ANTENNA DECOUPLING

Antenna decoupling refers to techniques used to improve signal quality and reduce the impact of interference on the received signal. Antenna decoupling can figure into the filter solution in both the combiner and multicoupler.

Filters are used in the creation of these antenna systems to select specific frequency bands for transmission or reception while rejecting unwanted signals or interference outside of these bands. SINAD (Signal-to-Noise and Distortion Ratio) is a measure of the quality of a signal relative to noise and distortion. A higher SINAD ratio indicates better signal quality. The filtering necessary to prevent a 1 dB reduction in a 12 dB SINAD ratio due to the transmitter carrier and/or wideband noise is reduced dB-for-dB by the available antenna decoupling.

The importance of antenna decoupling is in reducing the need for filtering to maintain signal quality, thereby affecting various aspects of system design, including insertion loss, noise figure, and overall size and cost. If separation is Vertical Collinear Separation: this refers to the separation distance between two antennas when they are aligned vertically, one above the other, in a collinear configuration. In other words, the antennas are stacked one on top of the other along a vertical axis. Then the distance between the top of the lower antenna to the bottom of the upper antenna is measured along the vertical axis. This measurement is important for ensuring proper installation and spacing of antennas to optimize their performance and minimize interference. Additionally, this is an area that can improve the overall system's performance when implemented, merely by leveraging the already available tower space. This affects both the transmit (TX) side's insertion loss (loss of signal power through the filter) and the receive (RX) side's system noise figure (measure of the degradation of signal-to-noise ratio by the system), and have a direct impact on the size and cost for both the multicoupler and combiner.

INTERMODULATION (IM)

In the realm of communication system optimization, Intermodulation (IM) studies play a pivotal role in ensuring minimal interference and maximum signal clarity. These studies encompass several critical components, including IM hit prevention, vertical collinear separation, and deviation considerations.

IM hit prevention is paramount, necessitating the avoidance of IM hits within specified frequency ranges. The study is used in conjunction with our stringent guidelines to mitigate interference, such as ensuring no 3rd, 5th, or 7th order IM hits within designated frequency bands. Implementing vertical collinear separation between TX and RX antennas further diminishes the risk of IM hits, fostering an environment conducive to optimal signal transmission and reception. Additionally, adherence to deviation parameters is imperative to prevent IM hits up to the 19th order when duplexing transmit combiners and receive multicouplers to a common antenna. These measures collectively safeguard against signal degradation and ensure the seamless operation of your communication systems.

CONCLUSION

In the context of combiners and multicouplers, maintaining proper spacing between transmit (TX) and receive (RX) frequencies is essential. For combiners, when possible, a minimum TX-TX spacing of 200 kHz is recommended to minimize loss and achieve favorable output Voltage Standing Wave Ratio (VSWR). Additionally, all TX frequencies should be contained within a single, or group, of 2 MHz bandwidth, with tighter bandwidths yielding better performance. Similarly, multicouplers should maintain RX frequencies within a 2 MHz bandwidth, allowing for closer spacing if necessary.

Stop bandwidth, influenced by pass bandwidth and antenna decoupling, is critical for maintaining signal integrity. While more stop bandwidth and enhanced antenna decoupling are advantageous, a rule-of-thumb suggests maintaining a 1:1 ratio between the widest of the TX or RX pass bandwidth and the stop bandwidth. This ensures adequate rejection of unwanted signals while allowing desired signals to pass through effectively.

In conducting Intermodulation (IM) studies, it is imperative to prevent IM hits within specified frequency ranges to minimize interference. Separating TX and RX antennas with vertical collinear separation helps mitigate IM hits, as does maintaining proper spacing between frequencies. Furthermore, IM hits should be minimized across various orders, with specific thresholds to ensure optimal system performance.

Antenna decoupling techniques play a crucial role in optimizing the performance of communication systems. Decoupling mitigates interference and noise by minimizing coupling between antennas and external sources, thereby enhancing signal quality and reducing system degradation.

In summary, optimizing combining and multicoupling processes involves careful consideration of antenna decoupling, filter ratios, and IM studies. By implementing effective decoupling techniques, maintaining proper spacing between frequencies, and adhering to specified filter ratios, communication systems can achieve enhanced signal quality, reduced interference, and improved overall performance. All of these factors work in concert and effect the system's complexity, which have a direct impact on the size and cost of the solution.

APPLICATION

The RFP outlines in 4.3 Frequency Requirements – "4.3.1 Seller must analyze the VHF frequencies currently held by Lewis County for use with the system and provide information to the buyer. If new frequency coordination or additional frequencies are to be added, the seller shall propose a detailed list of necessary additional resources required. The buyer will be responsible for all FCC licensing, frequency coordination, and all associated costs, although seller may propose to provide licensing services as an option. Seller must perform sufficient frequency research to determine if there is a high probability of being able to obtain all frequency resources required by their proposed system design. Seller is responsible to develop, gain approval from Buyer;s project manager, and implement a plan to transition from existing system to the proposed replacement system."

4.3.1 Established the foundation for the potential frequency pool that could be used in the antenna system and the starting point for the combiner/ multicoupler design. The amount of introduced variables originating from 4.3.1's brief statement are not easily seen and need to be outlined so that the final offered solution can be understood.

1. "Seller must analyze the VHF frequencies currently held by Lewis County for use with the system and provide information to the buyer."

    - Attachment_B-_Televate_Engineering_Report pg.15-16, Table 3: Lewis County Licensed Frequencies

        i. Contains sixteen (16) channels, the HEAR 154.3400 was not considered part of the pool.

        ii. Each frequency was also placed in the context of the current assigned user group's service type and their region of operation, FCC Location. The reuse of any specific user group's frequencies is based on the intent of that group's participation in the new purposed VHF Analog Simulcast System and would need to be understood in terms of the scale of the users impacted and its influence on future system cutover planning.

            1. With the limited input from the Televate report and RFP the use of existing assigned VHF channels was kept to a minimum.

2. "If new frequency coordination or additional frequencies are to be added, the seller shall propose a detailed list of necessary additional resources required."

    - Starting point was from, Attachment_B-_Televate_Engineering_Report pg.35-36, Table 8: Potential New Frequencies

        i. Contains fifteen (15) frequencies.

        ii. DWS internal FCC Coordination

            1. Five (5) channels were identified as licensed by Lewis County under Call Sign WRWD911.

            2. All fifteen (15) 'Station Class' potentials from the FCC were identified, allowing the identification of the frequency's availability to be a TX or RX.

3. ""Seller must perform sufficient frequency research to determine if there is a high probability of being able to obtain all frequency resources required by their proposed system design."

    - The final system is made up of 'channels'. From the FCC license perspective, each 'channel' is composed of two 'Frequency', the site 'Location', the 'Station Class' (MO,

FB2, etc.), 'Emission Designator', and critical to the system's coverage potential is 'Maximum ERP' (effective radiated power), the total power in watts that a radio transmitter emits in a specific direction.

Once all of the factors mentioned in points 1-3 have been identified, they are required to be placed in the context of "4.3.3 Seller shall coordinate and engineer the system to create a 7-channel system to include: (2) Law Channel, (2) Fire Channel, (1) Fire Page-only channel, (1) Public Works Channel, and (1) Ops Channel." Before the site-specific channel list can be determined, the coverage design must be performed, taking into account the positive and negative impacts of the signals from each site in a simulcast cell as they interact with each other. The coverage design's data outputs the channel list per site, and from these studies, the data is then incorporated into the context of frequencies for the Combiner, Multicoupler, Antenna Decoupling, and IM standards to determine the final offered antenna systems.

RESULTS

From the coverage design we have four (4) distinct channel combinations, across eleven (11) sites.

1. One (1) channel combination w/ five (5) channels for the East Cells at five (5) sites,

Cell	Site	Channels
East	Hopkins	Fire East, Law East, Public Works, Ops, Page (Tx only)
	Mineral Hill	Fire East, Law East, Public Works, Ops, Page (Tx only)
	Dog	Fire East, Law East, Public Works, Ops, Page (Tx only)
	Randle	Fire East, Law East, Public Works, Ops, Page (Tx only)
	Packwood	Fire East, Law East, Public Works, Ops, Page (Tx only)

2. One (1) channel combination w/ five (5) channels for the West Cells at one (1) site,

Cell	Site	Channels
West	Manners	Fire West, Law West, Public Works, Ops, Page (Tx only)

3. One (1) channel combination w/ two (2) channels for the West Cells at three (3) sites

Cell	Site	Channels
West	Meridian Mine	Fire West, Law West
	Bawfaw	Fire West, Law West
	Toledo	Fire West, Law West

4. One (1) channel combination w/ three (3) channels for the Countywide Cell at two (2) sites.

Cell	Site	Channels
Countywide	Cooks	Public Works, Ops, Page (Tx only)
	Crego	Public Works, Ops, Page (Tx only)

Now that we have channel combinations for each of the sites, ever frequency is now grouped together and pressed into an Intermodulation (IM) study. At this point we now have the basis for our antenna system design. Even at this level of detail our design still has options that allow for flexibility on the final deployment strategy in the event of a FCC denied frequency allocations, a detailed design review (DDR) frequency rejection, or a site's space restriction. An example of this flexibility is in the sites with the five (5) channels for the East Cells:

- Option A – This option requires the participation of many of the current user groups making their associated frequencies available for reuse in the new system. With the limited input on the current user group abandoning their standalone system and moving into the new VHF Analog Simulcast on from the Televate report and RFP narrative, and a resulting high cost, loss and physical size, the use of existing channels was kept to a minimum. The availability and reuse of any specific user group's frequencies would need to be better defined. With the participation of a large number of the users to include RFA City, RFA County etc. the need for additional frequency coordination was reduced to four (4) additional, two (2) TX, and two (2) RX channels to be secured from the optional list.
    - 4.3.3. The requirement for a '7-channel system to include: (2) Law Channels, (2) Fire Channels, (1) Fire Page-only channel, (1) Public Works Channel, and (1) Ops Channel' necessitates seven (7) transmit (TX) and six (6) receiver (RX) frequencies. An intermodulation (IM) study was conducted on all licensed channels in Lewis County, resulting in the elimination of many frequencies from the available list due to harmonic hits. In order to establish a baseline assuming that all frequencies are available, a system was designed using frequencies from the reduced list after the IM study, incorporating channels such as RFA City, RFA County, Page, Jail, City Police, Public Works, LCSO and a collection of TAC channels. However, the combiner/multicoupler configuration derived from the resulting TX/RX frequencies led to an equipment list with numerous filter impacts, high parts cost, and large physical size. Additionally, this approach affected a large number of user groups, resulting in an extremely complex cutover process.
    - While this would require the least amount of FCC coordination, it is also one of the most complex and costly options. The project faces a significant number of unknowns regarding the availability of frequencies connected to any participating user group. This results in an undefined range of frequency licensing hurdles contained within the current Lewis County channels, with the potential for frequency list reallocation to fit the new system's site design. Along with the cutover complexities, this option remains viable but presents challenges. It does provide the Buyer with a higher antenna system cost, but it does not align well with the Buyer's desire for the solution to have a high probability of implementation as designed. Consequently, this option has not been offered for sale.
- Option B – This option takes the DWS coordinator identified frequency list- both Lewis County's licensed and potential, and from this list provides a solution that takes into account the IM hits

up to the 19th order which allows for one of the major filter impacting TX frequencies to be moved into a duplexing transmit combiner that is placed into the receive multicoupler circuit that uses a common antenna.

  - This configuration was identified using the guidance in 4.3.3. The requirement for a '7-channel system to include: (2) Law Channels, (2) Fire Channels, (1) Fire Page-only channel, (1) Public Works Channel, and (1) Ops Channel' necessitates seven (7) transmit (TX) and six (6) receiver (RX) frequencies. An intermodulation (IM) study was conducted on all licensed and potential channels in Lewis County, resulting in the elimination of many frequencies from the available list due to harmonic hits, while still offering another set of additional optional frequencies. In order to establish another baseline a system was designed using frequencies from the reduced list after the IM study, incorporating channels such as RFA City, RFA County, Page, Jail, City Police, Public Works, and a collection from the 'Optional List'. The combiner/multicoupler configuration derived from the resulting TX/RX frequencies led to an equipment list with better performance than from the limited Lewis County licensed list, with numerous filter improvements, reduced part costs, optional one (1) TX in RX multicoupler option and a reduction in physical size. Additionally, this approach reduced the number of affected user groups, resulting in a less extreme cutover process.

  - While this option does not have any detrimental design implementation effects, its approach does not adhere strictly to Section 4.13.1 – "Sites with multiple receivers must have a receiver multicoupling system. *** The receiver multicoupling system must not be included in the transmitter combiner system." While the technical request may not be intended to exclude this particular Option B solution type, it does contradict this request detail. Consequently, this has not been offered for sale.

- Option C – This option takes the DWS coordinator identified frequency list, both licensed and potential, and places a cross-mute condition between two of the channels reducing the filter complexity and cavity size, which reduces cost and takes the system from two (2) 19-inch racks (or one (1) 23-inch) down to one (1) 19-inch rack.

  - While this option has great impact on the physical size, along with a reduction in the overall cost, without clear guidance on channel priorities, the availability of channels that can have their receiver muted is unknown. Consequently, this has not been offered for sale.

- Option D - This option expands the use of frequencies identified by the DWS coordinator, reduces Lewis County's current licensed to Page, Public Works, and three (3) TAC and places them into the most efficient configuration available. This solution does require the largest FCC Coordination efforts but provides the best system performance characteristics, aids in the reduction of filter complexities, reduced insertion loss, increasing performance to meet the design standards outline above. This option reduces the unknowns regarding scale when

reorganizing user group(s) fleet and infrastructure. Consequently, it has the highest probability of being able to obtain all frequency resources.

- 4.3.3. The requirement for a '7-channel system to include: (2) Law Channels, (2) Fire Channels, (1) Fire Page-only channel, (1) Public Works Channel, and (1) Ops Channel' necessitates seven (7) transmit (TX) and six (6) receiver (RX) frequencies. An intermodulation (IM) study was conducted on all licensed and potential channels for the Lewis County area of service. The expanded list and its new frequency options were once again run through an IM study, resulting in the elimination of frequencies from being available due to harmonic hits, while still producing another group of frequency options. In order to establish another baseline this new list of frequencies requiring FCC coordination, and incorporating a few channels from Lewis County's licensed channels: Page's RX, and Public Works' TX. The combiner/multicoupler configuration derived from the resulting TX/RX frequencies led to an equipment list with excellent performance, minimum IM, with numerous filter improvements, additional reduction in part costs, and further reduction in physical size. Consequently, this has been offered for sale.

Line	Channel Name	RPTX	RPRX
1	Fire West	155.3925	159.0825
2	Law West	155.7150	159.3150
3	Fire East	155.1000	158.9250
4	Law East	155.4000	158.8875
5	Public Works	154.8600	159.0450
6	OPS	154.2875	158.9325
7	Page (TX only)	155.9325	

Pricing Impact Comparison (Hardware Only): Option D vs. Options A-C

- Option A
    - Cost: 65% markup over Option D
    - Advantages:
        - Simplified FCC licensing complexity
    - Disadvantages:
        - Extreme cutover complexity without positive design performance: Most significant among all options
- Option B
    - Cost: 20% markup over Option D
    - Advantages:
        - Improvement in insertion loss
        - Simplified filter complexity
    - Disadvantages:
        - Does not adhere to Section 4.13.1
- Option C
    - Cost: 15% markup over Option D
    - Advantages:
        - Improvement in insertion loss
    - Limitations:
        - Insufficient data provided for assessing high usage deployment potential

In conclusion, the evaluation of Options A through D for the antenna system design reveals a comprehensive approach to address the complexities and challenges inherent in frequency allocation and system configuration. While each option presents unique advantages and considerations, and while Option D emerges as the most viable solution, this illustrates our capacity to deliver a system that is efficiency in frequency utilization without compromising technical standards.

The intent of this detailed overview is to provide the Buyer with insight into the complexities of proper frequency guidance, particularly with reference to participating user groups and the unknown outstanding and eventual FCC awards. This process comprises information extrapolated from the RFP and the Televate Engineering report, along with our ability to offer a deployable solution amidst internal FCC coordination and necessary assumptions. However, several unknowns remain which will influence additional offering options including, but not limited to, FCC approval and which compromises the Buyer is willing to make in order to achieve their communication goals. Factors such as cost, form factor, antenna decoupling, antenna count, TX insertion loss, and recommendations for cross-muting receivers must all be known and considered in relation to the need for crystal filters, desense mitigation, and IMD mitigation, as they are interrelated. Choosing to optimize one parameter will inevitably affect others in some manner. Electrical performance takes precedence, with desense and IMD mitigation being non-negotiable system design parameters.

The pricing impact comparison underscores the importance of balancing cost-effectiveness with technical requirements, highlighting our commitment to delivering tailored solutions that meet both operational needs and budget constraints. With a focus on flexibility, innovation, and adherence to regulatory standards, our proposed antenna system design is poised to optimize performance and reliability in real-world deployment scenarios.

TRAINING

Day Wireless understands the need for Lewis County technicians to be properly trained in the maintenance of the proposed radio system. Correct training and maintenance ensures the system will perform per the needed specifications and a long service life. It is also understood that the subscriber users need to be trained on how best to use the system.

Our proposal includes two key training plans for the County Maintenance team. The first is a classroom training conducted by Motorola trainers. For convenience, this class will be held for up to 12 technicians and conducted at a location of Lewis County's choosing. This is an on-site training program for three (3) days.

MOTOROLA ON-SITE TRAINING-3 DAYS

Curriculum:	Course Modules:

	• Overview
	  ○ Conventional Site Overview
	• Installation
	  ○ GCP 8000 Conventional Site Controller Installation
	  ○ GTR 8000 Conventional Base Radio Installation
	  ○ Conventional Comparator Installation
	  ○ Conventional Site Reference Installation
	  ○ Conventional Network Transport Installation
	• Configuration
	  ○ Unified Network Configurator (UNC)
	  ○ MLC 8000 Configuration Tool
	  ○ Configuration Service Software (CSS)
	  ○ Software Download Manager (SWDL)
	• Diagnostics
	  ○ GCP 8000 Conventional Site Controller Diagnostics
	  ○ GTR 8000 Conventional Base Radio Diagnostics
	  ○ Conventional Comparator Diagnostics
	  ○ Conventional Network Transport Diagnostics

The second included training is a hands-on, two-day field class conducted by a Day Wireless System Technician. This approach will provide an opportunity for the Lewis County technicians to get on the radio sites and be guided by the Day Wireless System Technician on best practices for the maintenance of the radio system.

DAY WIRELESS HANDS-ON SYSTEM TRAINING- 2 DAYS

Curriculum:	Course Modules:

	• Overview
	  ○ System Topology Overview
	• Site Work
	  ○ Dispatch Configuration and Integration to the System
	  ○ GTR Alignment
	  ○ System Timing and GCP Software
	  ○ Site Diagnostics and Troubleshooting
	  ○ Simulcast System Preventive Maintenance
	  ○ Antenna System
	  ○ Power System

USER TRAINING

Day Wireless proposes two types of subscriber trainings, one for the field users and the other for the dispatchers. The field users training will be offered in three different formats – Fire, Police, and Public Works. The dispatch training will be conducted specific to the dispatch users.

First, a “train the trainer” course for subscriber users will educate the field users on the system topology and how the system operates. This will help the users take full advantage of the new radio system.

SUBSCRIBER TRAINING- 3-4 HOURS (UP TO 30 LEARNERS)

Curriculum:	Course Modules:

	• Overview
	  ○ System Topology
	  ○ Simulcast Explanation
	  ○
	• Operation
	  ○ Push to Talk – Release to Listen – Radio Basics
	  ○ Subscriber Radio Channel Configuration
	  ○ Coverage and Roaming
	  ○ Basic User Troubleshooting

Second, a dispatcher training will educate the dispatcher on system topology, features, channel patching, console topology, and best practices.

DISPATCHER TRAINING- 4 HOURS (UP TO 10 LEARNERS)

Curriculum:	Course Modules: • Overview ○ System Topology ○ Simulcast Explained ○ Coverage Overview by Channel ○ Console Operation ○ Screen Set Up and Resources ○ Patching ○ Best Practices

EQUIPMENT LIST

The proposed solution is based around the following equipment:

Qty	Part Number	Description
		BAWFAW BOISTFORT PEAK
		LAW/ FIRE WEST COMPARATOR
1	T8341	GRV 8000 COMPARATOR
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
2	CA03084AA	ADD: COMPARATOR
2	CA01949AC	ADD: ANALOG CONV ONLY SW
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
1	CA01400AA	ADD: POWER CABLE, DC
1	SQM01SUM0333	MCG 8000 CONVENTIONAL GATEWAY
1	CA03715AA	ADD: DC POWER
3	CA03718AA	ADD: ANALOG 4WIRE INTERFACE
3	CA03720AA	ADD: ANALOG IP INTERFACE
1	DLN8038	FRU: MCG 8000 DC POWER MODULE
1	DLN8039	FRU: MCG 8000 HD ENH CONV GATEWAY MODULE
2	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS
1	9902095	1U 3-UNIT RACK MOUNT
2	9902096	1U RACK MOUNT BEZEL
		LAW WEST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
01	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE

FIRE WEST GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
POWER DISTRIBUTION		
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
GPS SYNCH		
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
RACK LAN SWITCH		
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE

TX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
RX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
RF DISTRIBUTION		
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
2	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
10	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
2	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
2	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
10	LMR-240	LMR-240 FLE CABLE
2	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS

12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
2	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
28	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male

48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
COOKS HILL		
PUBLIC WORKS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
OPS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL

1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE PAGE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR

RACK LAN SWITCH		
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
TX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
RX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
RF DISTRIBUTION		
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
3	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
15	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
3	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
3	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
15	LMR-240	LMR-240 FLE CABLE
3	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS

2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
3	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
36	LMR-240	LMR-240 Flex Cable
6	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
4	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F

2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
36	LMR-400	3/8"" LMR400 Coaxial Cable
6	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black

EQUIP CREGO HILL		
PUBLIC WORKS/ OPS COMPARATOR		
1	T8341	GRV 8000 COMPARATOR
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
2	CA03084AA	ADD: COMPARATOR
2	CA01949AC	ADD: ANALOG CONV ONLY SW
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
1	CA01400AA	ADD: POWER CABLE, DC
1	CA00975AA	ADD: BATTERY TEMP SENSOR EXTENSION CABLE
1	SQM01SUM0333	MCG 8000 CONVENTIONAL GATEWAY
1	CA03715AA	ADD: DC POWER
3	CA03718AA	ADD: ANALOG 4WIRE INTERFACE
3	CA03720AA	ADD: ANALOG IP INTERFACE
1	DLN8038	FRU: MCG 8000 DC POWER MODULE
1	DLN8039	FRU: MCG 8000 HD ENH CONV GATEWAY MODULE
2	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS
1	9902095	1U 3-UNIT RACK MOUNT
2	9902096	1U RACK MOUNT BEZEL
FIRE PAGE SYNC		
1	T8341	GRV 8000 COMPARATOR
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	CA03084AA	ADD: COMPARATOR
1	CA01949AC	ADD: ANALOG CONV ONLY SW
1	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
1	CA01400AA	ADD: POWER CABLE, DC
PUBLIC WORKS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)

1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		OPS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE PAGE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3

1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
		RACK LAN SWITCH
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
		TX ANTENNA
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
		RX ANTENNA
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
		RF DISTRIBUTION

1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
3	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
15	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
3	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
3	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
15	LMR-240	LMR-240 FLE CABLE
3	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
RACK & INTERCONNECT		
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel

4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
28	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold

2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
		DOG MOUNTAIN
		LAW EAST VOTING/ FIRE EAST VOTING
1	T8341	GRV 8000 COMPARATOR
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
2	CA03084AA	ADD: COMPARATOR
2	CA01949AC	ADD: ANALOG CONV ONLY SW
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
1	CA01400AA	ADD: POWER CABLE, DC
1	CA00975AA	ADD: BATTERY TEMP SENSOR EXTENSION CABLE
		CONSOLE INTERFACE
1	SQM01SUM0333	MCG 8000 CONVENTIONAL GATEWAY
1	CA03715AA	ADD: DC POWER
3	CA03718AA	ADD: ANALOG 4WIRE INTERFACE
3	CA03720AA	ADD: ANALOG IP INTERFACE
1	DLN8038	FRU: MCG 8000 DC POWER MODULE
1	DLN8039	FRU: MCG 8000 HD ENH CONV GATEWAY MODULE
2	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS
1	9902095	1U 3-UNIT RACK MOUNT
2	9902096	1U RACK MOUNT BEZEL
		LAW EAST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE EAST GTR
1	T7039	GTR 8000 BASE RADIO

1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
PUBLIC WORKS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
OPS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
FIRE PAGE GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL

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1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
		RACK LAN SWITCH
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
		TX ANTENNA
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F

1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
RX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
RF DISTRIBUTION		
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
25	LMR-240	LMR-240 FLE CABLE
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
RACK & INTERCONNECT		

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8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
28	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized

2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
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2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
	HOPKINS	
	LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
	FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC

1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
PUBLIC WORKS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
OPS GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
FIRE PAGE GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
POWER DISTRIBUTION		

1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
GPS SYNCH		
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
RACK LAN SWITCH		
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE

TX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
RX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
RF DISTRIBUTION		
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
25	LMR-240	LMR-240 FLE CABLE
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS

12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male

48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
MANNERS		
LAW WEST GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
FIRE WEST GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL

1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		PUBLIC WORKS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		OPS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE PAGE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC

1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
		RACK LAN SWITCH
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
		TX ANTENNA
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
		RX ANTENNA

1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
RF DISTRIBUTION		
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
25	LMR-240	LMR-240 FLE CABLE
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
RACK & INTERCONNECT		
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket

4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw

4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
		MERIDIAN
		LAW WEST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE WEST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
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1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS

5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
GPS SYNCH		
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
RACK LAN SWITCH		
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
TX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
RX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF

1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
		RF DISTRIBUTION
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
2	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
10	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
2	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
2	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
10	LMR-240	LMR-240 FLE CABLE
2	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
2	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red

50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
24	LMR-240	LMR-240 Flex Cable
4	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
4	3190-6141	BNC Male Crimp for LMR-195
2	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
24	LMR-400	3/8"" LMR400 Coaxial Cable
4	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces

2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
	MINERAL	
	LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
	FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
	PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC

1	X153AW	ADD: RACK MOUNT HARDWARE
		OPS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE PAGE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD

2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
	RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
	TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE

	RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
	RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX

5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
25	LMR-240	LMR-240 FLE CABLE
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
RACK & INTERCONNECT		
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK

24	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
PACKWOOD		
LAW EAST GTR		
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL

1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE EAST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
0	TRN7343	SEVEN AND A HALF FOOT RACK
		PUBLIC WORKS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		OPS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE

1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE PAGE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
		RACK LAN SWITCH
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
		TX ANTENNA

1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
RX ANTENNA		
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
RF DISTRIBUTION		
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
25	LMR-240	LMR-240 FLE CABLE
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS

12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male

48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
		RANDLE FIRE
		LAW EAST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE EAST GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL

1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
0	TRN7343	SEVEN AND A HALF FOOT RACK
		PUBLIC WORKS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		OPS GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		FIRE PAGE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE

1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
1	T8343	GSERIES SOFTWARE LICENSING
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
		POWER DISTRIBUTION
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
		RACK LAN SWITCH
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
		TX ANTENNA
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN

1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
		RX ANTENNA
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
		RF DISTRIBUTION
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
25	LMR-240	LMR-240 FLE CABLE
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
5	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear

2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
48	LMR-240	LMR-240 Flex Cable
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
6	3190-6141	BNC Male Crimp for LMR-195
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
48	LMR-400	3/8"" LMR400 Coaxial Cable
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece

4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
	TOLEDO	
	LAW WEST GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
0	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
	FIRE WEST GTR	
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
0	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE

1	T8343	GSERIES SOFTWARE LICENSING
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV
0	TRN7343	SEVEN AND A HALF FOOT RACK
	POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
	GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
	RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
	TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE
	RX ANTENNA	

1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR ½
100	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM
15	LDF4RK-50A	LDF4RK-50A 1/2 IN
1	L4HM-D	L4TNM-PSA 1/2 IN NM
		RF DISTRIBUTION
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5
2	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE
10	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX
2	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE
2	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240
10	LMR-240	LMR-240 FLE CABLE
2	EZ-240-BM-X	EZ-240-BM-X BM LMR 240
2	PSA3	PSA3 MOUNTS
2	HG12	HOISTING GRIP
12	CXB12	1/2" BLOCKS
12	CH35	3/8" ALL THREAD
6	GK-C12	1/2" GROUND KIT
1	BA123	BOOT ASSEMBLY
2	14-582	SITE HARDWARE KIT – STANDARD
		RACK & INTERCONNECT
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear
2	10605-019	Rack Base Insulator Kit, 19 in. Rack
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket

4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket
70	56967901	#10 TelcoFlex Black
70	56968301	#10 TelcoFlex Red
25	56976001	#2 TelcoFlex Green
50	56975801	#2 TelcoFlex Red
50	56975901	#2 TelcoFlex Black
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK
24	LMR195	LMR-195 COAX CABLE
24	LMR-240	LMR-240 Flex Cable
4	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240
4	3190-6141	BNC Male Crimp for LMR-195
2	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F
2	DB8922	50 OHM Load BNC 1/4W
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male
24	LMR-400	3/8"" LMR400 Coaxial Cable
4	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw

4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W
2	10562-001	Universal Earthquake Bracing Kit
2	11440-001	Threaded Drop Rod 72 in. L, Gold
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black
		SYSTEM WIDE
		SPARE GTR
1	T7039	GTR 8000 BASE RADIO
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
1	X530BG	ADD: VHF (136-174 MHZ)
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE
1	CA01400AA	ADD: POWER CABLE, DC
1	X153AW	ADD: RACK MOUNT HARDWARE
		SPARE GPS SYNCH
1	2406-613	SECURESYNC MODEL 2406-613
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD
1	8230	GNSS OUTDOOR ANTENNA
1	8226	GPS ANTENNA SURGE PROTECTOR
		SPARE GRV
1	T8341	GRV 8000 COMPARATOR
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
2	CA03084AA	ADD: COMPARATOR
2	CA01949AC	ADD: ANALOG CONV ONLY SW

2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
1	CA01400AA	ADD: POWER CABLE, DC
1	CA00975AA	ADD: BATTERY TEMP SENSOR EXTENSION CABLE
		GTR POWER SUPPLY
2	DLN6781	FRU: POWER SUPPLY
		POWER DIST. SPARE
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS
5	ICT-CB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICT-CB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
2	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
1	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3
		RACK LAN SWITCH SPARE
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE
		MONITOR AND CONTROL
2	DELL-C2423HA	DELL 24 VIDEO CONFERENCING MONITOR C2423H - LED MONITOR - FULL HD (1080P) - 24"
2	329N2UT#ABA	HP DESKTOP COMPUTER Z2 MINI G5 WORKSTATION INTEL CORE I5-10500 8GB DDR4 256 GB PCIE SSD INTEL UHD GRAPHICS 630 WINDOWS 10 PRO 64-BIT
1	DDN1289A	MCN SERVER 8000 SW LICENSE FOR MOTOROLA IP COMPARATORS
1	DDN1288A	MCN GRV 8000, GCM 8000 OR MLC 8000 COMPARATOR SUPPORT – QUAD
		AUDIO INTERFACE
6	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS
2	9902095	1U 3-UNIT RACK MOUNT
6	9902096	1U RACK MOUNT BEZEL

WARRANTY

Following is the warranty policy for Day Wireless. No other warranty policy applies unless stated in writing and agreed to by Day Wireless and the End User. Warranty is for product and for services provided.

Day Wireless will provide a warranty of the system for 365 days.

WARRANTY COVERAGE

• Repair or replace without charge to Buyer, any equipment or part thereof, which fails in operation during normal use within 12 months after system acceptance. Repairs or replacement do not apply to failures caused by acts of God or extraordinary circumstances. beyond the control of Seller.

• Perform all maintenance, servicing, removal and replacement of defective parts, and adjustments and measurements to maintain the equipment supplied under this contract to the manufacturer's specifications and requirements of the FCC for a period of 1 year from the date of Buyer's acceptance of the system. These actions will be at no additional cost to Buyer for those services requested for malfunctions reported during a normal working day. A normal working day is Monday through Friday, 0800 to 1700 hours, holidays excepted.

• Provide Buyer with written documentation after each service call describing the service performed, the cause of the outage or repair, and post repair testing, programming, or other actions taken to verify proper operation. If Buyer's spares were used in the repair, the item number or model number and serial number of the spare used, and the defective unit.

• Will have a trained and competent technician to maintain the supplied equipment in a timely manner on 24-hour call at all times. Buyer must be given the phone numbers and addresses of the people to contact in an emergency. The designated technician on call must be located within a 60-minute normal driving range of Buyer's dispatch center.

• When a malfunction is reported and service is requested, the Day technician will be in contact with County technical staff within 30 minutes after Seller was notified by Buyer of request for service.

• Day will provide the names of the persons acting as the primary contact point for service, complaints, and general inquiries. Their names, addresses, and telephone numbers will begiven to Buyer. DWS will supply the escalation process and personnel in written form in the event the normal trouble alerting and service request process not work.

AFTER WARRANTY SERVICE OPTIONS

• Included in our proposal is optional pricing for additional services. These services can be purchased for normal business hours or optionally 24/7. The prices in these options are inclusive of all labor required to repair the radio system

TIMELINE AND MILESTONES

Final schedule will be prepared by the respective project managers upon award and final design. Some scheduling elements are not in control of Day Wireless, including but not limited to: facility access, FCC license, site or facility permits, equipment delivery, and bad weather. Please reference Appendix G for sample schedule.

SCHEDULE MANAGEMENT PLAN

The purpose of this plan is to create a schedule baseline derived from resource requirements and availability, task durations and dependencies:

- The schedule shall be presented in MS Office Project format, Gant charts.
- Changes to schedule can only be made by the Project Manager
- Schedule Variance shall be calculated using earned value techniques. Variance of +/-.2 in the Schedule Performance Index (SPI) will require corrective action.

The final schedule will be prepared by the respective project managers upon award and final design. Some scheduling elements are not in control of Day Wireless, including but not limited to facility access, FCC license, site or facility permits, equipment delivery, and bad weather.

EXCEPTIONS

Day Wireless Systems will not be responsible for the following items:

- Cost of diagnosing problems with existing equipment
- Cost of diagnosing problems with existing antenna systems
- Cost of diagnosing problems with existing connectivity
- Cost of diagnosing or eliminating interference. Note that unlicensed frequencies interference is fairly common and performance can't be predicted/guaranteed. Licensed paths interference is extremely rare and means someone is operating illegally since licensed paths are coordinated by FCC.
- Permits or inspections
- Structural upgrades or grounding upgrades
- Any AC electrical work
- Any necessary roof/facility penetrations

APPENDICES

Please see the attached appendices for required forms and third-party information.

- Appendix A: SAM Registration and Verification Search Results and Clearance
- Appendix B- BYRD Anti-Lobbying Certification
- Appendix C- Certifications Regarding Debarment, Suspension, and Other Responsibility Matters Form
- Appendix D- Recommended Test Equipment
- Appendix E- Manufacturer Letters
- Appendix F- Estimated Project Schedule
- Appendix G- System Diagrams and Predicted Coverage Maps
- Appendix H- Rack Elevation Diagram
- Appendix I- Method of Approach
- Equipment Brochures

APPENDIX A

DAY MANAGEMENT CORP.

Unique Entity ID	CAGE / NCAGE	Purpose of Registration
DLD3TZDSFMD5	**1MZJ7**	**All Awards**
Registration Status	Expiration Date	
Active Registration	**Mar 20, 2025**	
Physical Address	Mailing Address	
4700 SE International WAY **Milwaukie, Oregon 97222-4657** **United States**	**Dba Day Wireless Systems** **PO Box 22169** **Milwaukie, Oregon 97269-2169** **United States**	

Business Information

Doing Business as	Division Name	Division Number
DAY WIRELESS SYSTEMS	**Day Management Corp.**	**0301**
Congressional District	State / Country of Incorporation	URL
Oregon 05	**Oregon / United States**	**http://www.daywireless.com**

Registration Dates

Activation Date	Submission Date	Initial Registration Date
Mar 22, 2024	**Mar 20, 2024**	**Aug 7, 2001**

Entity Dates

Entity Start Date	Fiscal Year End Close Date
Jun 30, 1976	**Dec 31**

Immediate Owner

CAGE	Legal Business Name
(blank)	**(blank)**

Highest Level Owner

CAGE	Legal Business Name
(blank)	**(blank)**

Executive Compensation

In your business or organization's preceding completed fiscal year, did your business or organization (the legal entity to which this specific SAM record, represented by a Unique Entity ID, belongs) receive both of the following: 1. 80 percent or more of your annual gross revenues in U.S. federal contracts, subcontracts, loans, grants, subgrants, and/or cooperative agreements and 2. $25,000,000 or more in annual gross revenues from U.S. federal contracts, subcontracts, loans, grants, subgrants, and/or cooperative agreements?

No

Does the public have access to information about the compensation of the senior executives in your business or organization (the legal entity to which this specific SAM record, represented by a Unique Entity ID, belongs) through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986?

Not Selected

Proceedings Questions

Is your business or organization, as represented by the Unique Entity ID on this entity registration, responding to a Federal procurement opportunity that contains the provision at FAR 52.209-7, subject to the clause in FAR 52.209-9 in a current Federal contract, or applying for a Federal grant opportunity which contains the award term and condition described in 2 C.F.R. 200 Appendix XII?

No

Does your business or organization, as represented by the Unique Entity ID on this specific SAM record, have current active Federal contracts and/or grants with total value (including any exercised/unexercised options) greater than $10,000,000?

Not Selected

Within the last five years, had the business or organization (represented by the Unique Entity ID on this specific SAM record) and/or any of its principals, in connection with the award to or performance by the business or organization of a Federal contract or grant, been the subject of a Federal or State (1) criminal proceeding resulting in a conviction or other acknowledgment of fault; (2) civil proceeding resulting in a finding of fault with a monetary fine, penalty, reimbursement, restitution, and/or damages greater than $5,000, or other acknowledgment of fault; and/or (3) administrative proceeding resulting in a finding of fault with either a monetary fine or penalty greater than $5,000 or reimbursement, restitution, or damages greater than $100,000, or other

Exclusion Summary

Active Exclusions Records?

No

SAM Search Authorization

I authorize my entity's non-sensitive information to be displayed in SAM public search results:

Yes

Entity Types

Business Types

Entity Structure
Other

Entity Type
Business or Organization

Organization Factors
Subchapter S Corporation

Profit Structure
For Profit Organization

Socio-Economic Types

Check the registrant's Reps & Certs, if present, under FAR 52.212-3 or FAR 52.219-1 to determine if the entity is an SBA-certified HUBZone small business concern. Additional small business information may be found in the SBA's Dynamic Small Business Search if the entity completed the SBA supplemental pages during registration.

Financial Information

Accepts Credit Card Payments
Yes

Debt Subject To Offset
No

EFT Indicator
0000

CAGE Code
1MZJ7

Electronic Funds Transfer

Account Type
Checking

Routing Number
*******48**

Lock Box Number
(blank)

Financial Institution
WELLS FARGO BANK, NA

Account Number
*******86**

Automated Clearing House

Phone (U.S.)
5036591240

Email
dwsaccountsreceivable@daywireless.com

Phone (non-U.S.)
(blank)

Fax
5034064999

Remittance Address

DAY MANAGEMENT CORP.
Dba Day Wireless Systems
PO Box 22169
Milwaukie, Oregon 97269
United States

Taxpayer Information

EIN
*****1623**

Type of Tax
Applicable Federal Tax

Taxpayer Name
DAY MANAGEMENT CORP

Tax Year (Most Recent Tax Year)
2023

Name/Title of Individual Executing Consent
Accounting Manager

TIN Consent Date
Mar 20, 2024

Address
4700 SE International WAY
Milwaukie, Oregon 97222

Signature
ROWENA PAPASADERO

Points of Contact

Accounts Receivable POC

5036591240

Electronic Business

Rowena Papasadero, GL Manager
dwsaccounting@daywireless.com
5036591240

PO Box 22169
Milwaukie, Oregon 97269
United States

JEFF FAIRBANKS
jfairbanks@daywireless.com
5036591240

PO Box 22169
Milwaukie, Oregon 97269
United States

Government Business

KERM MCPHERSON, Vice President of Operations
KMCPHERSON@DAYWIRELESS.COM
5036591240

4700 SE International WAY
Milwaukie, Oregon 97222
United States

MIKE ISHIDA
MISHIDA@DAYWIRELESS.COM
5036591240

4700 SE International WAY
Milwaukie, Oregon 97222
United States

Service Classifications

NAICS Codes

Primary	NAICS Codes	NAICS Title
Yes	**811210**	**Electronic And Precision Equipment Repair And Maintenance**
	237130	**Power And Communication Line And Related Structures Construction**
	423690	**Other Electronic Parts And Equipment Merchant Wholesalers**
	531120	**Lessors Of Nonresidential Buildings (Except Miniwarehouses)**
	532210	**Consumer Electronics And Appliances Rental**
	811111	**General Automotive Repair**
	811198	**All Other Automotive Repair And Maintenance**

Product and Service Codes

PSC	PSC Name
5965	**Headsets, Handsets, Microphones And Speakers**
6220	**Electric Vehicular Lights And Fixtures**
L058	**Technical Representative- Communication, Detection, And Coherent Radiation Equipment**
R426	**Support- Professional: Communications**

Size Metrics

IGT Size Metrics

Annual Revenue (from all IGTs)
(blank)

Worldwide

Annual Receipts (in accordance with 13 CFR 121)
$99,888,675.00

Number of Employees (in accordance with 13 CFR 121)
486

Location

Annual Receipts (in accordance with 13 CFR 121)
(blank)

Number of Employees (in accordance with 13 CFR 121)
(blank)

Industry-Specific

Barrels Capacity

Megawatt Hours

Total Assets

Electronic Data Interchange (EDI) Information

This entity did not enter the EDI information

Disaster Response

This entity does not appear in the disaster response registry.

Section 11. BYRD Anti-Lobbying Certification

(To be submitted with each bid or offer exceeding $100,000)

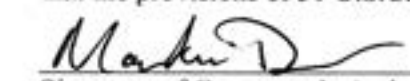
(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(c) The undersigned shall require that the language paragraph 1 and 2 of this anti-lobbying certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995).

The Contractor, Day Wireless Systems, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 et seq., apply to this certification and disclosure, if any.



Signature of Contractor's Authorized Official

Mackenzie Day - CEO

Printed Name and Title of Contractor's Authorized Official

2-26-2024

Date

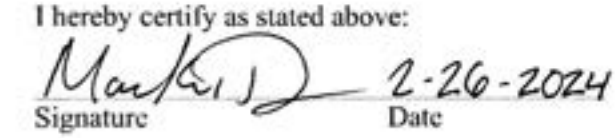
Section 11. Certifications Regarding Debarment, Suspension and other Responsibility Matters

The bidder, proposer, contractor, or subcontractor, as appropriate, certifies to the best of its knowledge and belief that neither it nor any of its officers, directors, or managers who will be working under the Contract, or persons or entities holding a greater than 10% equity interest in it (collectively "Principals"):

1. Are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal or state department or agency in the United States;
2. Have within a three-year period preceding this proposal, bid, or agreement been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state anti-trust or procurement statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are presently indicted for or otherwise criminally or civilly charged by a government entity, (federal, state or local) with commission of any of the offenses enumerated in paragraph 2 of this certification; and
4. Have within a three-year period preceding this application/proposal had one or more public transactions (federal, state or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or bid, or termination of the award or, in some instances, criminal prosecution.

I hereby certify as stated above:



2-26-2024

Signature Date

Mackenzie Day - CEO

Print Title and Name of authorized representative

I am unable to certify to one or more the above statements. Attached is my explanation.

Signature Date

Print Title and Name of authorized representative

APPENDIX D

Recommended Test Equipment

Test Equipment

	□□RREN□ RE□□MMENDED E□□IPMEN□ □X□□□ □ER□I□E M□NI□□R □ER□I□IED □E□□ □A□□E□ □E□E□ A□E □□D□AN□ENNA □□ EEP E□□IPMEN□ A□□□RAN□IN□ M□□□IME□ER NE□□ □R□ □A□□E □E□□ER □ IND□□ □ □AP□□P M□□□R□□A □□□□□ ARE APP□I□A□I□N□ M□□□R□□A □AP□□P □A□□E□ □AND□□□□□

APPENDIX E

Motorola Solutions, Inc.
500 W Monroe St
Chicago, IL 60661

April 19, 2024

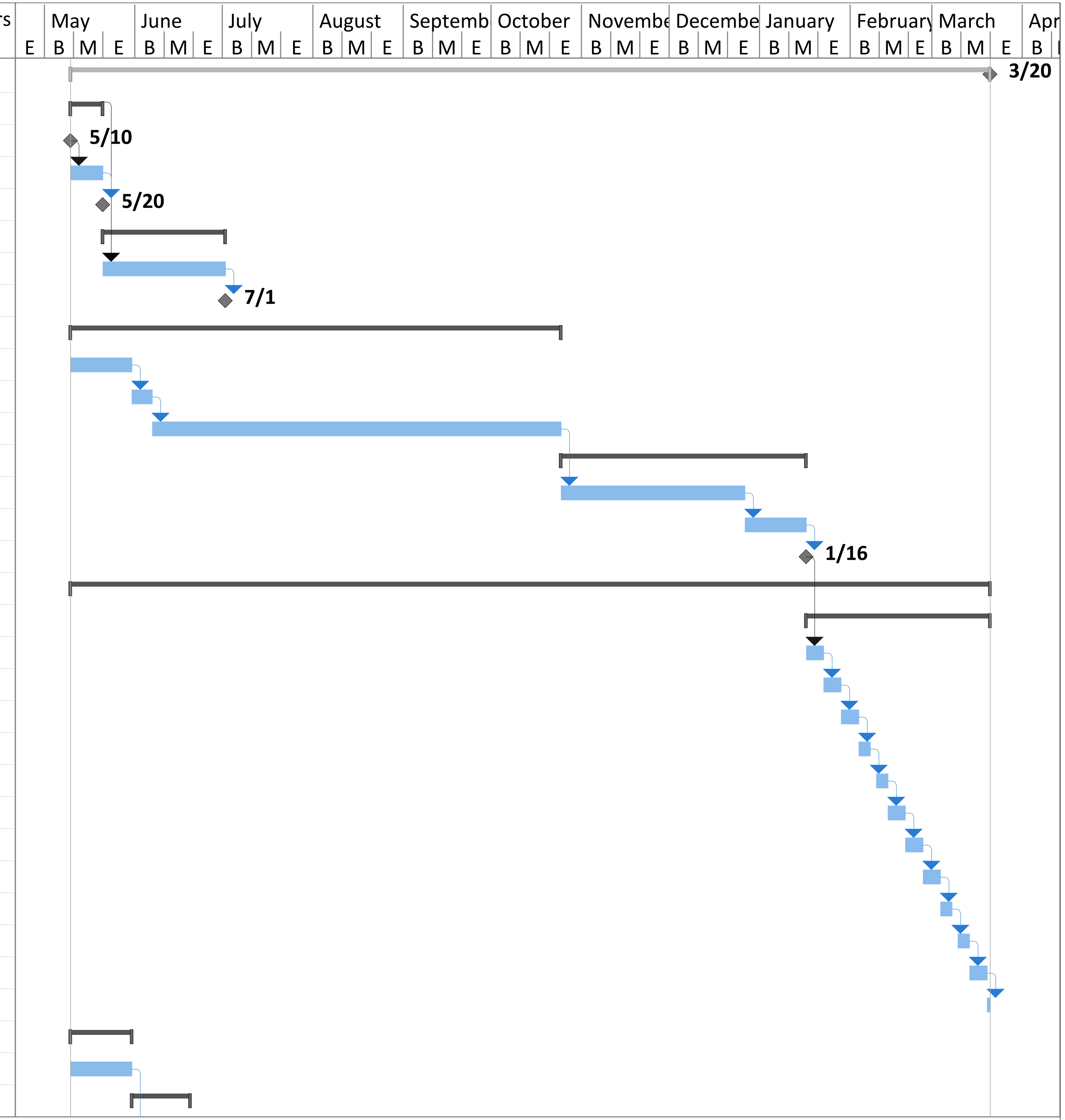
Motorola Solutions is the manufacturer of certain Land Mobile Radio Equipment that is part of a Day Wireless proposal submission to Lewis County RFP 2024-RFP-023. Motorola Solutions will use commercially reasonable efforts to provide replacement parts for Motorola manufactured fixed infrastructure equipment exclusive of third party IT equipment (e.g. servers, PCs) until 2034. Motorola reserves the right to supply either assemblies or piece parts.

Sincerely,

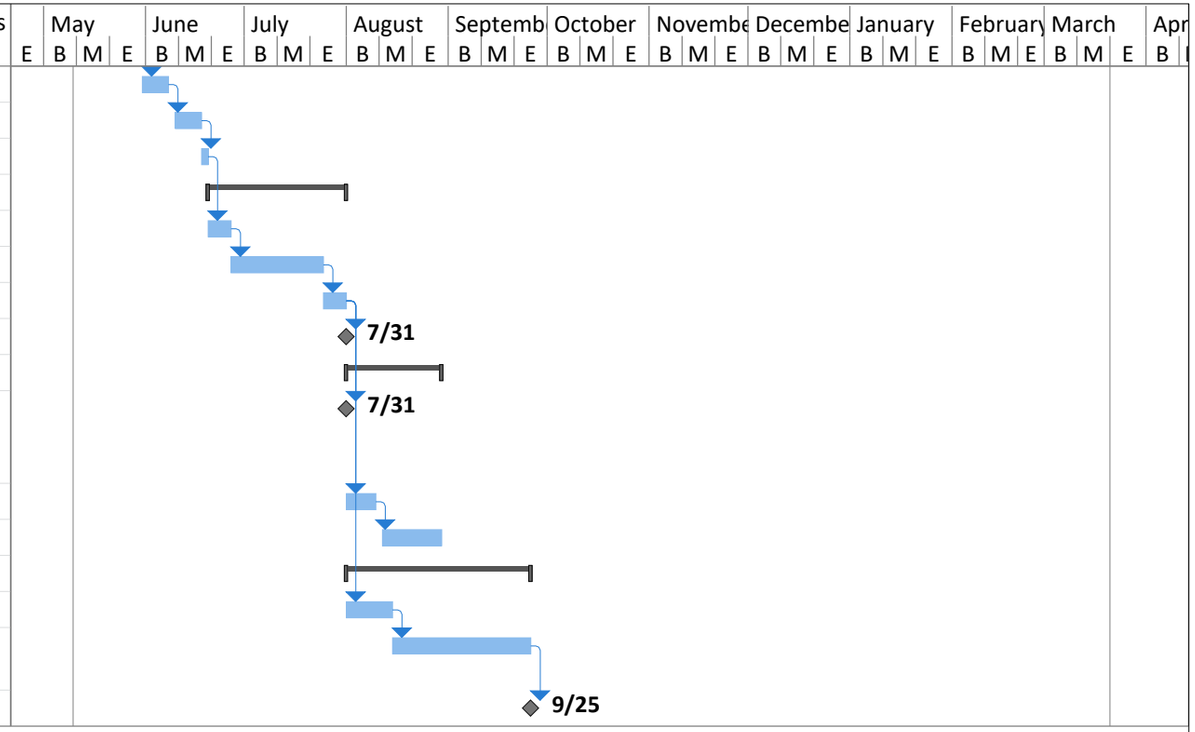
Andrew Chyterbok
Area Sales Manager Pacific Northwest
Motorola Solutions

APPENDIX

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
0	**0**	**Lewis County LMR Upgrade**	**225 days**	**Fri 5/10/24**	**Thu 3/20/25**	
1	**1**	**Contract**	**7 days**	**Fri 5/10/24**	**Mon 5/20/24**	
2	1.1	Contract Award	0 days	Fri 5/10/24	Fri 5/10/24	
3	1.2	Contract Administration	7 days	Fri 5/10/24	Mon 5/20/24	2
4	1.3	Project Kick Off	0 days	Mon 5/20/24	Mon 5/20/24	3
5	**2**	**Design Review**	**30 days**	**Tue 5/21/24**	**Mon 7/1/24**	
6	2.1	Review System Design	30 days	Tue 5/21/24	Mon 7/1/24	1
7	2.2	Design Approval	0 days	Mon 7/1/24	Mon 7/1/24	6
8	**3**	**Order Processing & Receiving**	**120 days**	**Fri 5/10/24**	**Thu 10/24/24**	
9	3.1	Process equipment list	15 days	Fri 5/10/24	Thu 5/30/24	
10	3.2	Order(s) Confirmed	5 days	Fri 5/31/24	Thu 6/6/24	9
11	3.3	Receive Equipment	100 days	Fri 6/7/24	Thu 10/24/24	10
12	**4**	**System Staging**	**60 days**	**Fri 10/25/24**	**Thu 1/16/25**	
13	4.1	Stage System	45 days	Fri 10/25/24	Thu 12/26/24	11
14	4.2	Field Stage TESTING	15 days	Fri 12/27/24	Thu 1/16/25	13
15	4.3	Authorization to proceed	0 days	Thu 1/16/25	Thu 1/16/25	14
16	**5**	**Implementation Services**	**225 days**	**Fri 5/10/24**	**Thu 3/20/25**	
17	**5.1**	**System Installation**	**45 days**	**Fri 1/17/25**	**Thu 3/20/25**	
18	5.1.1	Toledo	4 days	Fri 1/17/25	Wed 1/22/25	15
19	5.1.2	Randle Fire	4 days	Thu 1/23/25	Tue 1/28/25	18
20	5.1.3	Packwood	4 days	Wed 1/29/25	Mon 2/3/25	19
21	5.1.4	Mineral	4 days	Tue 2/4/25	Fri 2/7/25	20
22	5.1.5	Meridian	4 days	Mon 2/10/25	Thu 2/13/25	21
23	5.1.6	Manners	4 days	Fri 2/14/25	Wed 2/19/25	22
24	5.1.7	Hopkins	4 days	Thu 2/20/25	Tue 2/25/25	23
25	5.1.8	Dog Mountain	4 days	Wed 2/26/25	Mon 3/3/25	24
26	5.1.9	Crego Hill	4 days	Tue 3/4/25	Fri 3/7/25	25
27	5.1.10	Cooks Hill	4 days	Mon 3/10/25	Thu 3/13/25	26
28	5.1.11	Bawfaw Boistfort Peak	4 days	Fri 3/14/25	Wed 3/19/25	27
29	5.1.12	System Installation Wrap	1 day	Thu 3/20/25	Thu 3/20/25	28
30	**5.2**	**System Optimization**	**15 days**	**Fri 5/10/24**	**Thu 5/30/24**	
31	5.2.1	Optimize system FNE	15 days	Fri 5/10/24	Thu 5/30/24	
32	**5.3**	**Cut Over**	**14 days**	**Fri 5/31/24**	**Wed 6/19/24**	

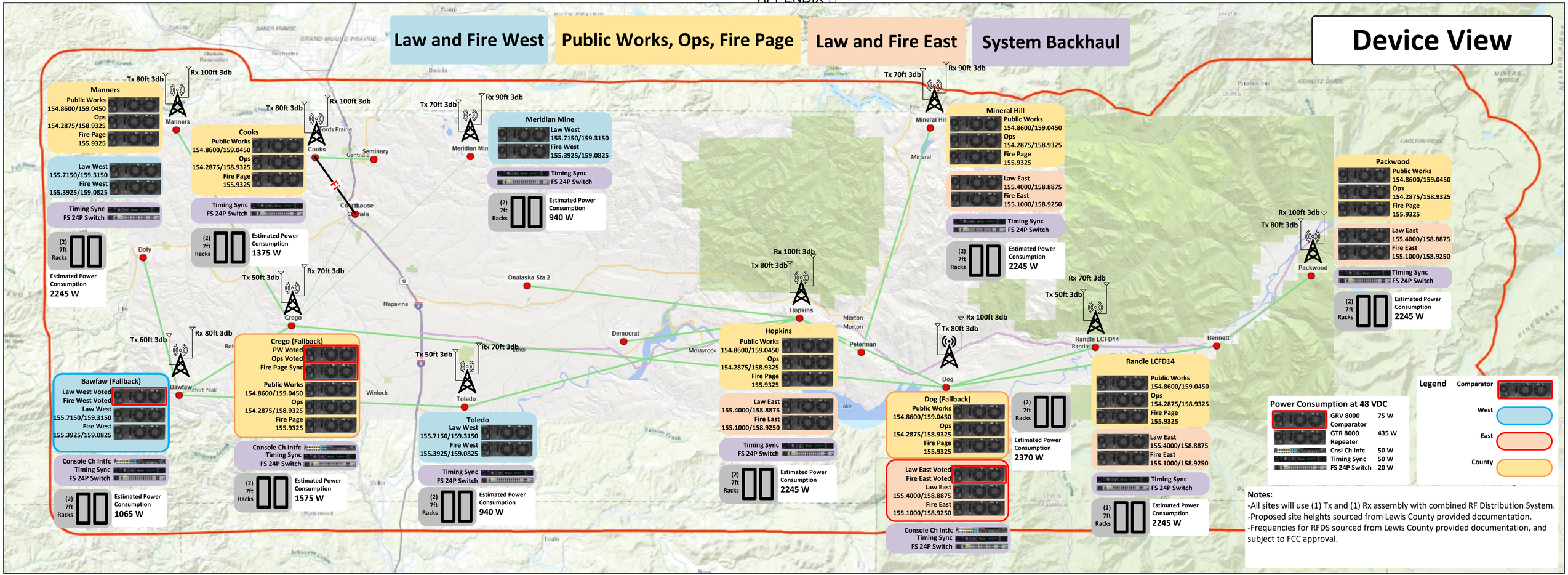


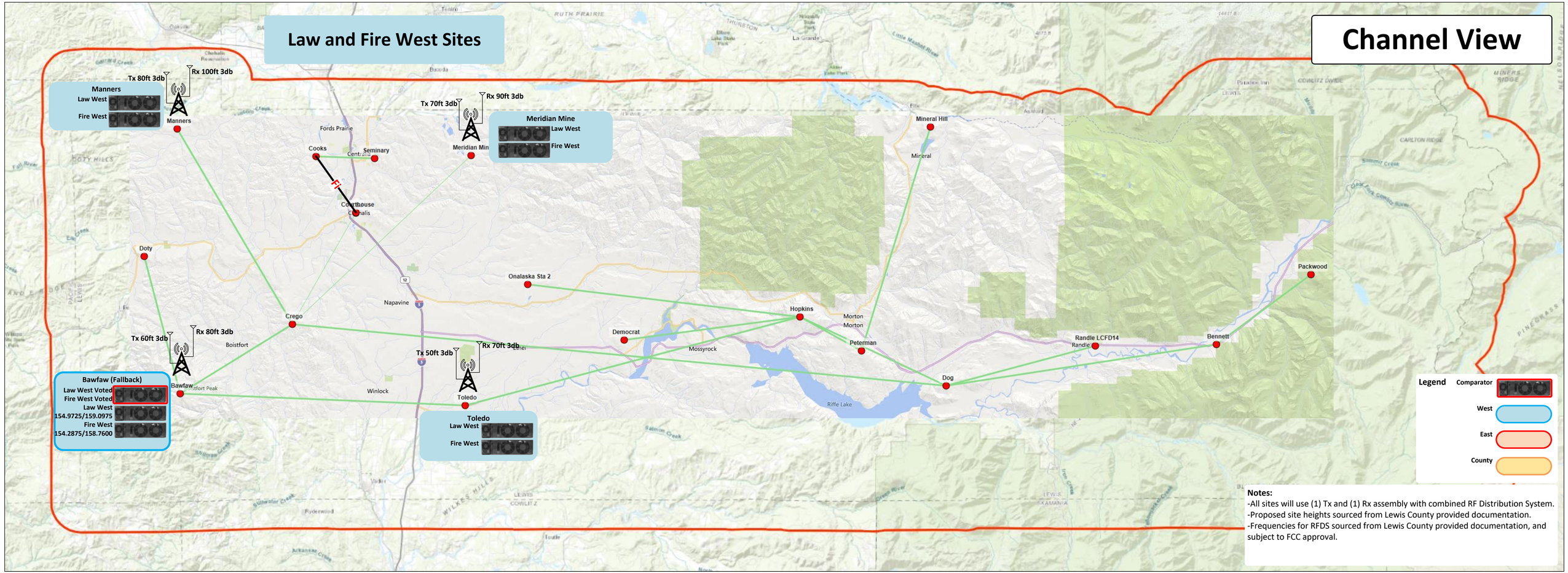
ID	WBS	Task Name	Duration	Start	Finish	Predecessors
33	5.3.1	Cut Over FNE	6 days	Fri 5/31/24	Fri 6/7/24	31
34	5.3.2	Cut Over Dispatch Back U	6 days	Mon 6/10/24	Mon 6/17/24	33
35	5.3.3	Cut Over Complete	2 days	Tue 6/18/24	Wed 6/19/24	34
36	**5.4**	**Acceptance Testing**	**30 days**	**Thu 6/20/24**	**Wed 7/31/24**	
37	5.4.1	Perform System Testing	5 days	Thu 6/20/24	Wed 6/26/24	35
38	5.4.2	Perform Coverage Testing	20 days	Thu 6/27/24	Wed 7/24/24	37
39	5.4.3	System Acceptance	5 days	Thu 7/25/24	Wed 7/31/24	38
40	5.4.4	Warranty Starts	0 days	Wed 7/31/24	Wed 7/31/24	39
41	**5.5**	**Training**	**21 days**	**Wed 7/31/24**	**Thu 8/29/24**	
42	5.5.1	Verify User Training and Technical Training at Project Kickoff	0 days	Wed 7/31/24	Wed 7/31/24	39
43	5.5.2	User Training	7 days	Thu 8/1/24	Fri 8/9/24	39
44	5.5.3	Technical Training	14 days	Mon 8/12/24	Thu 8/29/24	43
45	**5.6**	**Finalize**	**40 days**	**Thu 8/1/24**	**Wed 9/25/24**	
46	5.6.1	Punch list Resolution	10 days	Thu 8/1/24	Wed 8/14/24	39
47	5.6.2	Finalize Documentation/ As-Built	30 days	Thu 8/15/24	Wed 9/25/24	46
48	5.6.3	Final Acceptance	0 days	Wed 9/25/24	Wed 9/25/24	47

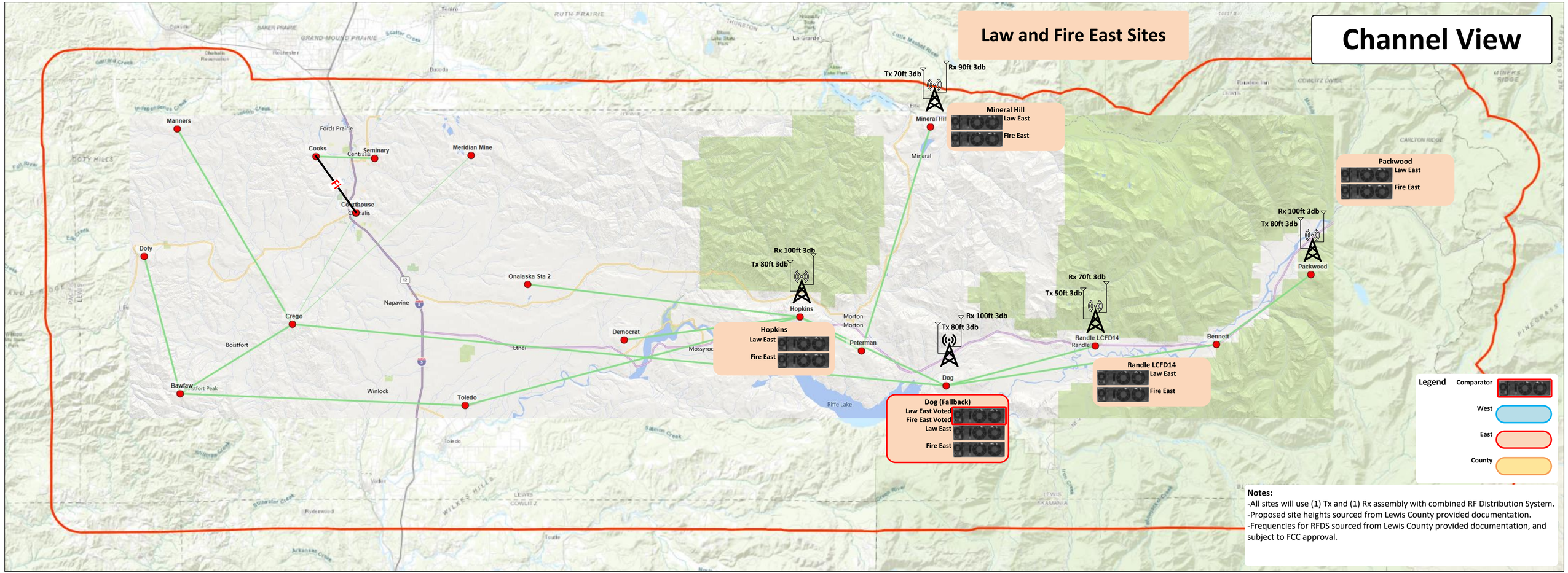


Device View

Law and Fire West | **Public Works, Ops, Fire Page** | **Law and Fire East** | **System Backhaul**




Law and Fire West Sites
Channel View
Manners
Law West
Fire West
Tx 80ft 3db
Rx 100ft 3db
Manners
Meridian Mine
Law West
Fire West
Tx 70ft 3db
Rx 90ft 3db
Meridian Min
Fords Prairie
Cooks
Seminary
Centralia
Courthouse
Doty
Napavine
Onalaska Sta 2
Crego
Boistfort
Democrat
Mossyrock
Hopkins
Morton
Morton
Peterman
Mineral Hill
Mineral
Dog
Riffe Lake
Randle LCFD14
Randle
Bennett
Packwood
Tx 60ft 3db
Rx 80ft 3db
Bawfaw
Bawfaw (Fallback)
Law West Voted
Fire West Voted
Law West
154.9725/159.0975
Fire West
154.2875/158.7600
Winlock
Tx 50ft 3db
Rx 70ft 3db
Toledo
Toledo
Law West
Fire West
Legend
Comparator
West
East
County
Notes:
-All sites will use (1) Tx and (1) Rx assembly with combined RF Distribution System.
-Proposed site heights sourced from Lewis County provided documentation.
-Frequencies for RFDS sourced from Lewis County provided documentation, and subject to FCC approval.


Law and Fire East Sites
Channel View
Tx 70ft 3db
Rx 90ft 3db
Mineral Hill
Law East
Fire East
Mineral Hill
Mineral
Packwood
Law East
Fire East
Rx 100ft 3db
Tx 80ft 3db
Packwood
Manners
Fords Prairie
Cooks
Seminary
Centralia
Meridian Mine
Courthouse
Centralia
Doty
Onalaska Sta 2
Rx 100ft 3db
Tx 80ft 3db
Hopkins
Hopkins
Law East
Fire East
Napavine
Crego
Democrat
Boistfort
Etnei
Mossyrock
Bawfaw
Winlock
Toledo
Morton
Morton
Peterman
Rx 100ft 3db
Tx 80ft 3db
Dog
Dog (Fallback)
Law East Voted
Fire East Voted
Law East
Fire East
Riffe Lake
Rx 70ft 3db
Tx 50ft 3db
Randle LCFD14
Randle
Randle LCFD14
Law East
Fire East
Bennett
Legend
Comparator
West
East
County
Notes:
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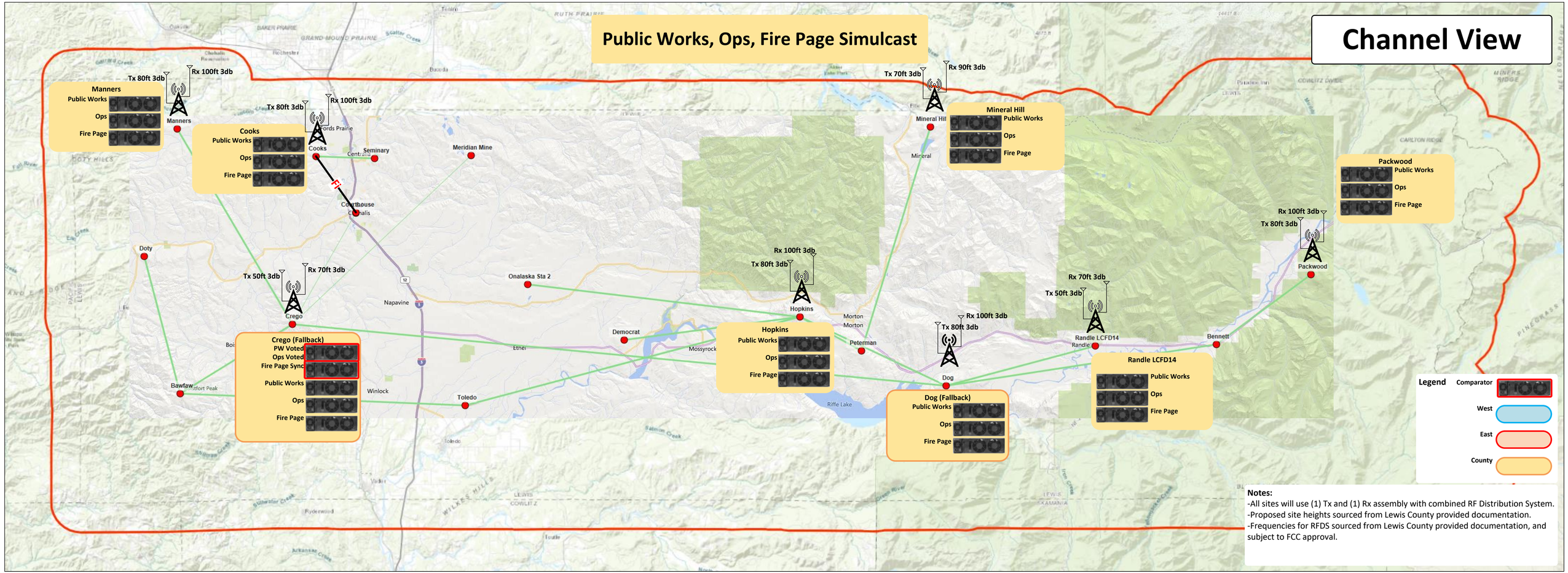
Public Works, Ops, Fire Page Simulcast
Channel View
Manners
Public Works
Ops
Fire Page
Tx 80ft 3db
Rx 100ft 3db
Manners
Cooks
Public Works
Ops
Fire Page
Tx 80ft 3db
Rx 100ft 3db
Cooks
Fords Prairie
Centralia
Seminary
Meridian Mine
Courthouse
Centralis
Doty
Crego
Tx 50ft 3db
Rx 70ft 3db
Crego (Fallback)
PW Voted
Ops Voted
Fire Page Sync
Public Works
Ops
Fire Page
Bawfaw
Winlock
Toledo
Napavine
Onalaska Sta 2
Democrat
Mossyrock
Ethel
Hopkins
Tx 80ft 3db
Rx 100ft 3db
Hopkins
Public Works
Ops
Fire Page
Morton
Peterman
Mineral Hill
Tx 70ft 3db
Rx 90ft 3db
Mineral Hill
Public Works
Ops
Fire Page
Mineral
Dog
Tx 80ft 3db
Rx 100ft 3db
Dog (Fallback)
Public Works
Ops
Fire Page
Riffe Lake
Randle
Tx 50ft 3db
Rx 70ft 3db
Randle LCFD14
Randle LCFD14
Public Works
Ops
Fire Page
Bennett
Packwood
Tx 80ft 3db
Rx 100ft 3db
Packwood
Public Works
Ops
Fire Page
Legend
Comparator
West
East
County
Notes:
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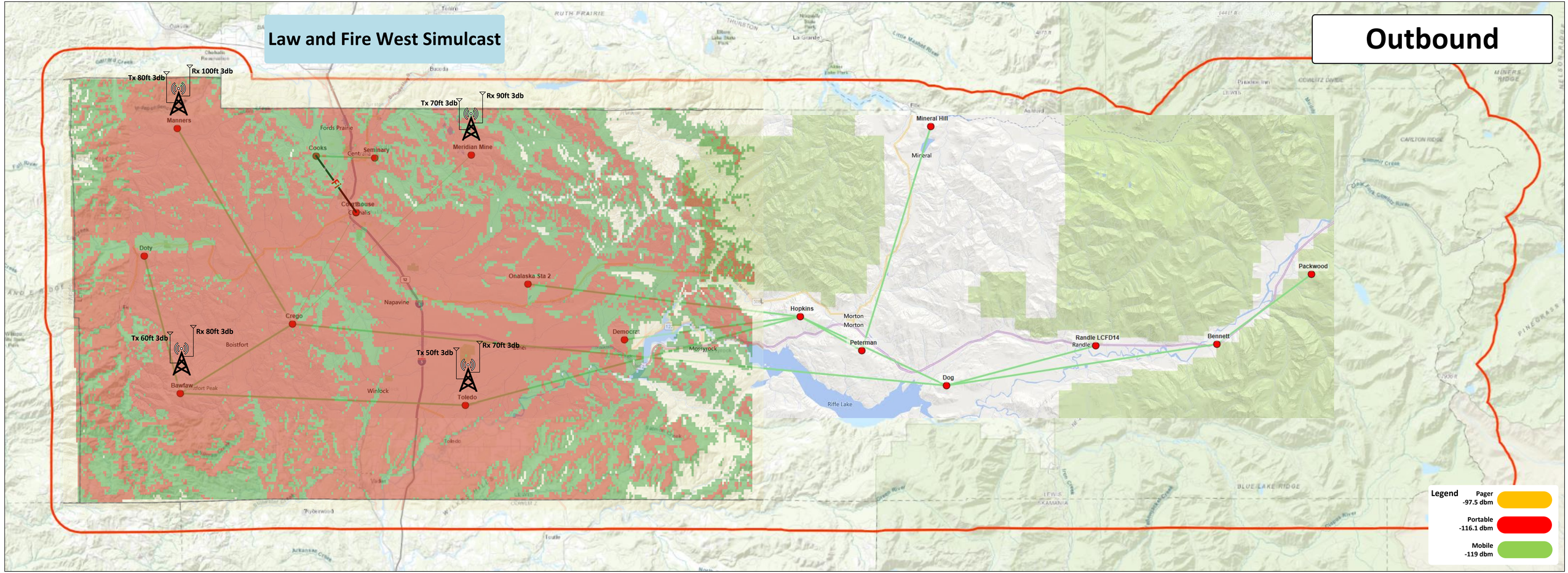
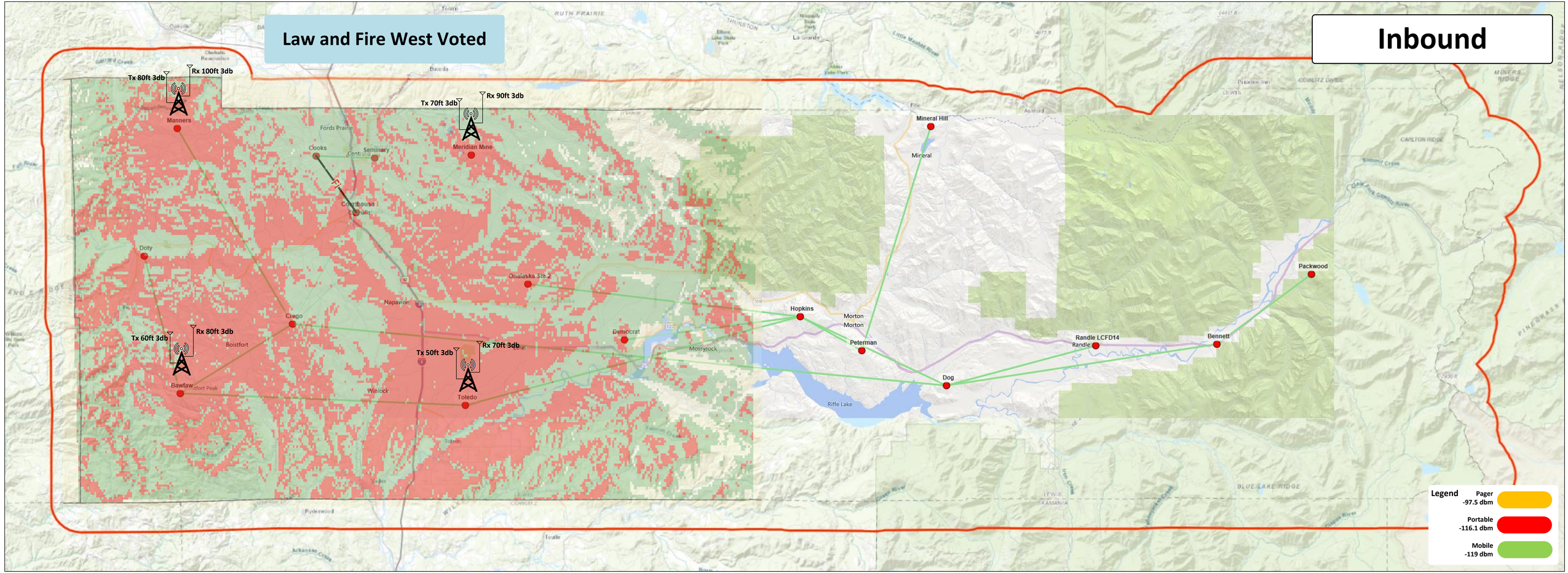
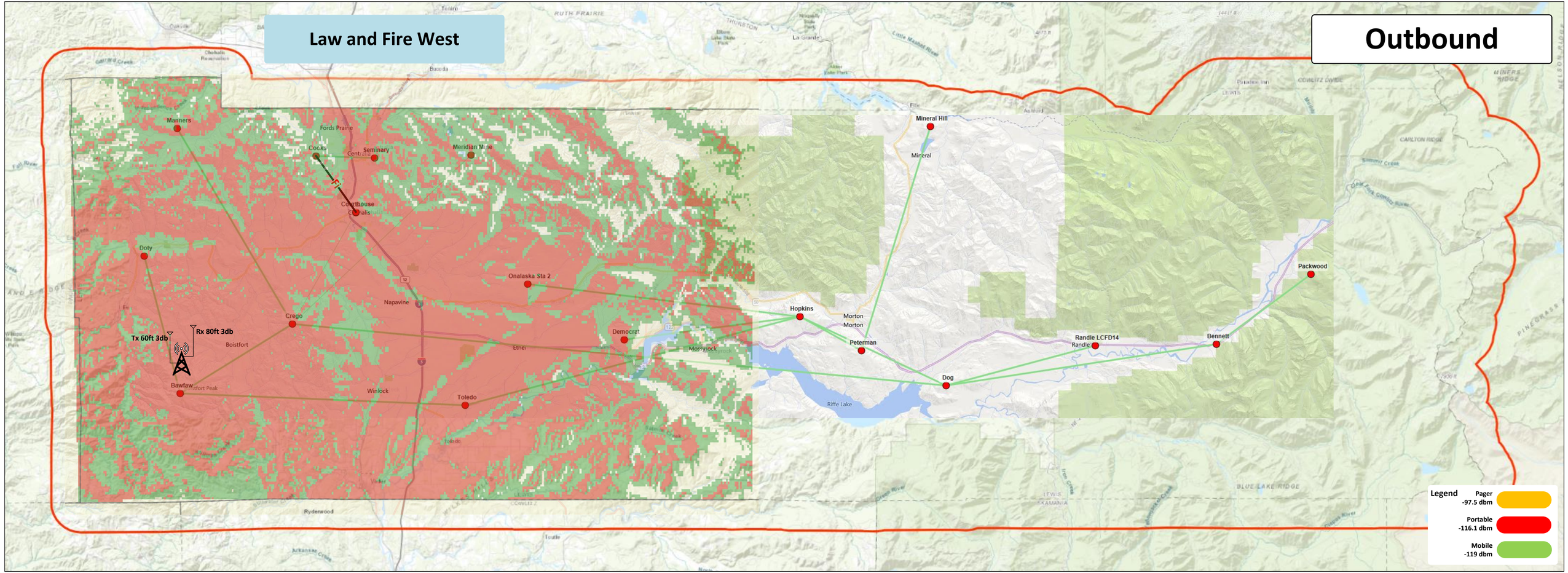
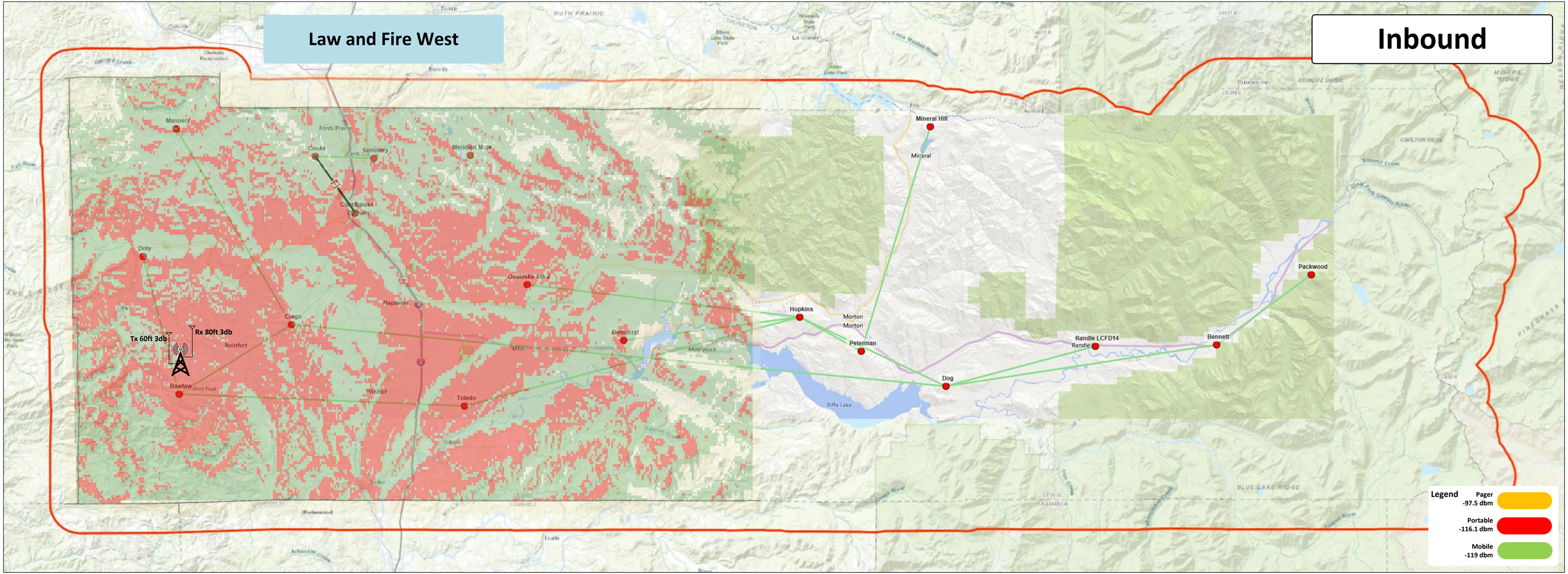

Law and Fire West Simulcast
Outbound
Tx 80ft 3db
Rx 100ft 3db
Manners
Tx 70ft 3db
Rx 90ft 3db
Meridian Mine
Fords Prairie
Cooks
Seminary
Centralia
Courthouse
Doty
Onalaska Sta 2
Napavine
Crego
Democrat
Tx 60ft 3db
Rx 80ft 3db
Boistfort
Bawfaw
Tx 50ft 3db
Rx 70ft 3db
Toledo
Winlock
Mineral Hill
Mineral
Hopkins
Morton
Morton
Peterman
Dog
Riffe Lake
Randle LCFD14
Randle
Bennett
Packwood
Legend
Pager
-97.5 dbm
Portable
-116.1 dbm
Mobile
-119 dbm


Law and Fire West Voted
Inbound
Tx 80ft 3db
Rx 100ft 3db
Manners
Tx 70ft 3db
Rx 90ft 3db
Meridian Mine
Cooks
Seminary
Fords Prairie
Courthouse
Centralia
Chehalis
Doty
Onalaska Sta 2
Napavine
Crego
Democrat
Mossyrock
Tx 60ft 3db
Rx 80ft 3db
Boistfort
Bawfaw
Tx 50ft 3db
Rx 70ft 3db
Winlock
Toledo
Mineral Hill
Mineral
Hopkins
Morton
Morton
Peterman
Randle LCFD14
Randle
Bennett
Packwood
Dog
Riffe Lake
Legend
Pager
-97.5 dbm
Portable
-116.1 dbm
Mobile
-119 dbm


Law and Fire West
Outbound
Manners
Fords Prairie
Cocks
Seminary
Centralia
Meridian Mine
Courthouse
Doty
Onalaska Sta 2
Napavine
Crego
Tx 60ft 3db
Rx 80ft 3db
Boistfort
Democrat
Morsylock
Etnei
Bawfaw
Winlock
Toledo
Rydenwood
Mineral Hill
Mineral
Hopkins
Morton
Morton
Peterman
Randle LCFD14
Randle
Bennett
Packwood
Dog
Riffe Lake
Legend
Pager
-97.5 dbm
Portable
-116.1 dbm
Mobile
-119 dbm

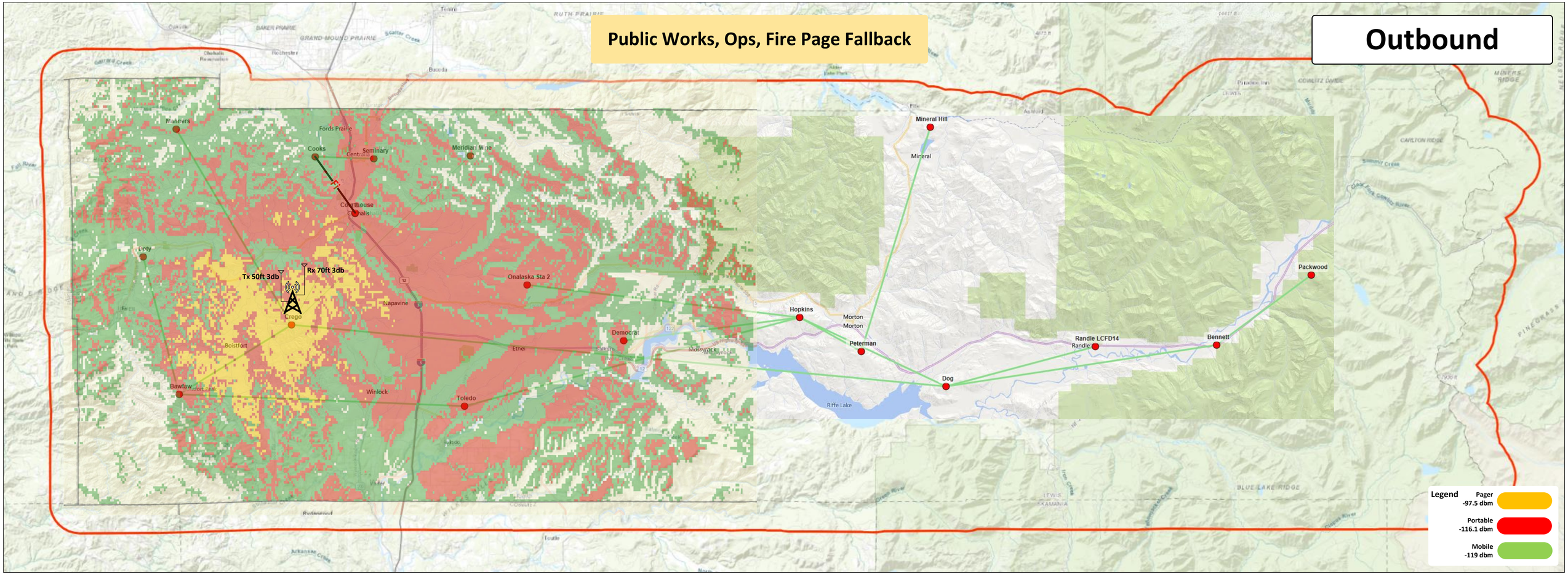
Law and Fire West

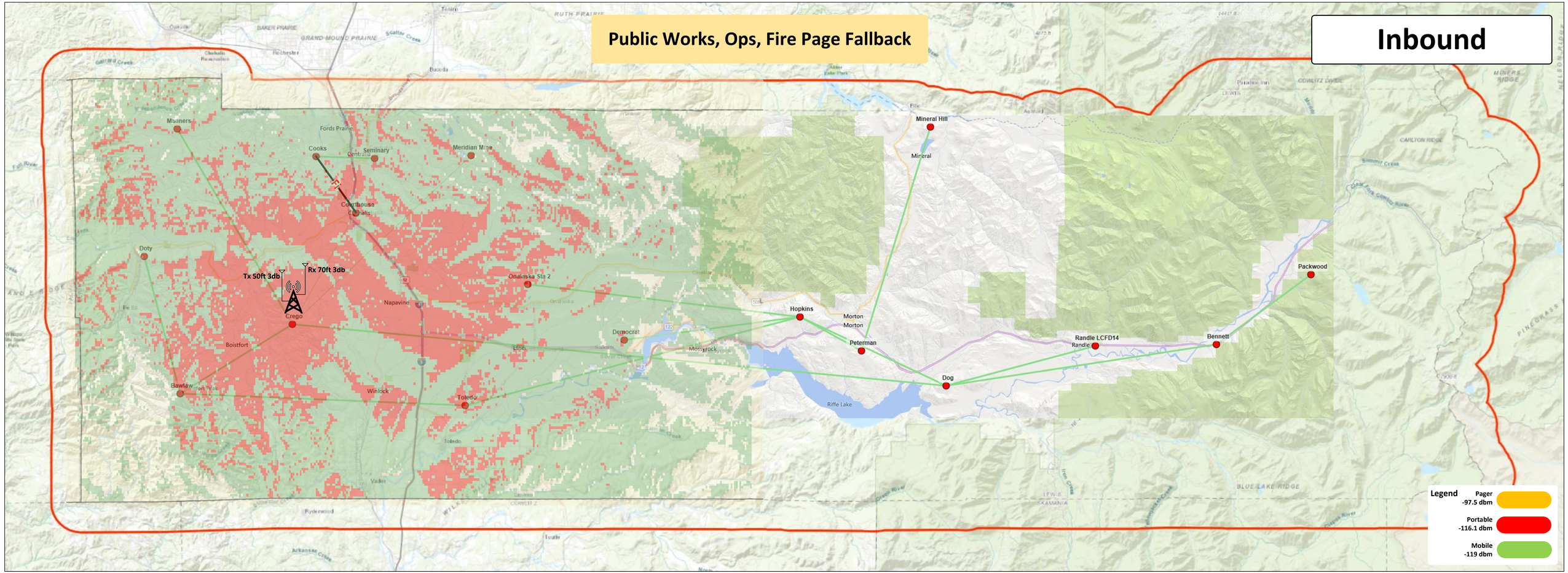
Inbound

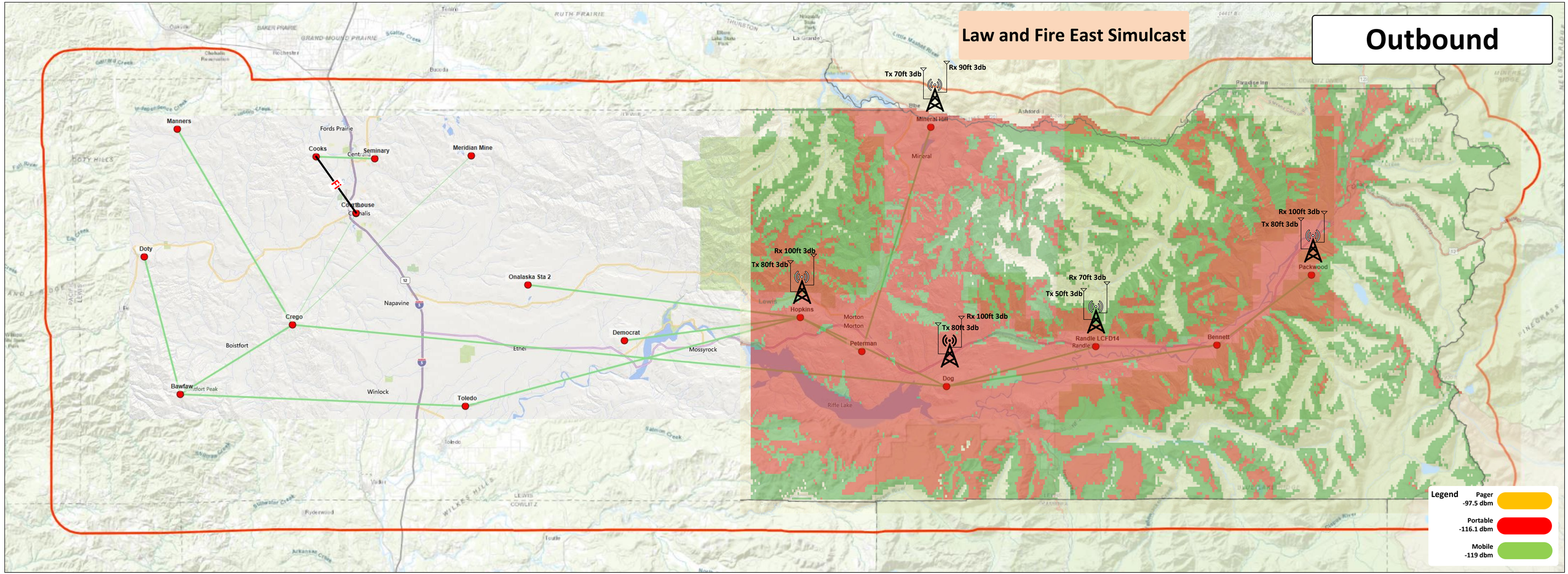


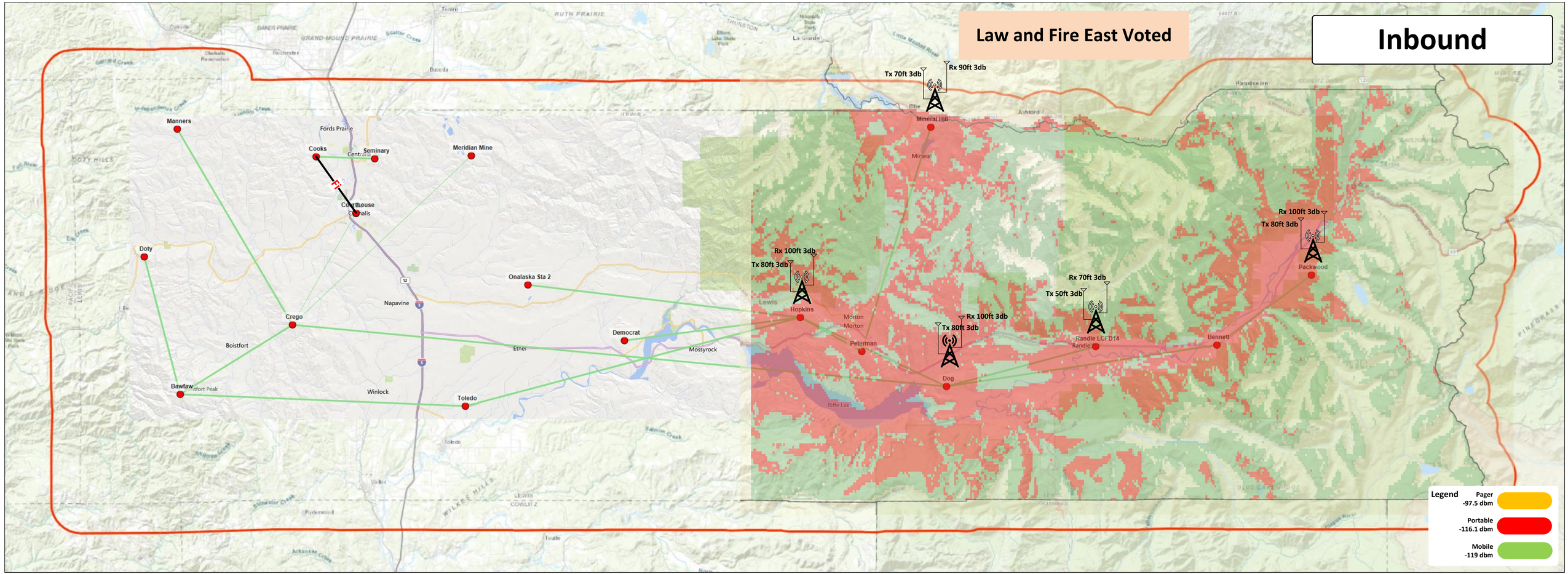
Public Works, Ops, Fire Page Fallback

Outbound




Public Works, Ops, Fire Page Fallback
Inbound
Manners
Fords Prairie
Cooks
Seminary
Centralia
Meridian Mine
Courthouse
Chehalis
Doty
Tx 50ft 3db
Rx 70ft 3db
Crego
Napavine
Boistfort
Bawlaw
Winlock
Toledo
Onalaska Sta 2
Democrat
Hopkins
Morton
Morton
Peterman
Mineral Hill
Mineral
Dog
Riffe Lake
Randle LCFD14
Randle
Bennett
Packwood
Legend
Pager
-97.5 dbm
Portable
-116.1 dbm
Mobile
-119 dbm


Law and Fire East Simulcast
Outbound
Manners
Fords Prairie
Cooks
Seminary
Centralia
Meridian Mine
Courthouse
Doty
Onalaska Sta 2
Napavine
Crego
Democrat
Boistfort
Etnei
Mossyrock
Bawfaw
Winlock
Toledo
Tx 70ft 3db
Rx 90ft 3db
Mineral Hill
Mineral
Rx 100ft 3db
Tx 80ft 3db
Hopkins
Morton
Peterman
Rx 100ft 3db
Tx 80ft 3db
Dog
Riffe Lake
Rx 70ft 3db
Tx 50ft 3db
Randle LCFD14
Randle
Bennett
Rx 100ft 3db
Tx 80ft 3db
Packwood
Legend
Pager
-97.5 dbm
Portable
-116.1 dbm
Mobile
-119 dbm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Etnei
Mossyrock
Bawfaw
Winlock
Toledo
Tx 70ft 3db
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Mineral Hill
Mineral
Rx 100ft 3db
Tx 80ft 3db
Hopkins
Lewis
Morton
Peterman
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Tx 80ft 3db
Dog
Riffe Lake
Rx 70ft 3db
Tx 50ft 3db
Randle LCFD14
Randle
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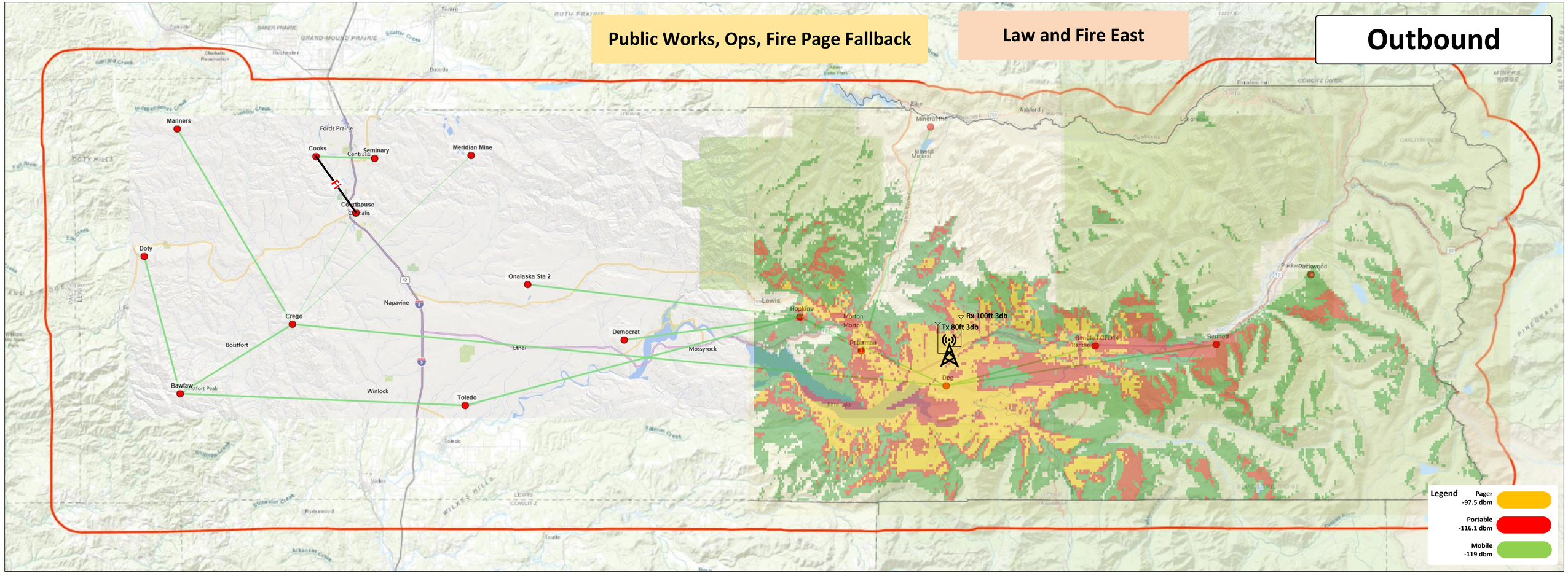
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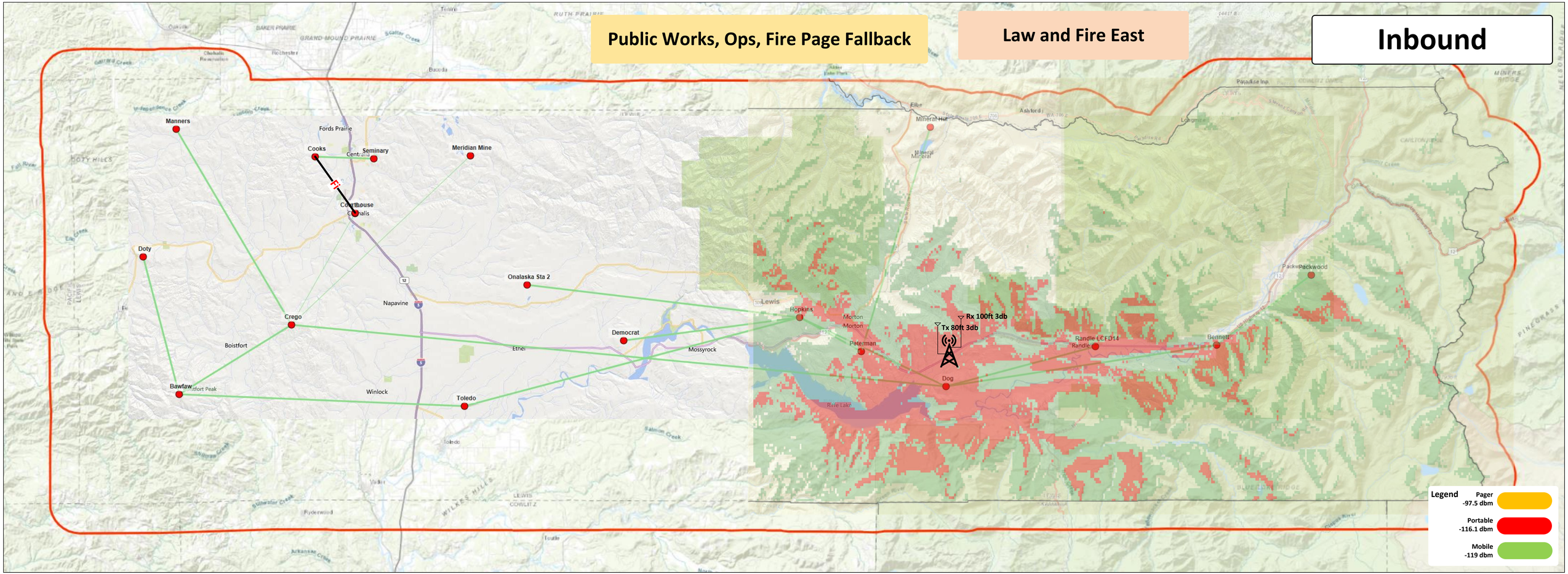
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Bawfaw
Winlock
Toledo
Elbe
Mineral Hut
Mineral
Ashford
Paradise Inn
Longmire
Packwood
Lewis
Hopkins
Morton
Peterman
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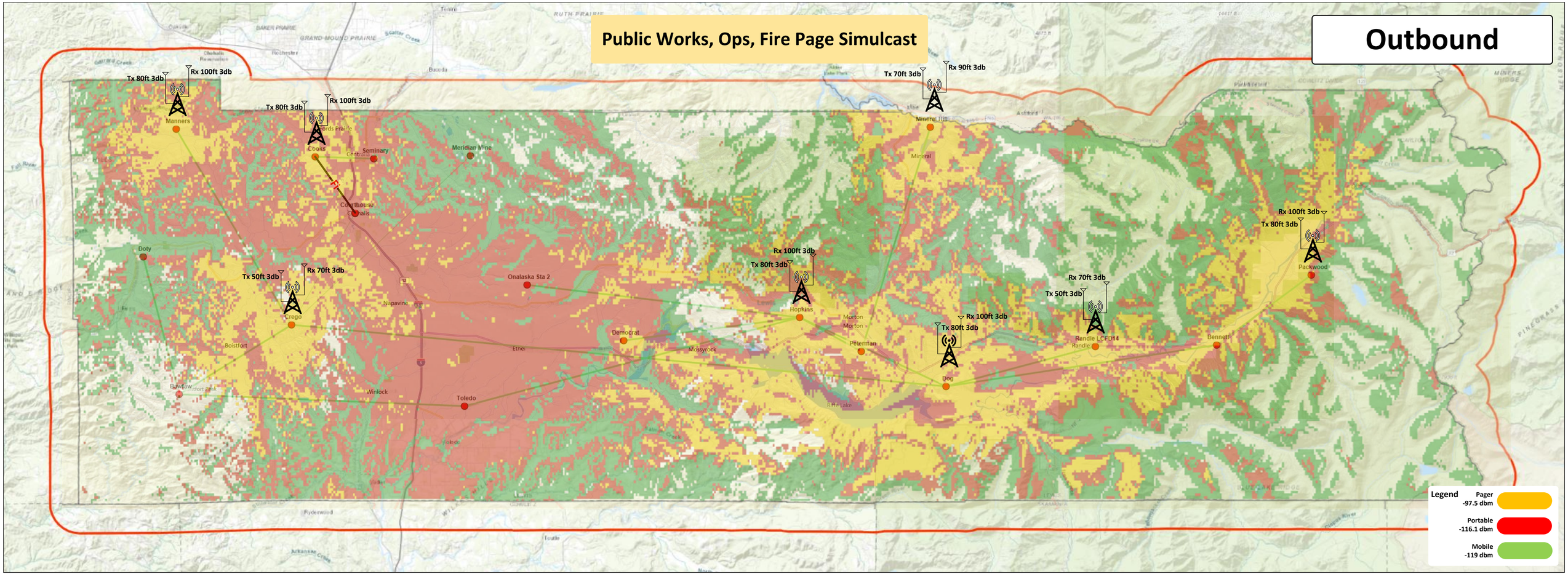
Mobile
-119 dbm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Centralia
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Courthouse
Chehalis
Doty
Tx 50ft 3db
Rx 70ft 3db
Crego
Napavine
Onalaska Sta 2
Boistfort
Bowlaw
Winlock
Toledo
Democrat
Etnel
Massyrock
Tx 70ft 3db
Rx 90ft 3db
Mineral Hill
Mineral
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Rx 100ft 3db
Hopkins
Morton
Peterman
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Dog
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Rx 70ft 3db
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Randle
Bennett
Tx 80ft 3db
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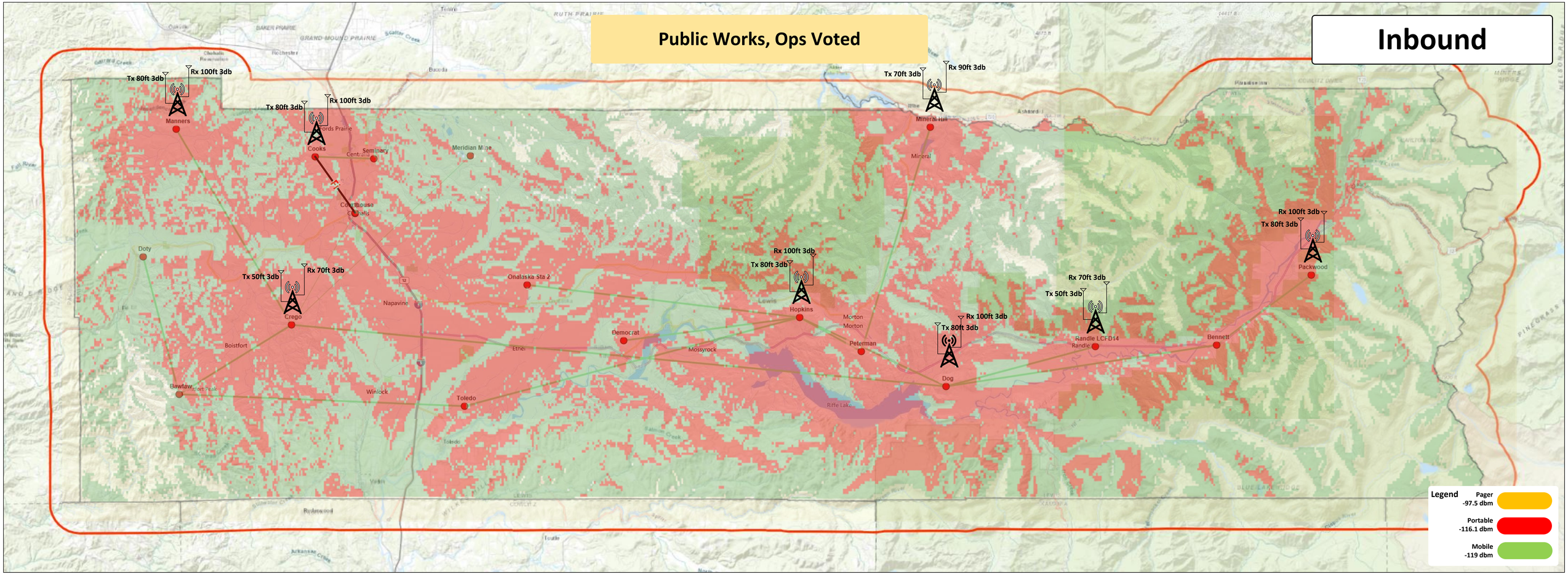
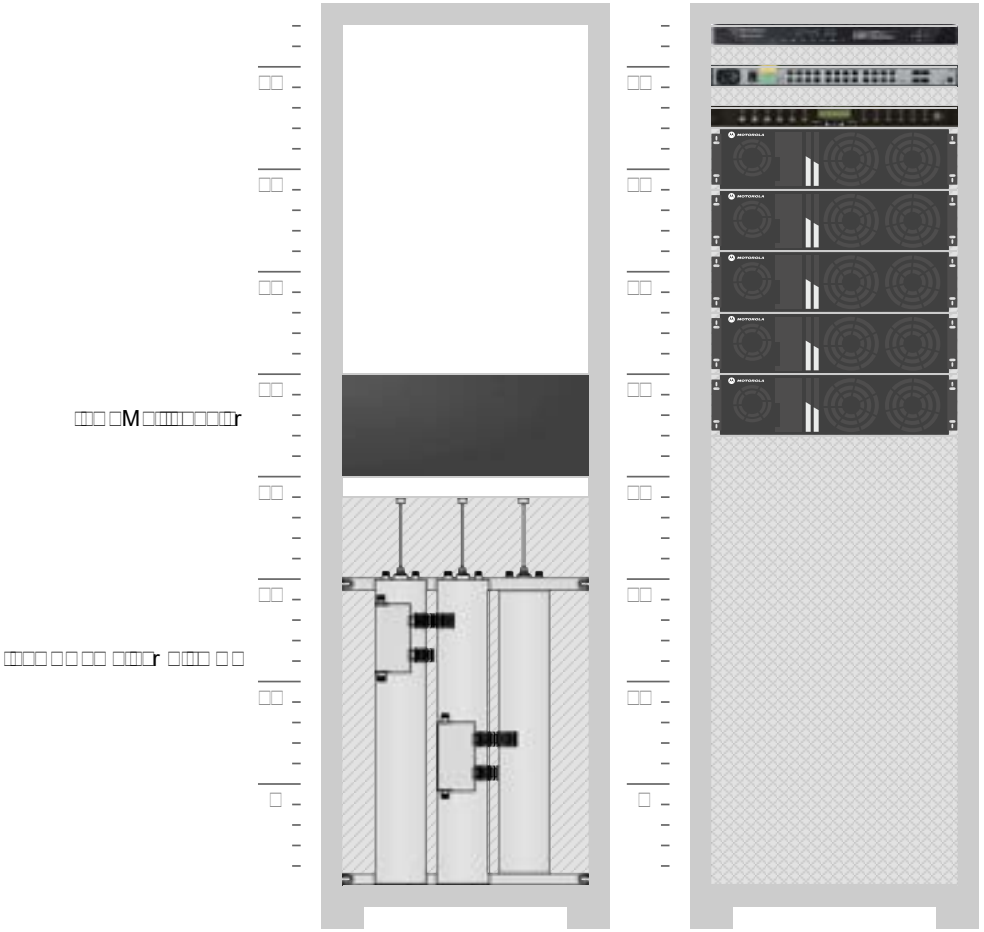
-116.1 dbm
Mobile
-119 dbm

Public Works, Ops Voted

Inbound





Manners_RFDS **Manners_LMR**

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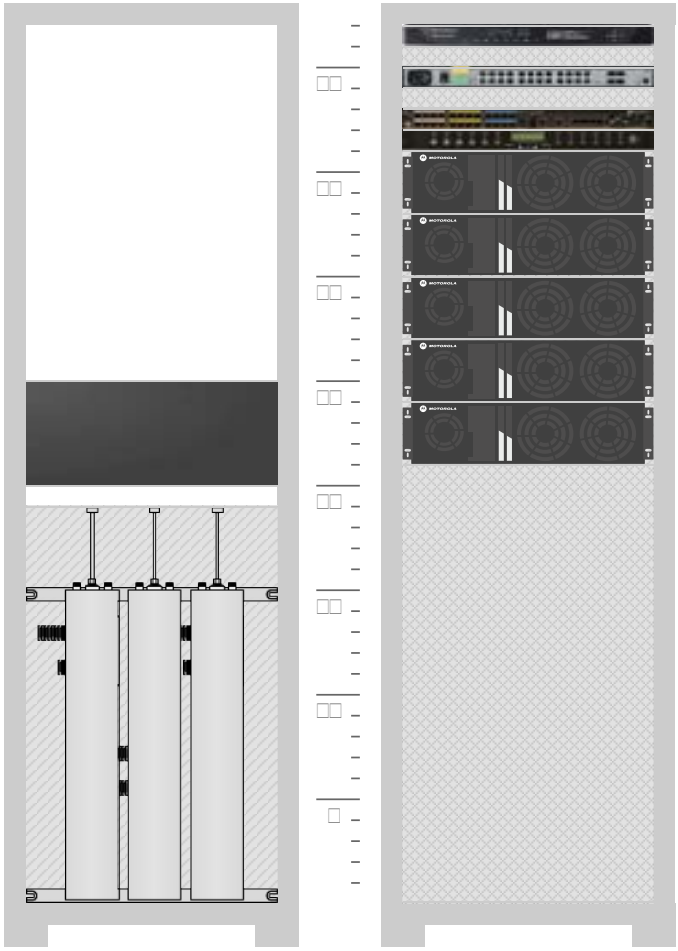

Crego_RFDS **Crego_LMR**

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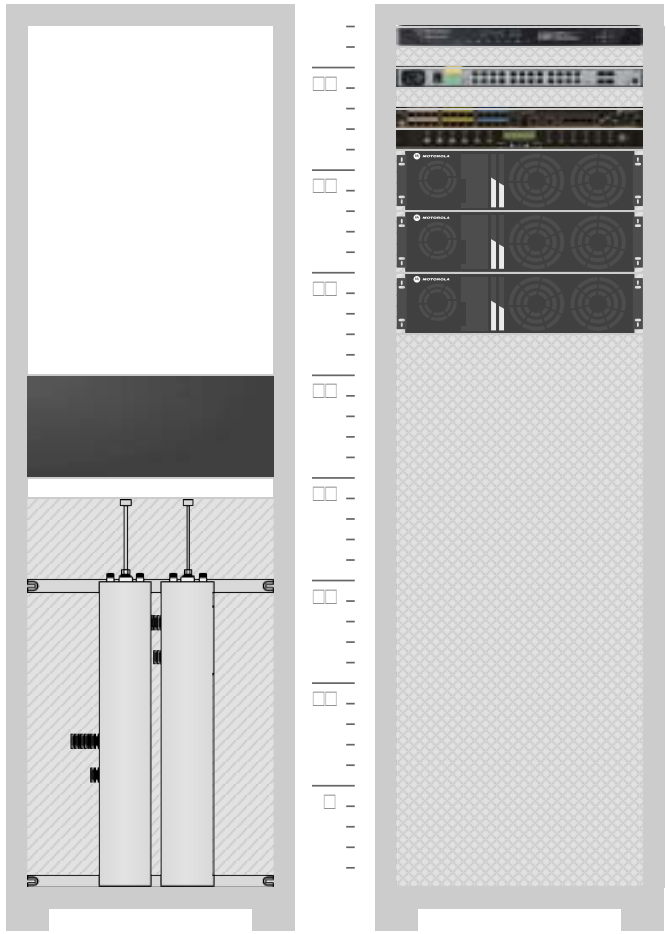

Bawfaw_RFDS **Bawfaw**

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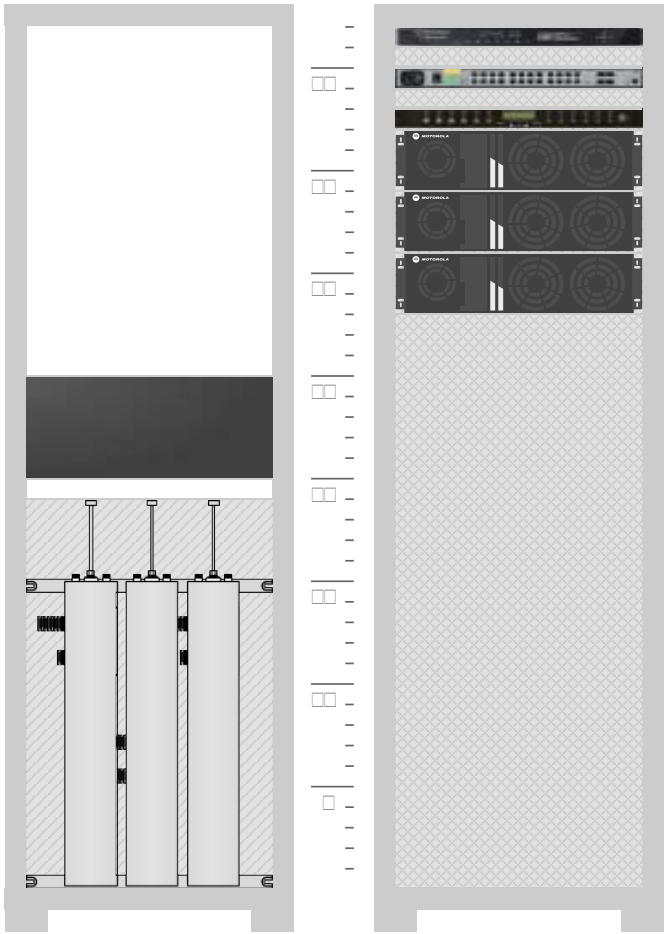

Cooks_RFDS **Cooks_LMR**

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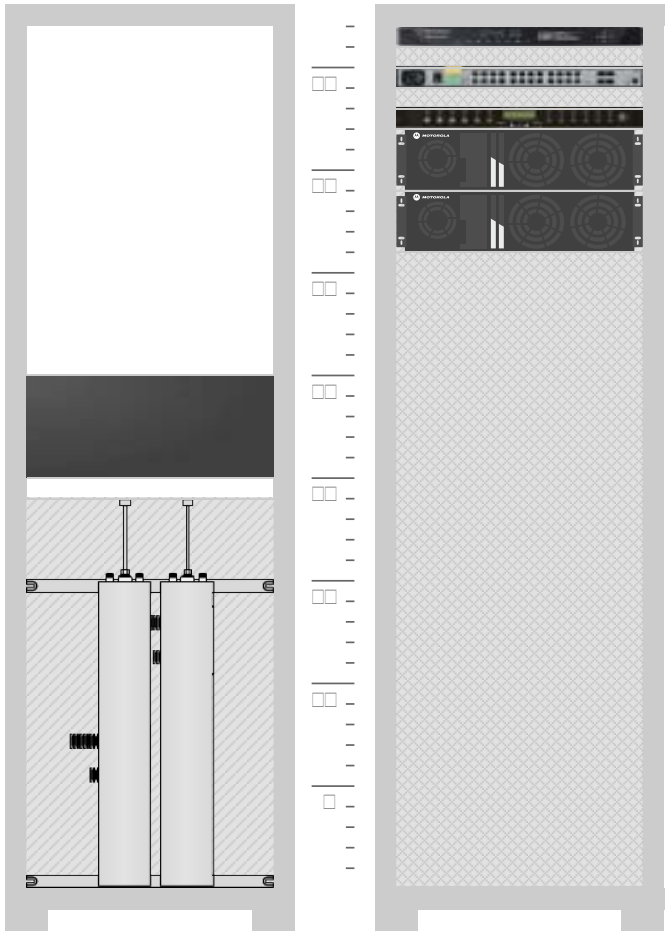

Toledo_RFDS **Toledo**

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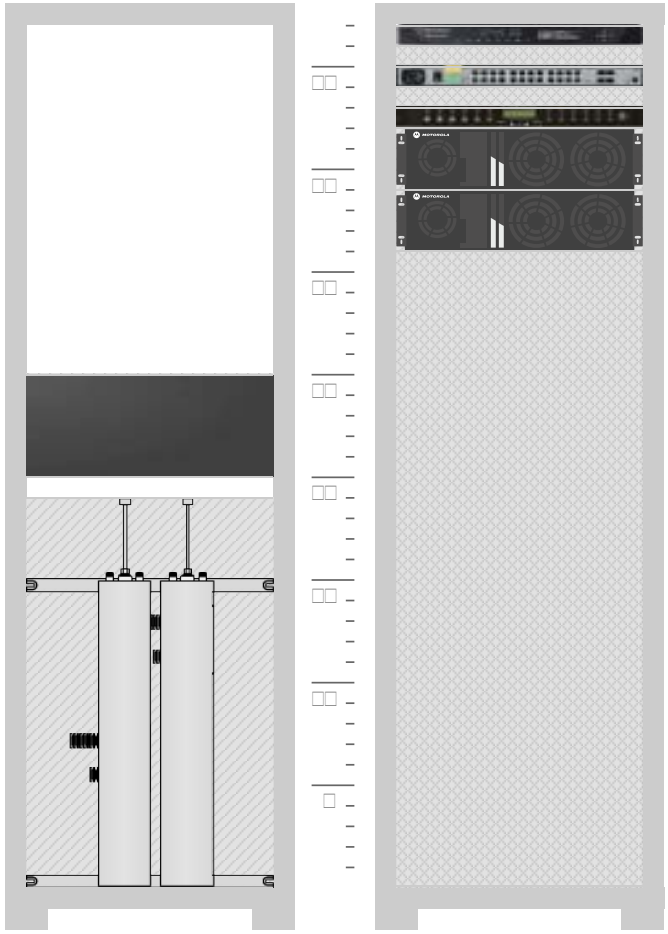

Meridian_RFDS **Meridian Mine_LMR**

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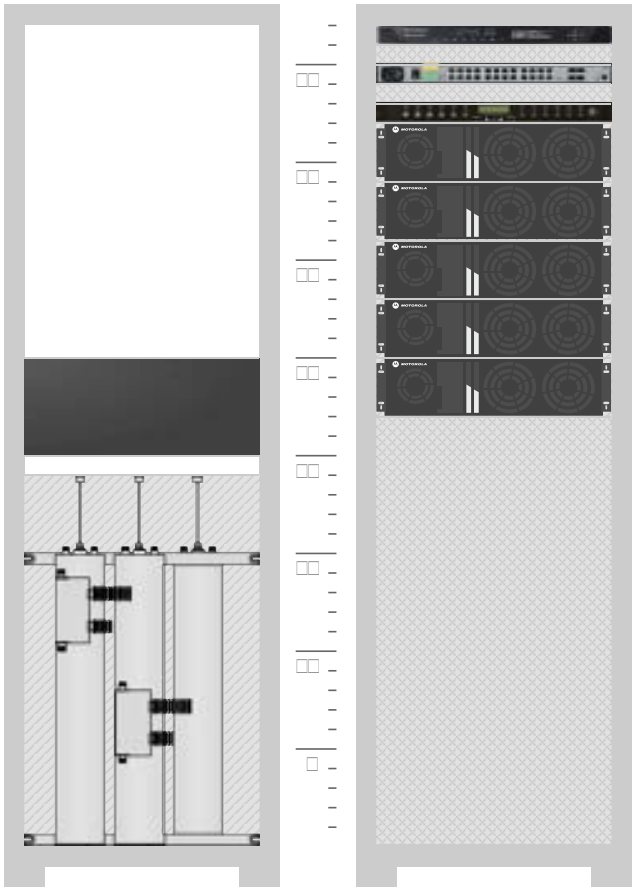

Hopkins_RFDS

Hopkins_LMR

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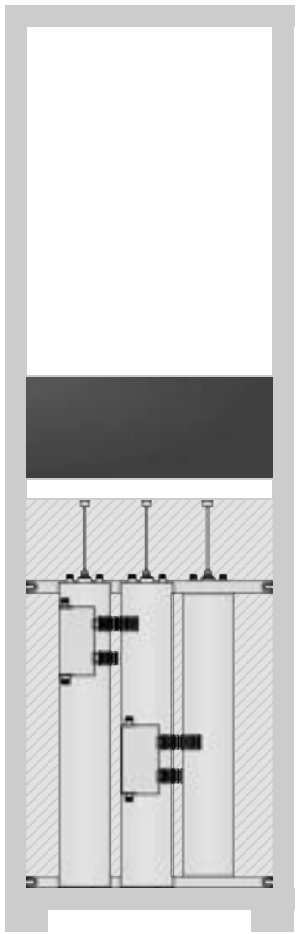

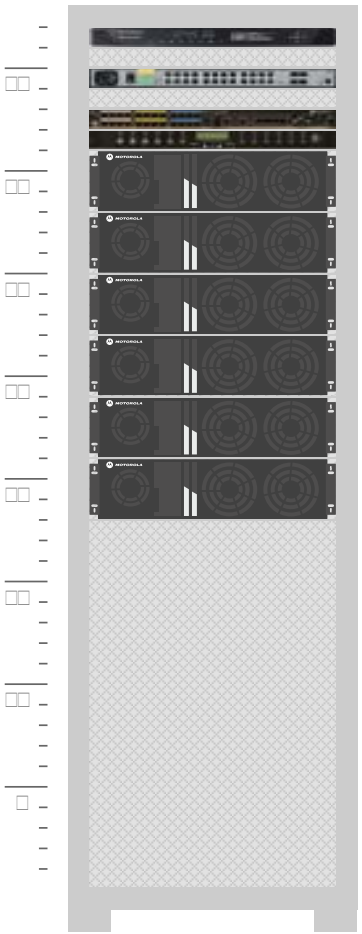

Dog_RFDS **Dog_LMR**

Height/ RU	□□"□□□R□
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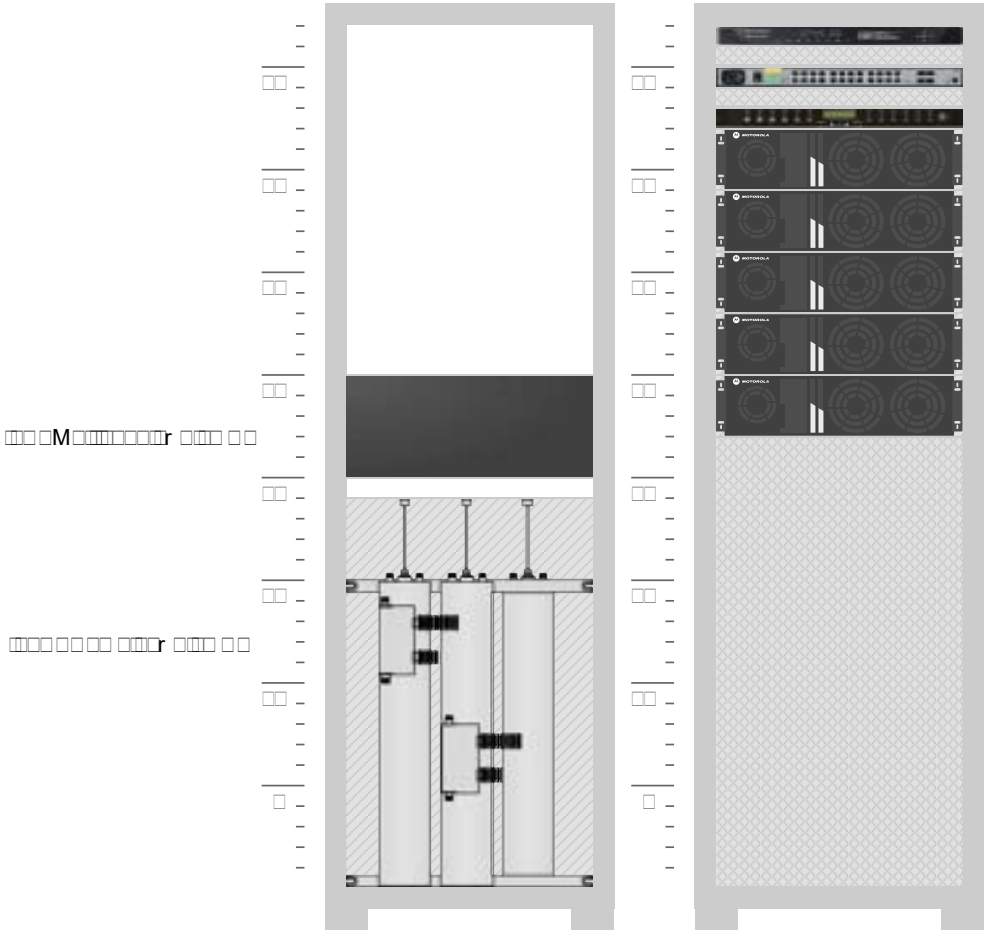

Mineral Hill_RFDS **Mineral Hill_LMR**

Height/ RU	□□"□□□R□
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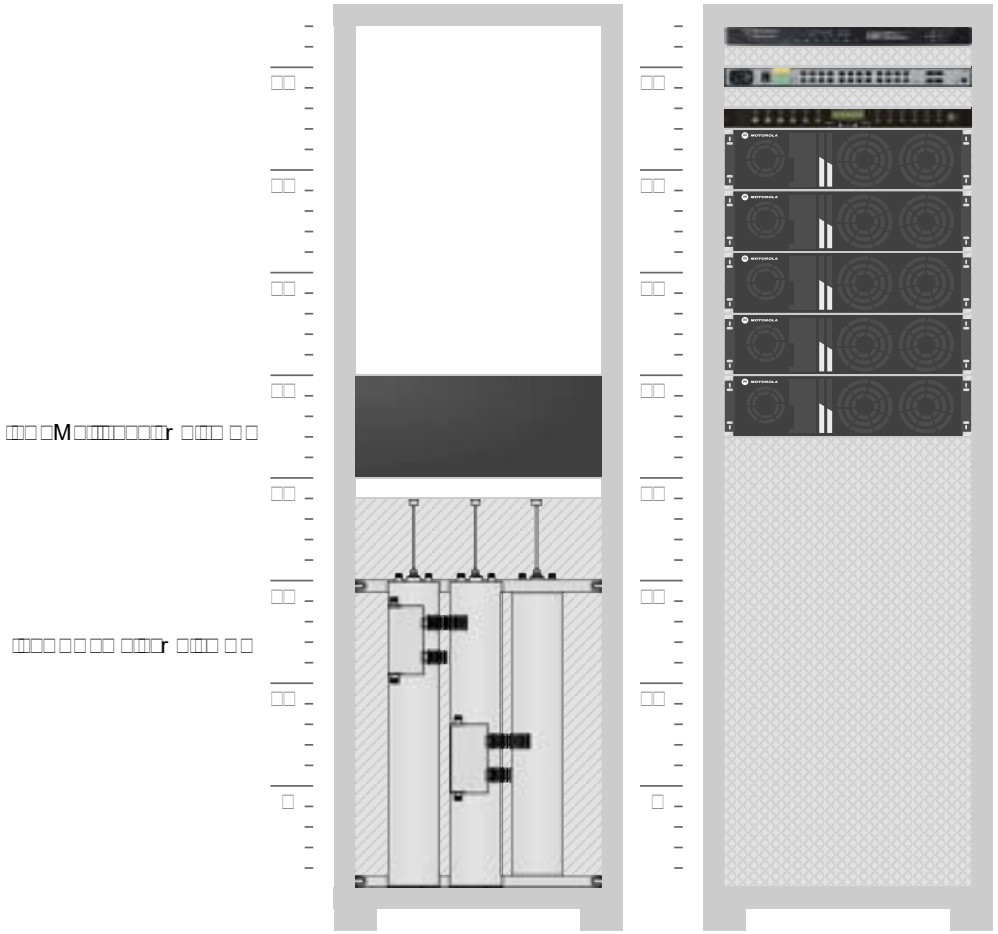

Randle_RFDS **Randle_LMR**

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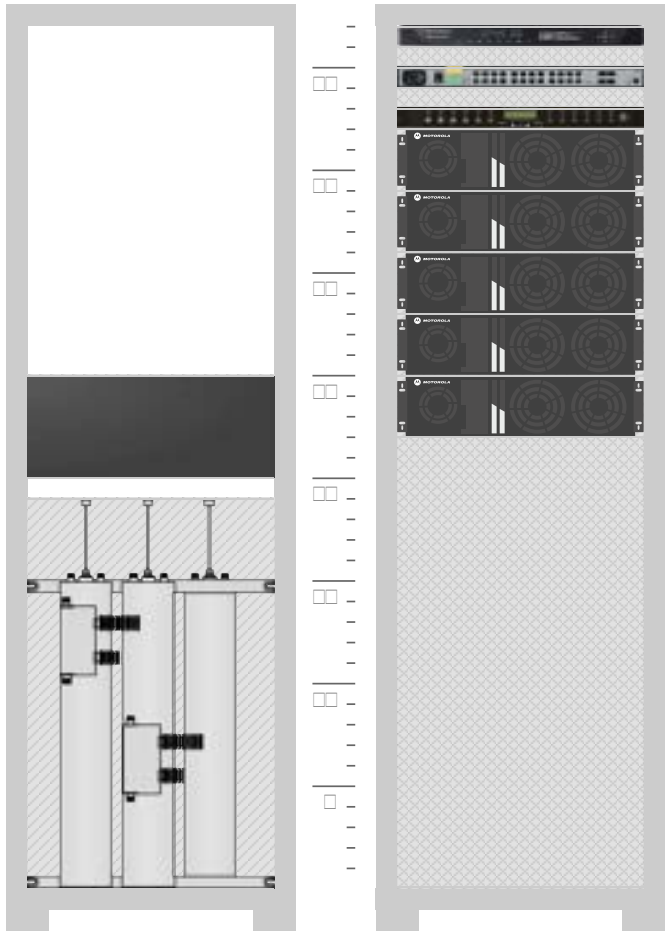

Packwood_RFDS **Packwood_LMR**

Height/ RU	□□"□□□R□
Mounting Type	□□r□□d□d □□□□□□□ □□□□□□□ □□□□□ □□□□□□□□ □□□□□□
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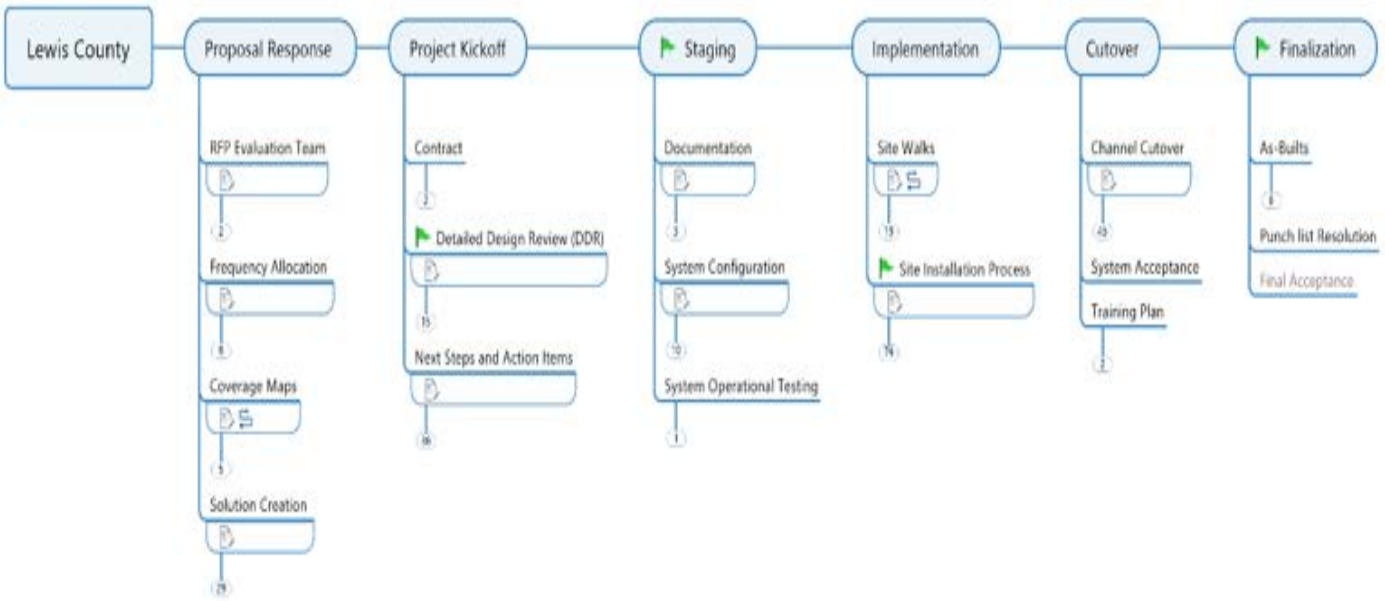
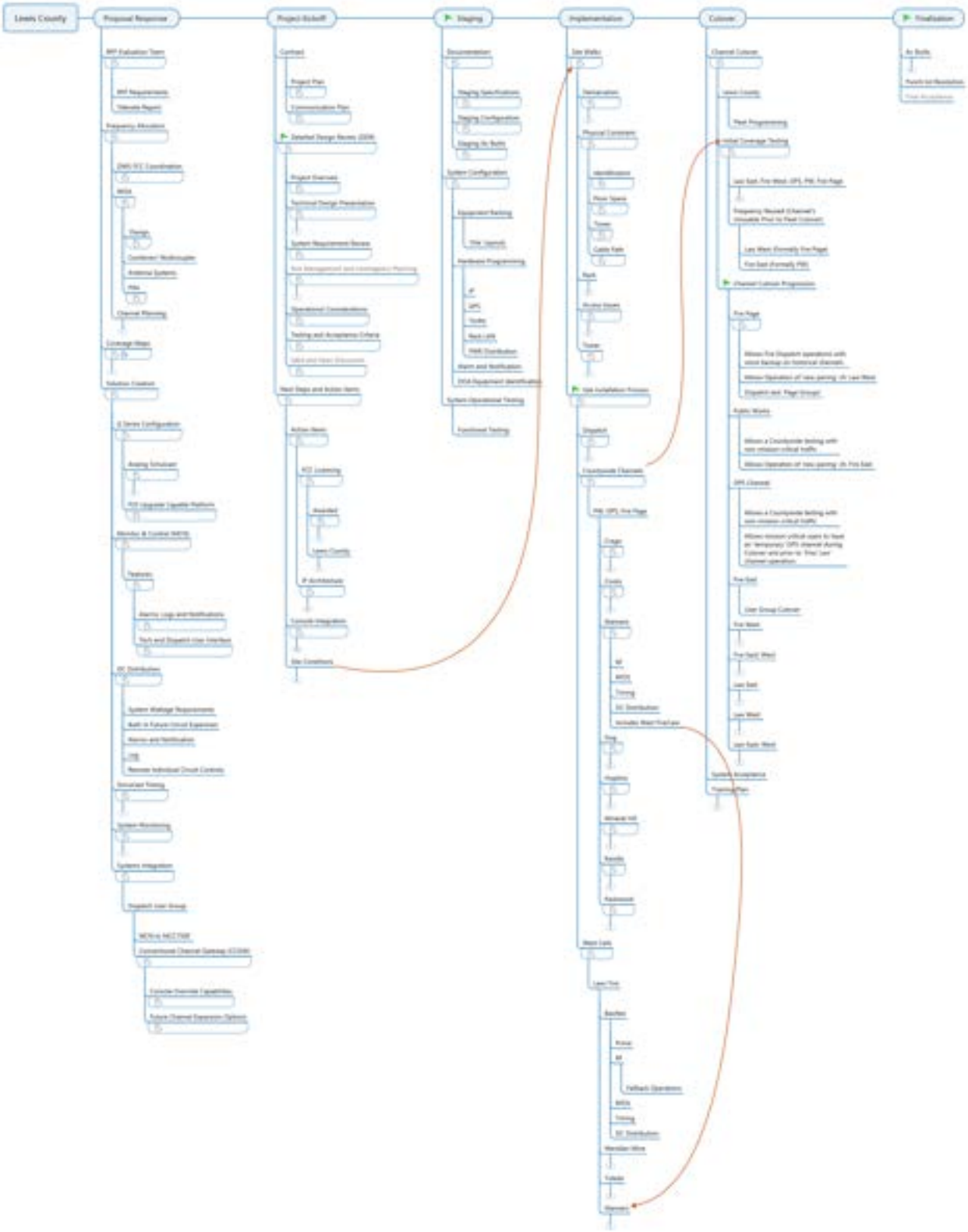
Day Wireless 'Method of Approach'

Lewis County Analog Simulcast System Design and Implementation



User interactive viewing provided via companion file
'Day Wireless - Method of Approach - Detailed View.html'



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1. Proposal Response

1.1. RFP Evaluation Team

DWS internal team review of all materials contained in the provided customer documentation package.
Task Assignments:

- Government Sales Division
- Area Service Division
- Engineering Department
- Pre-Sales Department

1.1.1. RFP Requirements

1.1.2. Televate Report

1.2. Frequency Allocation

The allocation of VHF frequencies significantly impacts the performance of the communication system. Consequently, significant efforts have been made

to identify the best solution combinations, detailed in the 'Frequency Allocation' section of the proposal.

1.2.1. DWS FCC Coordination

All possible VHF channels were compared to all licensed users in a large area surrounding Lewis County, along with the identification of any FCC channel restrictions. From this research, a list of available frequencies was identified and subjected to interference mitigation studies to determine the best possible performance options for the Radio Frequency Distribution System (RFDS). These findings are detailed in the 'Frequency Allocation' section of the proposal.

1.2.2. RFDS

The design of the Radio Frequency Distribution System (RFDS) involves balancing the interplay of coverage and PIM requirements, along with considerations for IM, antenna decoupling, and the performance of the combining and multicoupler system. These aspects are detailed in the 'Frequency Allocation' section of the proposal.

- Design

A VHF RFDS is a custom application, with vast differences between one set of frequencies to another. This is an inherent issue of VHF due to the history and the origins of its use.

In the early days of radio communication, VHF spectrum allocation played a crucial role in enabling public safety agencies to establish radio systems for emergency communication. VHF frequencies were chosen for their ability to provide broad coverage over large geographic areas, making them well-suited for early public safety radio networks.

Over time, dedicated portions of the VHF spectrum were set aside specifically for public safety use. These bands, such as the VHF High Band (150-174 MHz) and VHF Low Band (30-50 MHz), became essential for police, fire, and emergency medical services to communicate effectively during emergencies.

As the usage of wireless technologies has increased exponentially decade after decade, changing the demands on the usage of the VHF spectrum. These demands continually highlight issues with the original specifications or lack thereof for a band plan that organizes transmit (TX) and receive (RX) frequencies to non-overlapping areas of VHF, as well as many other performance-affecting areas of the allocation.

Interference Characteristics: VHF signals propagate differently compared to UHF/700/800 signals. VHF signals travel longer distances and penetrate obstacles such as buildings and foliage more effectively than UHF/700/800 signals. However, VHF signals are more susceptible to interference from atmospheric conditions, urban clutter, and electromagnetic noise. The impacts of interference are expressed most significantly in ‘receiver desense’ at the repeater site as it impacts the ability of a receiver to ‘hear’ (RX) the inbound (TX) traffic from the mobile and portable users. The understanding and mitigation of site noise through the system’s design is critical as its impact on the user’s coverage can be

significant, causing unpredictable/moment-by-moment variability in the system's ability to 'hear' the user group, most often expressed during mutual aid events.

- Combiner/ Multicoupler
- Antenna Systems
- PIM

Meet or Exceed Customer's Specification

1.2.3. Channel Planning

- Frequency Distribution

Location and channel usage based on site selection, East/ West/ Countywide user groups.

1.3. Coverage Maps

Relationship	points to Coverage

Numerous versions of coverage have been generated, each comprising various channel and site combinations, with each configuration having a defined impact on the system's ability to provide optimal coverage that meets or exceeds the RFP requirements. Coverage mapping has been conducted with consideration for simulcast operations to prevent unwanted destructive interaction in overlap areas while ensuring balanced performance between sites and users for TX/RX operations.

1.3.1. Site selection

The list of available sites, along with their location in the transport architecture (inside the ring protection or spur), was utilized in conjunction with coverage performance for selecting sites and housing specific channel assignments.

1.3.2. Channel allocation

1.3.3. RFDS Performance

Performance of the RFDS system are used to provide data inputs for the predicted performance of coverage maps.

1.3.4. Backup Channel

When an 'on' frequency backup channel is utilized to enable seamless continuity in the event of a technology outage or loss of simulcast functionality, it is imperative to have a clear understanding of its location and interaction within the larger simulcast system. This knowledge is essential to prevent any further reduction in user

performance. It includes ensuring that the backup channel's site has the capability to provide coverage even if it becomes severed from the system due to transport network failure. This mechanism is intricately woven into the design approach, considering factors such as channel coverage and the operating areas of user groups, to ensure uninterrupted communication during critical situations.

- In Cabinet or Stand Alone

1.4. Solution Creation

Development of the custom proposed system solution aims to enhance our best-in-class solution portfolio, ensuring that our offerings remain at the forefront of industry standards and customer expectations.

1.4.1. G Series Configuration

Motorola Solutions' product portfolio encompasses a comprehensive range of innovative solutions, including two-way radios, software applications, and integrated communication systems designed to meet the diverse needs of public safety and government sectors.

- Analog Simulcast

Motorola developed simulcast technology in the public safety space, particularly in the VHF band, during the 1980s. This innovation revolutionized the efficiency and reliability of communication systems for public safety agencies, allowing for simultaneous transmission of signals across multiple transmitter sites.

- Comparator Network
- Prime Site Topology

A 'Prime Site' topology is a streamlined design approach for deploying critical simulcast comparator network components. It offers significant advantages in operational performance by focusing operational, restoration, and protection methodologies on a reduced and finite list of scenarios with definable actions and outcomes. Mitigating the risks associated with geo-redundant comparator networks, where the master and satellite units are separated by a transport link, is a key aspect of this approach. This separation induces extra complexities in protection schemas, referred to as 'overhead'. With additional resources, configurations, and transport links, 'overhead' management increases to the point where an outage-inducing condition known as split-brain malfunction becomes prevalent.
In this proposal, the prime site topology has been augmented with companion feature enhancements of CCGW resources at remote sites, guiding the design strategy of the proposed solution. The Prime Site is configured in a geographically diversified manner, with comparators placed across several sites instead of a single physical location, departing from the traditional prime site topology. This geographical diversification or separation of comparators from a

single physical location allows for additional protections over a single-site outage, enhancing system reliability without introducing undue complexities. In a 'Prime Site' design, the prime site serves as the primary source of channel control and synchronization, ensuring that only one comparator is active for each channel at any given time. This centralized approach prevents the possibility of conflicting operations between comparators, thereby improving overall network efficiency and performance. Split-brain conditions occur when two comparators simultaneously take over the operation of the same channel due to network breaks that isolate regionally separated resources or due to intermittent network outages, leading to degraded system performance and self-inflicted communication failures. These conditions are exacerbated by transport network outages, which prevent the 'master' comparator handshake and confirmation for organized or understood transfer of ownership to the 'satellite' unit.
However, with a prime site design, the risk of split-brain conditions is prevented, providing greater system stability and reliability

- Geographical Diversity
- Main/ Alternate (option)

As previously highlighted in the 'Prime Site Topology', "This centralized approach prevents the possibility of conflicting operations between comparators, thereby improving overall network efficiency and performance." This approach is not limited to only one controller if another layer of outage protection is desired. The addition of a second controller at the identified prime location is referred to as a Main/Alternate configuration. The capabilities for supporting a Main/Alternate comparator are integrated into the proposed system's designs, and this feature, while above scope, is available to the 'Buyer' upon request for inclusion in the final deployed solution.

- P25 Upgrade Capable Platform

Meet and exceeds the RFP requirement.

1.4.2. Monitor & Control (MCN)

Designed to be collocated into the MCC console system for easier dispatch user interaction with the expanded receiver network of the simulcast system, or it can be deployed as a standalone application if desired.

- Features

A detailed explanation, along with example screenshots, is provided in the proposal response to illustrate the functionality and features of the system. This visual aid enhances understanding and allows stakeholders to grasp the concept more effectively.

- Alarms, Logs and Notifications

Detailed in the proposal response.

- Tech and Dispatch User Interface

  The MCN network offers a user interface accessible to both the dispatch user group and a more granular interface tailored for the technical support staff. Additional details regarding its functionality and features are provided in the RFP response.

1.4.3. DC Distribution

The RFP specifications provided the baseline requirement for the capacity and functionality of the system. Additionally, years of implementations and maintenance experience in rural mountaintop locations drove the selection of the product. This choice was made to address specific challenges such as remote diagnostics, alarm functionality, and enhanced troubleshooting and restoration capabilities. The selected product offers features such as individual circuit tagging, monitoring of current draw, and remote reboot capabilities, which are crucial for ensuring efficient operation and maintenance in remote and challenging environments.

- System Wattage Requirements
- Built-In Future Circuit Expansion
- Alarms and Notification
- Log
- Remote Individual Circuit Controls

1.4.4. Simulcast Timing

A GPS-based reference clock provides highly accurate and stable timing signals essential for the synchronization of various components within a simulcast system. The 1pps (one pulse per second) signal from a GPS receiver serves as a precise time reference, ensuring that all transmitters in the system are synchronized to transmit simultaneously. This synchronization is critical for preventing interference and ensuring seamless communication across multiple sites.

In addition to the 1pps signal, a GPS-based reference clock can also provide reference frequencies at 5 and 10 MHz. These frequencies serve as precise timing references for other system components, such as digital signal processors and modulators, ensuring that all equipment operates at the same frequency and phase.

The functionality and stability of a GPS-based reference clock are paramount for the reliable operation of a simulcast system. Any deviations in timing or frequency synchronization can lead to signal degradation, interference, and ultimately, system failure. Therefore, the

accuracy and stability of the reference clock directly impact the performance and reliability of the entire simulcast system.

Overall, a GPS-based reference clock plays a crucial role in ensuring the seamless operation of a simulcast system by providing accurate timing signals that synchronize all system components, thereby optimizing performance and minimizing the risk of signal interference or degradation.

- GPS Clock

The proposed GPS clocks have been meticulously chosen for their unmatched reliability and stability, particularly in demanding public safety environments. Recognized as industry leaders, these clocks have been extensively deployed by DWS in numerous public safety applications, ensuring precise frequency reference synchronization across simulcast networks and other critical systems. Additional details provided in the proposal response.

1.4.5. System Monitoring

System monitoring through the IP-enabled interfaces of the materials provided offers an advanced level of oversight and control over critical infrastructure. Leveraging these interfaces, users can remotely monitor the status and performance of various system components in real-time, enabling proactive maintenance and troubleshooting. Moreover, the system boasts increased flexibility by allowing the aggregation of alarms from a variety of sources, allowing for comprehensive monitoring. The materials provided in this response offer extensive functionality and integration capabilities. This comprehensive approach to system monitoring ensures optimal performance, reliability, and uptime, ultimately enhancing operational efficiency and minimizing downtime

- Comparator Network
- DC Distribution
- Motorola G-Series

1.4.6. Systems Integration

While the proposed simulcast system can operate independently of the console system, it has been designed with the ability to integrate with the K-Core system. Understanding the reasoning for providing this integration is crucial, as the operational workflow of a system that is truly "independent" will have significant compounding impacts on the day-to-day operation of the public safety network. By integrating the simulcast system into the console system, not only are the critical interactions between the dispatch user group and the user groups in the field ensured, but also for the technical staff who are responsible for programming the multitude of channel capabilities associated with voice transmissions, console override, patching, paging, and future

enablement efforts for any feature set expansion resulting from changes in the operational environment, incidents, or regulatory conditions. The increased functionality afforded by the greater interconnectedness of these systems underscores the importance of seamless coordination and integration between various components to maintain operational effectiveness and responsiveness for years to come.

- Dispatch User Group
  - MCN to MCC7500
  - Conventional Channel Gateway (CCGW)

    K-Core element used for the interaction of channel resources with the console system. Additional detail provided in the proposal response.

  - Console Override Capabilities

    Console override capabilities empower authorized personnel, including dispatchers or system administrators, to remotely assume control of communication channels or functions within the system. This feature proves crucial in managing critical situations, such as emergencies or priority communications, where immediate access and control are imperative. With console override capabilities, authorized users can efficiently prioritize communications, interrupt and preempt ongoing voice interactions, and redirect resources as necessary, ensuring a swift and effective response to evolving operational requirements.

  - Future Channel Expansion Options

    The provided CCGWs offer additional resource availability beyond the proposed system's designed resource requirements. This extra capacity enables the addition of other wanted or required resources at a later date with minimal efforts. It facilitates the extension of features and capabilities of the console network, allowing for new coverage when desired or for an identified need for channel expansion or interoperability with other agencies via RF channels that can be patched at the console and placed at remote site locations.

2. Project Kickoff

2.1. Contract

2.1.1. Project Plan

The purpose of this plan ensures we perform the project in a timely and successful manner by defining how the project is executed, monitored, controlled, and closed. Further details are available in the proposal response.

2.1.2. Communication Plan

The purpose of this plan is to establish a clear framework for project communications. Further details are available in the proposal response.

2.2. Detailed Design Review (DDR)

Flags	Yes

The Detailed Design Review (DDR) serves as a critical milestone in the project lifecycle, aimed at ensuring that the proposed system design aligns with the project requirements and specifications. This comprehensive review process involves a thorough examination of all aspects of the design, including technical feasibility, system architecture, component selection, and integration strategies. By conducting the DDR, the project team can identify potential design flaws, address technical challenges, and refine the system design to optimize performance and reliability. Additionally, the DDR provides an opportunity for stakeholders to provide feedback and ensure that the final design meets their needs and expectations. Overall, the DDR plays a crucial role in validating the proposed system design and laying the groundwork for successful implementation and deployment.

2.2.1. Project Overview

- Recap of project scope, goals, and timeline
- Summary of key deliverables and milestones

2.2.2. Technical Design Presentation

Detailed presentation of the technical design, including:

- Radio coverage analysis and propagation studies
- Frequency band allocation and channel planning
- Network architecture and topology
- Equipment selection and specifications
- Site layout and infrastructure design
- Redundancy and failover mechanisms
- Interoperability with existing systems

- Coverage

Relationship	begins at Coverage Maps

  - Mapping
  - Site Selection
  - Channel Allocation
- Alarms
  - Notification

- Logs

2.2.3. System Requirement Review

- Discussion of customer requirements and how they have been addressed in the design
- Verification that the design meets regulatory requirements and industry standards
- Alignment of technical solutions with agency objectives and operational needs

2.2.4. Risk Management and Contingency Planning

- Identification and assessment of potential risks and challenges
- Discussion of contingency plans and mitigation strategies
- Agreement on responsibilities and protocols for addressing unforeseen issues during implementation

- Project Management

2.2.5. Operational Considerations

- Review of user requirements and operational scenarios
- Discussion of system features and functionality from an end-user perspective

2.2.6. Testing and Acceptance Criteria

- Discussion of testing procedures and acceptance criteria for the completed system
- Agreement on test plan and schedule, including integration testing, acceptance testing, and user acceptance testing

2.2.7. Q&A and Open Discussion

- Opportunity for attendees to ask questions and provide feedback
- Resolution of any outstanding issues or concerns

2.3. Next Steps and Action Items

- Confirmation of action items, along with identification of DWS and Lewis County responsibilities.
- Agreement on follow-up meetings and communication protocols
- Establishing a timeline for implementation and deployment

2.3.1. Action Items

The preceding list of action items is provided for the 'buyer' as a reference of the identified and known items from DWS's internal MOA

creation but is not intended to be exhaustive, as the DDR process will identify additional items.

- FCC Licensing

  Customer has requested to handle FCC licensing efforts. Extensive coordination efforts have been undertaken by DWS's internal FCC licensing department for the design of the proposed system. Prior to award of the project, no FCC license applications have been processed, and the securing of new licensing is at the customer's expense. DWS has a fully staffed FCC licensing department, and upon the customer's request, coordination service can be quoted.

  - Awarded

    After the customer obtains VHF licensing from the FCC, any alterations in the frequency will require a review of the impact on the RFDS system, with revisions produced to clarify the final deliverable design. The efforts outlined in the 'Frequency Allocation' section of the proposal response highlight the steps taken to minimize this variability and the costs incurred for above scope changes.

  - Order frequency dependent, custom RFDS systems

  - Lewis County

  - Subscriber Fleet Codeplugs

    Once the FCC licensing is secured and the final system

- IP Architecture

  The proposed system is built on an IP topology with identified requirements for operation on the customer's network.

  - DWS

  - Transport network requirements

  - Multicast/ Unicast ETC.

  - IP Numbering Schema

    A previously identified and common IP network schema has been developed to provide technical support with an embedded clarification of the resource's location and types, improving programming clarification, troubleshooting efficiency, and system restoration.
    - Example:
      - Zone. Site. Channel. Device.

  - Lewis IS

The proposed solution can operate in a multitude of network topologies, ranging from Layer 2 or 3, with VLAN tagging and/or MPLS transport network types, among others.

- Provide Preferred IP Architecture

2.3.2. Console Integration

The proposed solution takes into account the integration elements with the K-Core system. This allows the solution not only to seamlessly work with the incumbent system but also provides the potential for expansion of functionality beyond that of the current system.

- Dispatch Conditions
  - Demarcation point (demarc)
  - Lewis County
  - DC Plant Circuits
  - Transport Network
  - LAN Network
  - Logging System
  - Dispatch User Group Console Configurations
  - Patch Group
  - Law East/ West
  - Fire East/ West
  - Page Groups
  - New Fire East/ West Resources
  - Channel Resources
  - MCN User Groups

2.3.3. Site Conditions

Relationship	points to Site Walks

- Floor Plans
- Tower Layout

- Demarcation point (demarc)
  - Lewis County
  - DC Plant Circuits
  - Transport Network

3. Staging

Flags	Yes

3.1. Documentation

The production of staging documentation involves synthesizing the previously designed proposed system with details gathered during the post-sale DDR process. This documentation serves as a comprehensive guide for staging activities, outlining the configuration, setup, and testing procedures for the radio equipment. It integrates information obtained from the initial design phase with any updates or modifications identified during the DDR process. By incorporating insights gathered from customer interactions and site assessments, the staging documentation ensures that the deployed system aligns closely with the customer's requirements and operational needs. This iterative approach enhances the accuracy and effectiveness of the staging process, ultimately contributing to the successful implementation of the radio system.

3.1.1. Staging Specifications

Desired functionality and configuration of the technical system based on DDR results.

3.1.2. Staging Configuration

Document detailing the configuration settings applied to the system. It specifies the parameters necessary to achieve the desired functionality.

3.1.3. Staging As-Builts

Working draft of the final as-built documentation, captures the configuration and setup of the system as it is being built.

3.2. System Configuration

Land mobile radio equipment staging is a critical phase in the deployment process, serving multiple purposes to ensure the success of field operations. Primarily, staging allows for the comprehensive testing and configuration of radio equipment before it is deployed into the field. This ensures that all devices are functioning properly and configured according to operational requirements, minimizing the risk of malfunctions or compatibility issues during field use. Additionally, staging facilitates the organization and

preparation of equipment, ensuring that all necessary components are accounted for and properly labeled for efficient deployment. Furthermore, during staging, the system configuration is meticulously checked and adjusted to meet operational needs, optimizing the readiness and effectiveness of radio communications systems for field deployment.

3.2.1. Equipment Racking

- 'Site' Layouts

3.2.2. Hardware Programming

- IP
- GPS
- TX/RX
- Rack LAN
- PWR Distribution

3.2.3. Alarm and Notification

3.2.4. DOA Equipment Identification

3.3. System Operational Testing

3.3.1. Functional Testing

4. Implementation

4.1. Site Walks

Relationship	begins at Site Conditions

Site walks will be performed prior to the deployment of equipment. This is to allow for the identification of all equipment cross-connect demarcations and any physical constraints for rack placement. This allows for the addressing of cable and interface issues at the earliest point of the deployment process, giving time for any identified issues to be resolved prior to outage impacting efforts.

4.1.1. Demarcation

Cross-connects

- Identification

Location of the interfaces and the cable routes available.

- Power Systems

  The interfacing of the proposed DC distribution system is based on two (2) separate circuits from Lewis County's 48vdc plant, used to feed the A and B buss configuration.
  Installation requirements
  - DC Plant interface type
    - Lug sizing
    - Hole Spacing
    - Breaker type and current capacity (county provided)
  - Circuit landing location
    - Identify which circuits are to be used to feed the DC branch circuits.

- Transport Network

  Location and interface types
  - Cable footage
  - Ethernet
  - Fiber
    - SM or MM

- Grounding Buss

  Survey and identify the physical location of the site's main ground buss (MGB). The provided equipment's grounding layout is based on a reference to a single point ground, with all racked equipment referencing a single vertical buss. This buss is extended via a single 2awg green 'rack runner' to the MGB.
  The physical connection to the site's identified buss will be made with the appropriate lug.
  - Hole size: 1/4, 5/16, 3/8
  - Hole pattern: one, two
  - Hole Separation: 1/2, 3/4, 1"

4.1.2. Physical Constraint

The proposed system comprises numerous elements that require careful planning to operate seamlessly alongside the existing RF infrastructure.

- Identification

  What is the available physical space for the proposed system's Rack and RFDS infrastructure?

  A plan will be developed to facilitate the 'temporary' placement of equipment, with the intention of transitioning to 'permanent' placement in a manner that minimizes outage time.

- Floor Space

Efforts are focused on identifying available square footage for equipment rack mounting. Each site has a rack count of two (2) 19" ETA units. Please refer to the rack assembly appendix for detailed layouts per site.

- Tower

Planning for the mounting of the TX and RX antenna entails considering the practical sequence requirements due to highly congested tower real estate. The timing of the installation of the new antennas is crucial, as they cannot be temporarily located. Therefore, the process of moving them into operation must align with the cutover, ensuring a smooth installation process.

- Cable Path

Identification of the site's cable raceway configuration?

- DC Power pathway
- Network interface pathway
- RF coax pathway
    - Port Window capacity and dimensions

4.1.3. Rack

- Placement

Identify the available floor space: Does it allow for permanent installation, temporary setup, or co-location applications?

- Top Support

The support atop the rack is provided with equipment capable of earthquake bracing. Proper configuration requires the identification of the application configuration. An application-flexible solution has been provided in the proposal.

4.1.4. Access Issues

After the equipment has been racked for staging and intrarack cabling, the package is prepared for site delivery and installation. The mode of travel to remote sites can affect the necessary transport equipment types. Road and site conditions are considered to allow for the most efficient transport, handling, and placement of the racked solution. Winter weather considerations are included in reference to the system's installation schedule.

- Roads

- Buildings

Confirm doorway widths and heights, walkway widths, and vertical clearances.

4.1.5. Tower

Each tower will be surveyed to allow for a preliminary understanding of the antenna installation options for the TX and RX, with a focus on meeting the minimum requirements for antenna decoupling. In cases where a site is capable of >20' tip-to-base separation, additional antenna decoupling can be selected to enhance isolation and set up the antenna system for better capabilities in the event of future channel expansions with previously unknown frequencies.

- Antenna Placement
- Cable Raceway

4.2. Site Installation Process

Flags	Yes

The order of site installation is determined by the features contained within each site necessary for the operation of the system, as well as the interaction of resources across the entire system. This list may be impacted by findings during the DDR process, and pertinent adjustments will be made accordingly. The descriptions under each preceding site are intended to provide reference to the interdependent nature and approach of the provided list.

4.2.1. Dispatch

The Dispatch Site, located at the MCC7500 console location, houses the Dispatch user group responsible for receiving 911 calls and facilitating the coordination of public safety resources. This user group's reach spans across all sites and users, making it a foundational component of the system's operational capabilities. Consequently, the establishment of this site's infrastructure interfaces with its monitoring capabilities makes it an ideal location for verifying the progression of site-based resources as they come online.

- MCN Network
- CCGW Integration

4.2.2. Countywide Channels

Relationship	points to Initial Coverage Testing

Countywide Channels are housed in the largest number of sites and in the East Cell all sites also include the Law and Fire channels making them a logical place to start 'hilltop' site installations.

- PW, OPS, Fire Page
- Crego

Crego: includes all countywide transmitters, along with comparators for Fire Page and OPS, and all supporting equipment. Additionally, the site is identified as a Fallback operation site for Fire Page and OPS. With the new frequency allocations, these channels can be placed on air as early as practical, initially as standalone channels, then progressing to simulcast operation as the site installation progresses. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- Prime
- RF
- Fallback Operations
- RFDS
- Timing
- DC Distribution
- Cooks

Cooks: includes all countywide transmitters and supporting equipment. As this is not a comparator site, OPS and Fire Page can be joined to the Crego site, allowing for the start of simulcast operation. With the new frequency allocations, these channels can be placed on air as early as practical for simulcast operation. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- RF
- RFDS
- Timing
- DC Distribution
- Manners

Manners: includes all countywide transmitters, West Fire/Law and supporting equipment. As this is not a comparator site, the OPS and Fire Page channels can be joined to the Crego Comparator/ Prime site, allowing for the start of simulcast operation. With the new frequency allocations, these channels can be placed on air as early as practical for simulcast operation. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- RF

- RFDS
- Timing
- DC Distribution
- Includes West Fire/Law

Relationship	points to Manners

- Dog

  Includes all countywide transmitters and East Fire/Law, along with the East Fire/Law and Public Works (PW) comparator and all supporting equipment. Additionally, the site is identified as a Fallback operation site for East Fire/Law. With the new frequency allocations, these channels can be placed on air as early as practical, initially as standalone channels, then progressing to simulcast operation with the previously installed PW transmitters. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- Prime
- RF
- Fallback Operations
- RFDS
- Timing
- DC Distribution
- Hopkins

  This is the start of four (4) sites that all contain a five (5) channel configuration that include all countywide transmitters and East Fire/Law, along with all supporting equipment. These reamining site will complete the countywide and the East Fire/Law cell. Other than the Fire East channel, with the new frequency allocations, of the remaining channels can be placed on air as early as practical, expanding the simulcast operation from the Dog comparator/ Prime site. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- RF
- RFDS

- Timing
- DC Distribution
- Includes East Fire/ Law
- Mineral Hill

  Second of the four (4) sites, each containing a five (5) channel configuration that includes all countywide transmitters and East Fire/Law, along with all supporting equipment. These remaining sites will complete the countywide and East Fire/Law cell. With the exception of the Fire East channel, with the new frequency allocations, the remaining channels can be placed on air as early as practical, expanding the simulcast operation from the Dog comparator/Prime site. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- RF
- RFDS
- Timing
- DC Distribution
- Includes East Fire/ Law
- Randle

  Third of the four (4) sites, each containing a five (5) channel configuration that includes all countywide transmitters and East Fire/Law, along with all supporting equipment. These remaining sites will complete the countywide and East Fire/Law cell. With the exception of the Fire East channel, with the new frequency allocations, the remaining channels can be placed on air as early as practical, expanding the simulcast operation from the Dog comparator/Prime site. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- RF
- RFDS
- Timing
- DC Distribution
- Includes East Fire/ Law

- Packwood

  The last of the four (4) sites, each containing a five (5) channel configuration that includes all countywide transmitters and East Fire/Law, along with all supporting equipment. This site's completion will complete the sites that contain the countywide channels as well as the East Fire/Law. With the exception of the Fire East channel, with the new frequency allocations, the remaining channels can be placed on air as early as practical, expanding the simulcast operation from the Dog comparator/Prime site. Testing of the system operation during the progressive installation process helps expose potential issues as early in the process as possible.

- RF
- RFDS
- Timing
- DC Distribution
- Includes East Fire/ Law

4.2.3. West Cells

The detailed approach outlined in the Countywide and East simulcast cells will be applied to the remaining three (3) West cell site. The below site list is in the order of migration allowing for the same implementation approach.

- Law/ Fire
  - Bawfaw
  - Prime
  - RF
  - Fallback Operations
  - RFDS
  - Timing
  - DC Distribution
  - Meridian Mine
  - RF
  - RFDS

- Timing
- DC Distribution
- Toledo
- RF
- RFDS
- Timing
- DC Distribution
- Manners

Relationship	begins at Includes West Fire/Law

- RF
- RFDS
- Timing
- DC Distribution
- Includes Countywide Channels

5. Cutover

5.1. Channel Cutover

Sequence can be impacted by DDR findings and the desired User Group migration timing

5.1.1. Lewis County

- Fleet Programming

5.1.2. Initial Coverage Testing

Relationship	begins at Countywide Channels

The site installation process of the implementation phase is intricately linked to the cutover process, facilitating initial coverage testing. This testing phase encompasses Law East, Fire West, OPS, PW, and Fire Page channels operating on the 'New' Frequency, enabling rigorous evaluations of performance and functionality. Notably, this testing phase ensures that system operations can commence without any adverse impact on user groups. Furthermore, all sites and 'cells' are

represented, spanning across East, West, and Countywide areas. The comprehensive testing regime includes thorough dispatch operation assessments, examining patch and page groups' functionalities. Additionally, leveraging historically familiar dispatch user's GUI interfaces minimizes operational impacts, requiring minimal training. This testing phase is strategically timed to avoid dependency on User Training, highlighting the system's user-friendly design and intuitive operation.

- Law East, Fire West, OPS, PW, Fire Page
  - Channels = 'New' Frequency
  - No user Group Impact
  - All Sites Represented
  - All 'Cells' Represented
  - East
  - West
  - Countywide
  - Dispatch Operation Testing
  - Patch Groups
  - Page Groups
  - Historical User GUI Interface (Minimal Training Required)
- Frequency Reused (Channel's Unusable Prior to Fleet Cutover)
  - Law West (Formally Fire Page)
  - Fire East (Formally PW)

5.1.3. Channel Cutover Progression

Flags	Yes

- Fire Page

The establishment of a countywide Fire Page channel provides operational capacity that is currently unavailable to the county, and the currently deployed frequency is to be repurposed for the Law West channels.

- Allows Fire Dispatch operations with voice backup on historical channels
- Allows Operation of 'new pairing' ch: Law West
- Dispatch test 'Page Groups'

- Public Works
  - Allows a Countywide testing with non-mission critical traffic
  - Allows Operation of 'new pairing' ch: Fire East
- OPS Channel
  - Allows a Countywide testing with non-mission critical traffic
  - Allows mission critical users to have an 'temporary' OPS channel during Cutover and prior to 'Fire/ Law' channel operation.
- Fire East
  - User Group Cutover
- Fire West
  - User Group Cutover
- Fire East/ West
  - Dispatch Functional Testing
  - Voice Communications
  - Patching
- Law East
  - User Group Cutover
- Law West
  - User Group Cutover
- Law East/ West
  - Dispatch Functional Testing
  - Voice Communications
  - Patching

5.2. System Acceptance

5.3. Training Plan

5.3.1. Technical Training

Details Outline in Proposal Response

5.3.2. User Training

Details Outline in Proposal Response

6. Finalization

Flags	Yes

6.1. As-Builts

6.1.1. Documentation Packages

6.1.2. Floor Plans

6.1.3. Rack Elevations

6.1.4. IP Schema

6.1.5. System Setting

6.1.6. Optimization Levels

6.2. Punch list Resolution

6.3. Final Acceptance

ASTRO®
G-SERIES SITE EQUIPMENT

MOTOROLA SOLUTIONS

COMMON PLATFORM

The ASTRO® portfolio of RF stations, receivers, site controllers and comparators make up the building blocks for Project 25 (P25) two-way radio communication systems from Motorola Solutions. ASTRO site equipment is built with flexibility, resilience and service in mind.

FLEXIBLE DESIGN. SOFTWARE-CONFIGURABLE.

Because it is defined and configured through software, the common platform has the flexibility to support different modes of operations based on individual site requirements. Simple software downloads provide cyber security patches, new features and technology migrations to carry your needs into the future.

ALWAYS AVAILABLE. RESILIENT TO DISRUPTION.

Built to last, ASTRO sites continue to provide wide-area communication regardless of the conditions. From technology that delivers superior coverage to site designs with no single point of failure (resulting in no more than 1 channel removed from service), ASTRO sites provide best-in-class performance.

SERVICE MADE EASY.

ASTRO sites are built to ease service and maintenance with front access modules, cable connections and LED indicators. Hot-swap modules ensure channels are back on the air with minimal downtime. Remote software upgrades with rolling activation makes it easy to stay up to date with minimal disruption.

TOPOLOGIES

Whether analog, digital, conventional or trunked, ASTRO sites support various modes of operation and can be software-configured based on need.

TRUNKING

ASTRO sites support P25 FDMA and TDMA trunking operations ranging from single site to large regional systems. The sites support seamless interoperability with the ability to dynamically switch between FDMA and TDMA without any user intervention or awareness.

CONVENTIONAL

The equipment can be configured to support analog conventional or P25 digital conventional operation. Mixed mode operation supports fleets of both radio types to allow a gradual migration from analog to digital. The ASTRO site components can be used separately for a single conventional repeater or together for a large statewide or country-wide conventional system.

SIMULCAST

When configured for simulcast operation, additional timing and voting equipment allow adjacent sites to utilize the same frequencies with minimal audio degradation. ASTRO sites support both conventional and trunking simulcast systems. Linear Simulcast Modulation (LSM) enables greater spacing without sacrificing coverage or capacity, resulting in fewer sites to build and maintain.

DATA

ASTRO trunking and conventional systems can be enabled with P25 Integrated Data to support basic user data needs. Base station channels can dynamically switch from voice to data based on the call type. ASTRO Enhanced Data optimizes the data channel for applications with a high amount of short inbound data messages like location, telemetry and biometrics, and can improve data efficiency by 12X over standard P25 data.

GTR 8000 BASE RADIO (T7039A)

From conventional to trunking, single repeater to multisite, FDMA to TDMA, and available in multiple frequency bands, the GTR 8000 offers design flexibility and investment protection in a high performance package.

GENERAL SPECIFICATIONS

		700/800 MHz	UHF Range 1 UHF Range 2	VHF	High Power 800 MHz
Size (HxWxD)		5.25 x 19 x 18 in (133 x 483 x 457 mm)			
Weight		46 lb (21 kg)	46 lb (21 kg)	46 lb (21 kg)	48 lb (22 kg)
Temperature Range		-22 to 140 °F (-30 to 60 °C)			
Power Requirements		AC: 90-264 VAC, 47-63 Hz			
		DC: 43.2-60 VDC			
Power Consumption	**Efficiency Package**	C4FM, FM: 405 W LSM, H-DQPSK: 425 W	C4FM, FM: 410 W LSM, H-DQPSK: 445 W	C4FM, FM: 405 W LSM, H-DQPSK: 315 W	C4FM, FM: 700 W
	Standard	C4FM, FM: 430 W LSM, H-DQPSK: 470 W	C4FM, FM: 435 W LSM, H-DQPSK: 455 W	C4FM, FM: 435 W LSM, H-DQPSK: 345 W	C4FM, FM: 725 W
Antenna Connectors TX		N female			
Antenna Connectors RX	**Standard**	BNC female			
	Optional Preselector	N female			
Channel Spacing		12.5/25 kHz	12.5/25 kHz	12.5/15/25/30 kHz	12.5/25 kHz
Modulation	**TX**	C4FM, LSM, H-DQPSK, FM	C4FM, LSM, H-DQPSK, FM	C4FM, LSM, H-DQPSK, FM	FM, C4FM
	RX	C4FM, H-CPM, FM			
Frequency Stability		100 ppb/2 yr or External Reference			

TRANSMITTER

		700/800 MHz	UHF Range 1 UHF Range 2	VHF	High Power 800 MHz
Frequency Range		764-776, 851-870 MHz	380-435, 435-524 MHz	136-174 MHz	851-870 MHz
Power Output		2-100 W	C4FM, FM: 2-110 W H-DQPSK, LSM: 2-100 W	C4FM, FM: 2-100 W H-DQPSK, LSM: 2-60 W	High Power: 15-150 W Low Power: 2-30 W
Electronic Bandwidth		Full Bandwidth			
Modulation Fidelity		5%			
Intermodulation Attenuation		80 dB	65 dB	55 dB	55 dB
Spurious and Harmonic Emissions Attenuation		90 dB			
Analog FM Hum and Noise	**12.5 kHz channel**	45 dB			
	25 kHz channel	50 dB			
Analog Audio Distortion		<2% at 1000 Hz	<2% at 1000 Hz (Typical: 1%)	<2% at 1000 Hz (Typical: 1%)	<2% at 1000 Hz
Emissions Designators		8K70D1E, 8K70D1D, 8K70D1W, 8K10F1E, 8K10F1D, 8K10F1W, 10K0F1E, 10K0F1D, 10K0F1W, 9K80D7E, 9K80D7D, 9K80D7W, 17K7D7D, 16K0F1D, 16K0F3E, 11K0F3E, 14K0F1D, 14K0F3E, 21K7D7E, 21K7D7D, 21K7D7W	8K70D1E, 8K70D1D, 8K70D1W, 8K10F1E, 8K10F1D, 8K10F1W, 9K80D7E, 9K80D7D, 9K80D7W, 10K0F1D, 11K0F3E, 16K0F1D, 16K0F3E	8K70D1E, 8K70D1D, 8K70D1W, 8K10F1E, 8K10F1D, 8K10F1W, 9K80D7E, 9K80D7D, 9K80D7W, 10K0F1D, 11K0F3E, 16K0F1D, 16K0F3E	High Power: 8K10F1E, 8K10F1D, 8K10F1W, 16K0F1D, 16K0F3E, 11K0F3E, 14K0F1D, 14K0F3 Low Power: 8K10F1D, 8K10F1E, 8K10F7W, 8K70D1W, 8K70D7W, 9K80D7W, 10K0F1D, 11K0F3E, 16K0F3E, 16K0F1D

RECEIVER

		700/800 MHz	UHF Range 1 UHF Range 2	VHF	High Power 800 MHz
Frequency Range		792-825 MHz	380-435, 435-524 MHz	136-174 MHz	806-825 MHz
Analog Sensitivity (12 dB SINAD)	**12.5 kHz channel**	-118 dBm	-118 dBm	-119 dBm	-118 dBm
	25 kHz channel	-117 dBm	-117 dBm	-118 dBm	-117 dBm
Digital Sensitivity (5% BER)	**C4FM**	-118 dBm	-118 dBm	-119 dBm	-118 dBm
	H-CPM	-116 dBm	-116 dBm	-117 dBm	-116 dBm
Intermodulation Rejection		85 dB			
Digital Adjacent Channel Rejection		60 dB			
Analog Adj Channel Rejection (EIA603)	**12.5 kHz channel**	75 dB			
Analog Adj Channel Rejection (TIA603D)	**12.5 kHz channel**	50 or 60 dB (adjustable)			
	25 kHz channel	80 dB			
Spurious and Image Response Rejection	**Standard**	85 dB	85 dB	90 dB	85 dB
	With optional preselector	100 dB	100 dB	95 dB	100 dB
Analog Audio Response		+1, -3 dB from 6 dB per octave de-emphasis; 300-3000 Hz referenced to 1000 Hz at line output			
Analog Audio Distortion		3% or 5% (adjustable)			
Analog FM Hum and Noise	**12.5 kHz channel**	45 dB			
	25 kHz channel	50 dB			
Intermediate Frequency	**First**	73.35 MHz	73.35 MHz	44.85 MHz	73.35 MHz
	Second	2.16 MHz			

GTR 8000 EXPANDABLE SITE SUBSYSTEM (SQM01SUM7054A)

The single rack design of the GTR 8000 Expandable Site Subsystem (ESS) houses up to 6 channels with RF distribution and power systems. Factory-configured and tuned to your specific system, it makes installation quick and easy. Connect multiple ESS racks to achieve maximum site capacity.

GENERAL SPECIFICATIONS

		700/800 MHz	UHF Range 1 UHF Range 2	VHF	High Power 800 MHz	900 MHz
Number of Channels		1 to 6	1 to 6	1 to 6	2 to 6	1 to 6
Height with 7.5 ft Rack		90.4 in (2300 mm)				
Footprint (W x D) with 7.5 ft Rack		20.5 x 23.5 in (520 x 600 mm)				
Weight with 7.5 ft Rack		520 lb (235 kg)	UHF R1: 475 lb (215 kg) UHF R2: 565 lb (260 kg)	475 lb (215 kg)	538 lb (246 kg)	575 lb (260 kg)
Temperature Range		-22 to 140 °F (-30 to 60 °C)				
Power Requirements		AC: 90-264 VAC, 47-63 Hz, DC: 43.2-60 VDC				
Power Consumption	**C4FM,FM**	2900 W	2500 W	2650 W	4580 W	3700 W
	LSM, H-DQPSK	3100 W	2700 W	2200 W	N/A	4100 W
	C4FM,FM (Efficiency Package)	2755 W	2325 W	2500 W	4310 W	3700 W
	LSM, H-DQPSK (Efficiency Package)	2900 W	2500 W	2100 W	N/A	4100 W
Antenna Connectors	**TX**	7/16 or N Female	7/16 Female	N Female	N Female	7/16 Female
	RX	N Female	N Female	BNC Female	N Female	N female
Channel Spacing		12.5/25 kHz	12.5/25 kHz	12.5/15/ 25/30 kHz	12.5/25 kHz	12.5 kHz
Transmit Combiner Spacing		100 or 150 kHz	150 kHz (450 - 512 MHz) N/A (380-450, 512-524 MHz)	N/A	N/A	12.5 kHz (Hybrid) 150 kHz (Cavity)
Modulation	**TX**	C4FM, LSM, H-DQPSK, FM	C4FM, LSM, H-DQPSK, FM	C4FM, LSM, H-DQPSK, FM	FM, C4FM	C4FM, LSM, H-DQPSK
	RX	C4FM, H-CPM, FM	C4FM, H-CPM, FM	C4FM, H-CPM, FM	C4FM, H-CPM, FM	C4FM, H-CPM
Frequency Stability		Repeater Site: 100 ppb/2 yr				
		Simulcast (Multisite): GPS synchronized				

TRANSMITTER (CABINET OUTPUT)

		700/800 MHz	UHF Range 1 UHF Range 2	VHF	High Power 800 MHz	900 MHz
Frequency Range		764-776, 851-870 MHz	380-435, 435-524 MHz	136-174 MHz	851-870 MHz	935-941 MHz
Power Output		1-40 W	C4FM, FM: 2-110 W (380-450, 512-524 MHz) LSM, H-DQPSK: 2-100 W (380-450, 512-524 MHz) C4FM, FM: 1-33 W (450-512 MHz) LSM, H-DQPSK: 1-30 W (450-512 MHz)	C4FM, FM: 2-100 W LSM, H-DQPSK: 2-60 W	13-134 W	2-way Hybrid: 1-37 W 3-way Hybrid: 1-22 W 4-way Hybrid: 1-17 W 5-way Hybrid: 1-12 W 6-way Hybrid: 1-10 W
Modulation Fidelity		5%				
Intermodulation Attenuation		80 dB	80 dB (450-512 MHz), 65 dB (380-450, 512-524 MHz)	55 dB	55 dB	80 dB
Spurious / Harmonic Emissions Attenuation		90 dB				
Analog FM Hum / Noise	**12.5 kHz channel**	45 dB	45 dB	45 dB	TBA	N/A
	25 kHz channel	50 dB	50 dB	50 dB	TBA	N/A
Analog Audio Distortion		<2% at 1000 Hz, 1% typ for UHF and VHF bands				
Emissions Designators		8K70D1E, 8K70D1D, 8K70D1W, 8K10F1E, 8K10F1D, 8K10F1W, 10K0F1E, 10K0F1D, 10K0F1W, 9K80D7E, 9K80D7D, 9K80D7W, 17K7D7D, 16K0F1D, 16K0F3E, 11K0F3E, 14K0F1D, 14K0F3E, 21K7D7E, 21K7D7D, 21K7D7W	8K70D1E, 8K70D1D, 8K70D1W, 8K10F1E, 8K10F1D, 8K10F1W, 9K80D7E, 9K80D7D, 9K80D7W, 10K0F1D, 11K0F3E, 16K0F1D, 16K0F3E	8K70D1E, 8K70D1D, 8K70D1W, 8K10F1E, 8K10F1D, 8K10F1W, 9K80D7E, 9K80D7D, 9K80D7W, 10K0F1D, 11K0F3E, 16K0F1D, 16K0F3E	8K10F1E, 8K10F1D, 8K10F1W, 10K0F1E, 10K0F1D, 10K0F1W, 16K0F1D, 16K0F3E, 11K0F3E, 14K0F1D, 14K0F3E	8K70D1E, 8K70D1D 8K70D1W, 8K10F1E 8K10F1D, 8K10F1W 9K80D7E, 9K80D7D 9K80D7W, 10K0F1D 11K0F3E, 16K0F1D 16K0F3E

Does not include Transmitter RF Distribution System for VHF, UHF 380-450, 512-524 MHz and High Power 800 MHz.

RF DISTRIBUTION SYSTEM (TX)

	700/800 MHz Cavity	900 MHz Hybrid	UHF Cavity
Frequency Range	764-776 MHz 851-870 MHz	935-941 MHz	450-512 MHz
Insertion Loss (150 kHz spacing)	3.1 dB typ	2-way loss: 4.4 dB typ 3-way loss: 6.3 dB typ 4-way loss: 7.6 dB typ 5-way loss: 8.8 dB typ 6-way loss: 9.7 dB typ	4.5 dB typ
Tx-Tx Isolation (150 kHz spacing)	32 dB	20 dB	32 dB

RF DISTRIBUTION SYSTEM (RX)

		700/800/900 MHz	UHF
Frequency Range		792-825 MHz or 896-902 MHz	450-512 MHz
Noise Figure	**Typ / Limit**	3.8 / 5 dB	4.6 / 5.5 dB
Gain	**Typ / Limit**	13 / -16 to 24 dB adjustable	10 / -16 to 24 dB adjustable
3rd Order Output Intercept (Typ)		21 dBm	19 dBm
Amplifier Intercept		35 dBm	40 dBm
Preselector Bandwidth		792-825 MHz or 896-902 MHz	2 or 3.5 MHz
RF Input Connector Type		N (Female)	N (Female)
RF Output Connector Type		BNC (Female)	BNC (Female)

RECEIVER (TOP OF CABINET)						
		700/800 MHz	UHF Range 1 UHF Range 2	VHF	High Power 800 MHz	900 MHz
Frequency Range		792-825 MHz	380-435, 435-524 MHz	136-174 MHz	806-825 MHz	896-902 MHz
Analog Sensitivity (12 dB SINAD)	**12.5 kHz channel**	-123 dBm	-117 dBm (380-450, 512-524 MHz) -121.5 dBm (450-512 MHz)	-118 dBm (12.5/15 kHz)	-123 dBm	N/A
	25 kHz channel	-122 dBm	-116 dBm (380-450, 512-524 MHz) -120.5 dBm (450-512 MHz)	-117 dBm (25/30 kHz)	-122 dBm	N/A
Digital Sensitivity (5% BER)	**C4FM**	-123 dBm	-117 dBm (380-450, 512-524 MHz) -121.5 dBm (450-512 MHz)	-118 dBm	-123 dBm	-123 dBm
	H-CPM	-121 dBm	-115 dBm (380-450, 512-524 MHz) -119.5 dBm (450-512 MHz)	-116 dBm	N/A	-121 dBm
Intermodulation Rejection		80 dB				
Digital Adjacent Channel Rejection		60 dB				
Analog Adjacent Channel Rejection (EIA603)	**12.5 kHz channel**	75 dB	75 dB	75 dB	75 dB	N/A
Analog Adjacent Channel Rejection (TIA603D)	**12.5 kHz channel**	50 or 60 dB (adjustable)	50 or 60 dB (adjustable)	50 or 60 dB (adjustable)	50 or 60 dB (adjustable)	N/A
	25 kHz channel	80 dB	80 dB	80 dB	80 dB	N/A
Spurious and Image Response Rejection		100 dB	85 dB (380-435 MHz) 100 dB (450-512 MHz)	90 dB	100 dB	100 dB
Analog Audio Response		+1, -3 dB from 6 dB per octave de-emphasis; 300-3000 Hz referenced to 1000 Hz at line output				N/A
Analog Audio Distortion		3% or 5% (adjustable)	3% or 5% (adjustable)	3% or 5% (adjustable)	3% or 5% (adjustable)	N/A
Analog FM Hum / Noise	**12.5 kHz channel**	45 dB	45 dB	45 dB	45 dB	N/A
	25 kHz channel	50 dB	50 dB	50 dB	50 dB	N/A
Intermediate Frequency	**First**	73.35 MHz	73.35 MHz	44.85 MHz	73.35 MHz	73.35 MHz
	Second	2.16 MHz				

GCM 8000 COMPARATOR (T7321A)

GENERAL SPECIFICATIONS	
	TRUNKING SYSTEMS
Channel Capacity	1 or 2
Size (HxWxD)	5.25 x 19 x 18 in (133 x 483 x 457 mm)
Weight	40 lb (18 kg)
Temperature Range	-22 to 140°F (-30 to 60°C)
Rack Option	19 in standard rack mountable
Time Stability	External Reference
Power Requirements	AC: 90-264 VAC 47-63Hz DC: 43.2-60 VDC
Power Consumption	AC: 1 module 130 W AC: 2 modules 160 W DC: 1 module 60 W DC: 2 modules 80 W

GRV 8000 COMPARATOR (T8341A)

GENERAL SPECIFICATIONS	
	CONVENTIONAL SYSTEMS
Channel Capacity	1 or 2
Size (HxWxD)	5.25 x 19 x 18 in (133 x 483 x 457 mm)
Weight	36 lb (16 kg)
Temperature Range	-22 to 140°F (-30 to 60°C)
Rack Option	19 in standard rack mountable
Time Stability	External Reference
Power Requirements	AC: 90-264 VAC 47-63Hz DC: 43.2-60 VDC
Power Consumption	AC: 1 module 80 W AC: 2 modules 105 W DC: 1 module 50 W DC: 2 modules 75 W

GPW 8000 RECEIVER (T7540A)

GENERAL SPECIFICATIONS					
		700/800 MHz	**UHF Range 1**	**VHF**	**900 MHz**
Frequency Range		792-825 MHz	380-435, 435-524 MHz	136-174 MHz	896-902 MHz
Size (HxWxD)		5.25 x 19 x 18 in (133 x 483 x 457 mm)			
Weight		36 lb (16 kg)			
Temperature Range		-22 to 140°F (-30 to 60°C)			
Power Requirements		AC: 90-264 VAC 47-63Hz or DC: 43.2-60 VDC			
Power Consumption (1 Module / 2 Modules)		AC: 80 / 105 W or with AC Power Efficiency Package: 40 / 65 W			
		DC: 50 / 75 W or with DC Power Efficiency Package: 30 / 50 W			
Antenna Connectors	**Standard**	BNC Female			
	With Optional Preselector	N Female			
Modulation		C4FM, FM			
Frequency Stability		Conventional: 100 ppb/2 yr			
Analog Sensitivity (12 dB SINAD)	**12.5 kHz channel**	-118 dBm	-118 dBm	-119 dBm (12.5/15 kHz)	N/A
	25 kHz channel	-117 dBm	-117 dBm	-118 dBm (25/30 kHz)	N/A
Digital Sensitivity (5% BER)	**C4FM**	-118 dBm	-118 dBm	-119 dBm	-118 dBm
	H-CPM	-116 dBm	-116 dBm	-117 dBm	-116 dBm
Intermodulation Rejection		85 dB	85 dB	85 dB	N/A
Digital Adjacent Channel Rejection		60 dB	60 dB	60 dB	N/A
Analog Adjacent Channel Rejection (EIA603)	**12.5 / 25 kHz channel**	75 dB	75 dB	75 dB	TBA
Analog Adjacent Channel Rejection (TIA603D)	**12.5 kHz channel**	50 or 60 dB (adjustable)	50 or 60 dB (adjustable)	50 or 60 dB (adjustable)	TBA
	25 kHz channel	80 dB	80 dB	80 dB	TBA
Spurious and Image Response Rejection	**Standard**	85 dB	85 dB	90 dB	90 dB
	With Optional Preselector	100 dB	100 dB	95 dB	N/A
Analog Audio Response		+1, -3 dB from 6 dB per octave de-emphasis; 300-3000 Hz referenced to 1000 Hz at line output			
Analog Audio Distortion		3% or 5% (adjustable)			
Analog FM Hum and Noise		12.5 kHz channel: 45 dB, 15 kHz channel: 50 dB			
Intermediate Frequency	**First**	73.35 MHz	73.35 MHz	44.85 MHz	73.35 MHz
	Second	2.16 MHz			

GCP 8000 SITE CONTROLLER (T7038A)

GENERAL SPECIFICATIONS			
Channel Capacity	Repeater Site: 28	**Rack Option**	19 in standard rack mountable
	Simulcast (Multicast): 30	**Frequency Stability**	Simulcast (Multisite): External
Size (HxWxD)	5.25 x 19 x 18 in (133 x 483 x 457 mm)	**Power Requirements**	AC: 90-264 V, 47-63 Hz or DC: 43.2-60 V
Weight	40 lb (18 kg)	**Power Consumption**	AC: 130 W, DC: 60 W
Temperature Range	-22 to 140 °F (-30 to 60 °C)		

DSC 8000 SITE CONTROLLER / REFERENCE DISTRIBUTION MODULE (T8810A)

GENERAL SPECIFICATIONS			
Channel Capacity	Repeater Site: 28	**Rack Option**	19 in standard rack mountable
	Simulcast (Multicast): 30	**Frequency Stability**	Opt. redundant GPS, Opt. redundant GPS with Rubidium extended hold-over, or External Reference
Size (HxWxD)	1.72 x 19 x 15.98 in (43.8 x 483 x 406 mm)	**Power Requirements**	AC: 90-264 V, 47-63 Hz or DC: 26.5-60 V
Weight	19.8 lb (9 kg)	**Power Consumption**	AC: 115 W, DC: 100 W
Temperature Range (Operating)	-22 to 140 °F (-30 to 60 °C)	**Relative Humidity**	15% to 90%, non-condensing
Temperature Range (Non-Operating)	-40 to 185 °F (-40 to 85 °C)		

DSC 8000 Site Controller / Rererence Distribution Module (T8810A)

DSC 8000 AC POWER SUPPLY (T8811A)

GENERAL SPECIFICATIONS			
Size (HxWxD)	1.72 x 19 x 15.98 in (43.8 x 483 x 406 mm)	**Rack Option**	19 in standard rack mountable with included brackets
Weight	22.4 lb (10.2kg)	**Power Requirements**	AC: 90-264 V, 47-63 Hz
Temperature Range (Operating)	-22 to 140 °F (-30 to 60 °C)	**Power Consumption (per DSC 8000)**	AC: 115 W
Temperature Range (Non-Operating)	-40 to 185 °F (-40 to 85 °C)	**Relative Humidity**	15% to 90%, non-condensing

DSC 8000 AC Power Supply (T8811A)

DSC HUB (T7038A)

GENERAL SPECIFICATIONS (CHASSIS WITH 2 DSC HUBS)			
Channel Capacity	6 channels	**Rack Option**	19 in standard rack mountable
Size (HxWxD)	5.25 x 19 x 18 in (133 x 483 x 457 mm)	**Power Requirements**	Powered by GTR 8000 / GPW 8000
Weight	33 lb (15 kg)	**Power Consumption**	DC: 22 W
Temperature Range (Operating)	-22 to 140 °F (-30 to 60 °C)	**Relative Humidity**	15% to 90%, non-condensing
Temperature Range (Non-Operating)	-40 to 185 °F (-40 to 85 °C)		

G-SERIES COMPACT SITE

Protected from the elements, the G-Series Compact Site is a complete ASTRO site that can house up to three GTR 8000 Base Radios in an outdoor, environmentally controlled cabinet. It is ideal for Project 25 (P25) deployments where building enclosures are not cost effective or not feasible due to difficult terrain.

Frequency Band	700 MHz, 800 MHz
Size (HxWxD)	51.2 x 27.2 x 36.5 in (1300 x 690 x 925 mm): Pole Mount 59.5 x 27.2 x 36.5 in (1510 x 690 x 925 mm): Pad Mount 55.3 x 27.2 x 36.5 in (1405 x 690 x 925 mm): Wall Mount
Weight	230 lb (104 kg) empty, 460 lb (209 kg) fully loaded
Temperature Range (External to Cabinet)	-22 to 122 °F (-30 to 50 °C)
Mounting Options	Pole, Pad, or Wall Mountable

SERVICES

Choose the right level of services you need to achieve mission-critical performance for your ASTRO system. The more you engage Motorola Solutions, the more you transfer the risk to us and achieve peace of mind in maximizing your uptime.

ESSENTIAL

Technical support when and where you need it, so you can maintain and restore your system.

ADVANCED

Rely on us to monitor and update your network, providing improved network response and continuity.

PREMIER

Transfer day-to-day accountability to us to operate and optimize all or part of your system to maximize performance and reduce risk.

FCC TYPE ACCEPTANCE

Frequency Range	Type	Power Output	Type Acceptance Number
136-174 MHz	Transmitter	2-100 W	ABZ89FC3790B, ABZ89FC3799B
136-174 MHz	Receiver	N/A	ABZ89FR3791B
406-435 MHz	Transmitter	2-110 W	ABZ89FC4821C
406-435 MHz	Receiver	N/A	ABZ89FR4822B
435-512 MHz	Transmitter	2-110 W	ABZ89FC4819C
435-512 MHz	Receiver	N/A	ABZ89FR4820B
764-776 MHz	Transmitter	2-100 W	ABZ89FC5812B
851-870 MHz	Transmitter	2-100 W	ABZ89FC5810B
792-825 MHz	Receiver	N/A	ABZ89FR5811B
935-941 MHz	Transmitter	2-120 W	ABZ89FC5823B
896-902 MHz	Receiver	N/A	ABZ89FR5824B
851-870 MHz	Transmitter	15-150 W	ABZ89FC5825B

EU REGULATORY COMPLIANCE

CE mark is available on the GTR 8000 Base Radio (T7039A) and GPW 8000 Receiver (T7540A) in the following frequency ranges: UHF 380-525 MHz and VHF 136-174 MHz.

NOTES
- All specifications shown are typical unless otherwise noted.
- All specifications are subject to change without notice.

For more information, please visit us on the web at: www.motorolasolutions.com/ASTRO

MOTOROLA SOLUTIONS

Motorola Solutions, Inc. 500 West Monroe Street, Chicago, Il 60661 U.S.A. **motorolasolutions.com**

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ELECTRONICS & DEFENSE

SECURESYNC 2400

Resilient Time and Frequency Synchronization Platform

Resilient Timing for Evolving Requirements

Resilient Timing depends on securing the time reference acquisition and timescale keeping in the face of GNSS interference. Government recommendations, like the Executive Order in the US or the Cybersecurity Act in European Union, pave the way for future regulations in this domain.

The SecureSync product ecosystem offers a number of solutions to address GNSS threats. With a layered-defense approach, each protective layer increases the sophistication required to compromise, minimizing chances for successful attack.

SecureSync relies on the proven Interference Detection Suite, allowing jamming and spoofing detection. Threats are mitigated by high-performance internal oscillators, or through strong modularity and choice of input interfaces, building redundancy into the timing system architecture.

Whatever your industry, there is a cost-effective SecureSync configuration that keeps your time distribution accurate and available.

- Multi-GNSS synchronization (GPS, Galileo, GLONASS, BeiDou, QZSS)
- GPS jamming and spoofing detection option
- Internal precision timekeeping via TCXO, OCXO or Rb oscillator
- Supports a wide variety of available input/ output signals
- Modular (configure-to- order)
- Exceptional operating temperature range of -20°C to +65°C
- High bandwidth NTP
- PTP v2 Master/Slave
- Dual Gb Ethernet
- Secure network management: Enable or disable protocols for encryption, authentication, authorization and accounting
- REST API management
- Alert notifications via SNMP traps and email alert
- Industry-leading five year limited warranty

Safran Electronics & Defense is with you every step of the way, building in the intelligence that gives you a critical advantage in observation, decision-making and guidance.

SAFRAN

Security

SecureSync 2400 is designed with security in mind, combining cybersecurity best practices, including VLAN support account/access management, authentication, encryption, security event logs, network features disabling, as well as regular, secured firmware updates to keep pace with the latest vulnerabilities and protocol improvements.

Networking that Scales

SecureSync 2400 provides strong and scalable networking capability, thanks to higher embedded processing power. Two Gigabit Ethernet ports (one RJ45, one SFP) are available on the base unit enabling flexible network synchronization as a NTP server or PTP slave/master, as a NTP stratum 2 server, or as a PTP slave/boundary clock.

New generation network option cards (1204-49 and 4A) provide additional dual and quad Gigabit Ethernet SFP ports, embedding their own processing capability and offering further capabilities as NTP server and future PTP slave/master. Scaling up network timing distribution or adding timing redundancy in the network becomes easy.

Modularity

For applications that use “physical” timing signals and require multiple interface types, SecureSync 2400 offers unmatched modularity and a choice of more than 40 option cards.

The base unit provides configurable Input/Output timing interfaces (TTL pulse, RS232/RS485, IRIG AM /DCLS), on top of 10 MHz and 1 pps outputs. If more interfaces are needed, the base unit supports either 2 (2402) or 6 (2406) option card slots, enabling whatever combination of frequency, phase, NMEA or Have Quick time codes, and network synchronization is needed.

Reliability

At the appliance level, SecureSync includes an optional, dual (redundant), hot swappable power supply combined with AC, 12 VDC or 24/48 VDC power modules. Modularity enables multiple time reference management as well as redundant time distribution architectures, which is instrumental to system- level reliability. Any failure is identified and reported in real time, reducing periods of unavailability.

Monitoring

SecureSync 2400 embeds local and remote monitoring tools, including detailed event logs, real-time access to health and operation status, timing performance graphs, and alerts. Integration into automated monitoring systems is supported with legacy protocols like SNMP as well as the more recent REST API. Quick, local diagnostics are accelerated thanks to the front panel indicators and OLED display.

Technical Specifications

Specifications

See option card descriptions for additional performance specifications.

10 MHz Frequency Output:

Internal Oscillator	TCXO	OCXO	LPN OCXO	Rubidium	LPN Rub
Accuracy (average over 24 hours when GPS locked)	$5x10^{-12}$	$4x10^{-12}$	$3x10^{-12}$	$1x10^{-12}$	$1x10^{-12}$
Medium Term Stability (without GPS after 2 weeks of GPS lock)	$1x10^{-8}$ / day	$5x10^{-10}$ /day	$2x10^{-10}$ / day	$5x10^{-11}$ /month ($3x10^{-11}$ /month typ)	
Short Term Stability (Allan Deviation)					
1 sec	$2.5x10^{-9}$	$1x10^{-11}$	$1x10^{-11}$	$1x10^{-11}$	$1x10^{-11}$
10 sec	$1x10^{-9}$	$9x10^{-12}$	$9x10^{-12}$	$9x10^{-12}$	$1x10^{-11}$
100 sec	$5x10^{-10}$	$9x10^{-12}$	$8x10^{-12}$	$4x10^{-12}$	$5x10^{-12}$
Temperature Stability (peak-to-peak)	$1x10^{-6}$	$5x10^{-9}$	$2x10^{-9}$	$1x10^{-10}$	$1x10^{-10}$
Phase Noise (dBc/Hz)					
@1 Hz	—	-95	-100	-80	-100
@10 Hz	—	-123	-128	-98	-128
@100 Hz	-110	-140	-148	-120	-148
@1 kHz	-135	-145	-150	-140	-150
@10 kHz	-140	-150	-150	-140	-150
Signal Waveform & Levels: +13 dBm Sine into 50 ohm, BNC					

1 PPS Timing Output

	TCXO	OCXO	LPN OCXO	Rubidium	LPN Rub
Accuracy to UTC (locked to GPS, @ 1 sigma)	±50 ns	±25 ns	±15 ns	±15 ns	±15 ns
Holdover (constant temp after 2 weeks of GPS lock)					
After 4 hours	12 µs	1 µs	0.5 µs	0.2 µs	0.2 µs
After 24 hours	450 µs	25 µs	10 µs	1 µs	1 µs
Signal Waveform & Levels: TTL (5 V_{P-P}), into 50 ohm, BNC					

Timing Signals

10 MHz Sine Output, BNC

SW Configurable Timing Output, BNC

- TTL Output (1 PPS, xPPS [output only], IRIG DCLS, HAVE QUICK)

SW Configurable Timing Input/Output, HD-15

- TTL Input/Output (1 PPS, xPPS [output only], IRIG DCLS, HAVE QUICK)
- RS-232 Input/Output (NMEA, ASCII ToD)
- RS-485 Input/Output (1 PPS, xPPS [output only], IRIG DCLS, HAVE QUICK, NMEA, ASCII ToD)
- IRIG AM Output

Network Services Timing

- NTP v2, v3, v4: Conforms with RFC 1305 and 5905. Supports Unicast, Broadcast, Multicast, Symmetric Key Encryption, Peering, Stratum 2
- SNTP v3, v4: Conforms with RFC 1769, 2030, 4330, and 5905
- PTP v2: Conforms with IEEE 1588:2019. Supports Master, Slave, E2E, IPv4/v6, Multicast, Unicast, Hybrid modes
- PTP supported profiles: default, power (IEEE 61850-9-3, IEEE C37.238-2011/2017), telecom (ITU-T G.8265.1, G.8275.2 master only)

Management & Communications

- IPv4/IPv6: Dual stack
- VLAN support
- DHCPv4/DHCPv6 (AUTOCONF)/SLAAC: Automatic IP address assignment
- Syslog: Logging
- HTTP(S): Browser-based configuration and monitoring
- REST API configuration and monitoring
- (S)FTP Server: Access to files (logs, etc.)
- SNMP: Supports v1, v2c, and v3 (no auth/auth/priv) with Enterprise MIB
- SMTP: Email

Security Features

- Configurable Password Policy
- Authentication: LDAP, RADIUS, TACACS+
- Enable/Block protocols
- Access Control Lists
- HTTP Strict Transport Security (HSTS) support
- SSL/SSH
- TLS v1.2, v1.3
- SFTP/SCP: Securely transfers files to and from the time server over an SSH session
- SNMP v3: Remotely configure and manage over an encrypted connection
- Alert notifications via SNMP traps and email
- Signed software updates

GNSS Receiver

- Connector: Type SMA with Type N cable adapter, +5V to power active antenna (+3.3V for optional SAASM)
- Frequency: GPS L1 (1575.42 MHz), Galileo E1 (1575.42 MHz), GLONASS L1 (1602.0 MHz), BeiDou B1 (1561.1 MHz), QZSS L1 (1575.42 MHz).
- Satellite tracking: 1 to 72, T-RAIM satellite error management
- Synchronization time: cold start < 15 minutes (includes almanac download), warm start < 5 minutes (assumes almanac downloaded)
- Antenna system: sold separately.

Communications

Network Port

- Dual Gb Ethernet (one RJ-45, one SFP)

Serial Set-up Interface

- RS-232 communications on front panel micro USB, rear panel RJ-45

Front Panel

- LED segments for time display
- OLED menu display and keypad for status and basic configuration
- LED status buttons with one-click menu access

Power

- Fixed 100-240 VAC, 50/60 Hz, 310% from IEC60320 (option 0) connector; power cord included
- Fixed 12 VDC (option 3) or 24/48 VDC (option 4); mating connector and cable clamp included
- Optional dual hot-swap power with load-sharing and failover

Power Draw

- TCXO: 40 W normal (50 W start-up)
- OCXO: 40 W normal (50 W start-up)
- Rubidium: 50 W normal (80 W start-up)

Environmental

	Operating	Storage
Temp	-20 to +65°C (+55°C for Rb)	-40 to +85°C
Humidity	0%-95% RH non-condensing @ 40°C	
Altitude	100-240 VAC up to 13,123 ft (4,000 m)	45,000 ft (13,700 m)
Shock	MIL-STD-810H, 516.8 15g, 11 ms halfsine	
Vibration	MIL-STD-810H, 514.8C-2 cat 4 and 514.8D-11, cat 21 1.1 g rms vertical and 0.8 g rms longitudinal	

Agency Approvals

- CE, TUV, cTUV, FCC part 15 class A, RoHS, REACH, WEEE

Physical & Environmental

Size/Weight

- Designed for EIA 19" rack. 17.1" W x 1.74" H (1U) x 15.17" D (434 mm W x 44 mm H x 385 mm D)
- Weight : 6.0 lbs (2.72 kg) for base unit with AC power supply
- Front rack mount hardware included (assembly required)

Warranty

Five Year Limited Warranty[1]

- Oscillator for rubidium option is warrantied for two years
- Extended warranty is available

[1] *The warranty period may be dependent on country.*

Ordering Information

Base Units

240w-xyz

Select expansion capability, power, internal oscillator and GNSS options:

w = Expansion	x = Power	y = Internal Oscillator	z = GNSS Reference
2 = 2 Option Slots 6 = 6 Option Slots	0 = AC 3 = 12 VDC 4 = 24/48 VDC 6 = Dual Hot-Swap support[2]	0 = TCXO 1 = OCXO 2 = Low Phase Noise OCXO 3 = Rubidium 5 = Low Phase Noise Rubidium	3 = Multi-GNSS

[2] *Dual Hot-Swap requires ordering at least one power module (see power module options below), on top of power option 6 for the base unit .*

Example

A SecureSync with 6 slots base unit with fixed AC power, OCXO internal oscillator, and GPS as the primary reference is Model Number 2406-013. Order option modules for additional input/output functions.

A SecureSync with 2 slots base unit, with Dual Hot Swap AC power supplies, rubidium internal oscillator and GPS as the primary reference requires Model Number 2402-633 and the addition of 2 power supply module 2400-HS-A1.

Optional Upgrade

SS-OPT-BSH: GPS Jamming and Spoofing Detection

Option Modules

Up to 2 or 6 option modules can be accommodated per unit.

See Option Module Card datasheet for details.

Power Modules

Up to 2 power modules, from below list, shall be ordered with the Dual Hot-Swap power option 6:

- 2400-HS-A1: 100-240 VAC.
- 2400-HS-D1: 12 VDC Hot Swap Power module.
- 2400-HS-D2: 24/48 VDC Hot Swap Power module.

Accessories

- I/O timing signals breakout cable enables conversion from single HD-15 connector to individual BNC and Sub-D connectors
- SFP (copper, FO Single Mode, FO Multi-Mode)
- Ancillary kit, rugged installation

POWERED BY TRUST

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SAFRAN

August 18, 2023

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MCN Server 8000™ v8.10
for Motorola Solutions IP Comparators

Introduction

The MCN (Monitoring and Control Network) Server 8000™ software monitors and controls receiver voting systems from a PC over IP network. Support is provided for the following Motorola Solutions IP comparators:

- GRV 8000 Analog or Digital Comparator
- GCM 8000 Digital Comparator
- MLC 8000 Analog Comparator
- Mixed Mode voting systems using a GCM 8000 and MLC 8000 combination

The MCN Server 8000 processes status messages (Vote, Receive, Disable, Fail messages) from the comparators and passes them to the client displays on the IP network. The display screens can be user-defined with various numbers of rows and columns and a number of tabs. Multiple screens can be defined for different users. (Police Dispatch, Fire Dispatch, Technicians) Individual client PCs can be limited to specific screens if desired.

The MCN Server 8000 also accepts control commands (Force-Vote, Disable) from the remote clients and sends them to the comparators.

The MCN Server 8000 supports multiple clients, and may be located remotely from the comparator equipment.

System Configuration

Common system configuration information (Receiver names, Module addresses, channel information, display screen configuration, output functions, etc.) resides in the MCN Server 8000 and is user-configured with the MCNConfig Server 8000 program.

Remote (Client) Display

The Client PC display features real-time stat

monitoring and control of the modules on the MCN network. The client display opens a display screen from the server and accepts status updates from it.

Control functions such as Force-Vote or Disable for comparators are passed to the server for processing.

Local (Server) Display

The Server software includes local display and control capability.

Receiver Failure and Error Logging

The MCNRCD Server software can log receiver failures and other user-defined errors. The error log can aid in diagnosing intermittent receivers or phone lines. Logging can be sent to:

- PC Screen
- Disk
- Printer

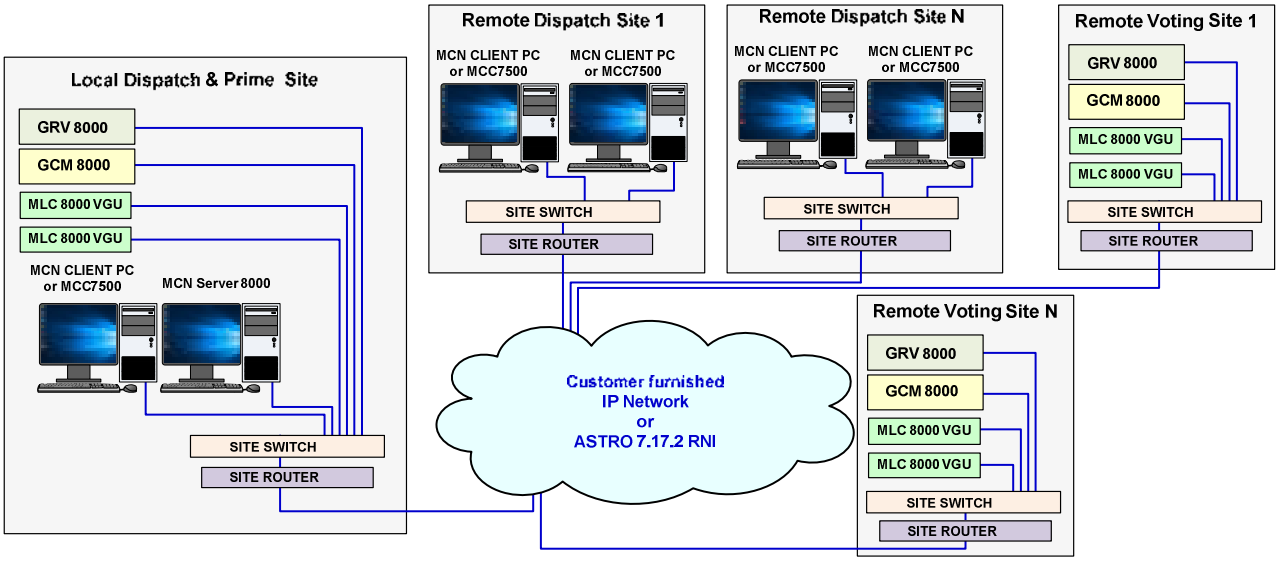
CTI Products, Inc.
1211 West Sharon Road
Cincinnati, Ohio 45240
USA

phone
+1.513.595.5900

fax
+1.513.595.5983

e-mail
info@ctiproducts.com

www.ctiproducts.com



MCN Server 8000 Specifications

Application type	Native 32 Bit Windows Application
Operating Systems	Windows XP, Vista, 7 or 10, Windows Server 2003, 2005, or 2008R2
PC Requirements (min.)	Small Systems: Xeon Dual-Core, 2 GHz, 2GB Memory, CD ROM Drive, Open USB 2.0 Port, 100Base-T Port,Color Monitor Large Systems: Xenon E5 3Ghz 4 core, 8 Gb RM, 100/1000M Ethernet,1 TB Disk, DVD Drive, Graphics card for dual monitors, Windows 7 Pro or 10 Pro, 27”-32” Non-Touch Monitor
Clients Supported	Base system: 4 (Expandable to 64 with additional Client Packs)
Comparators Supported	Base system: 4 (Expandable to 240 with additional Comparator Support Packs.) Note: Mixed Mode systems (GCM 8000 and MLC 8000) use two comparators.
Transport Protocol	UDP-IP Unicast, UDP-IP Multicast to Clients
Support for Legacy MCN Interfaces	Supports (1) HIB-IP unit. Order optional HIB-IP 8002 and appropriate comparator interfaces & I/O (CIB, AIB, GPIO modules, etc.). Contact CTI Products for details. Order one or more DDN1294 options if more than 1 HIB-IP unit must be supported.
Maximum receivers, or I/O points per window	Over 400, depending upon screen resolution and length of names
Receiver Names, Channel Titles, and Display Grid	User configurable
Status Messages and Colors	User configurable

Client Specifications

Application type	Native 32 Bit Windows Application
Operating Systems	Windows XP, Vista,7 or 10, Windows Server 2003, 2005, or 2008R2
PC Requirements (min.)	Xeon Dual-Core, 2 GHz, 2GB Memory, CD ROM Drive, Open USB 2.0 Port, 100Base-T Port,Color Monitor

Ordering

Motorola Part #	CTI Part #	Description
DDN1289	S1-61594	MCN Server 8000 Software License for 4 Motorola IP Comparators & 4 Clients
DDN1287	S1-61595	MCN Server 8000 Software License for 1 Additional Motorola IP Comparator
DDN1288	S1-61596	MCN Server 8000 Software License for 4 Additional Motorola Comparators
DDN1295	S1-61129	MCN Software License Option - Client Expansion for 4 Additional Clients
DDN1294	S2-61164	MCN Software License Option – Multi-NI-4 Adds Support for 4 HIB-IPs
DDN1290	S2-61600	MCN Server 8000 Manual

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PUBLIC SAFETY RADIO EQUIPMENT AND SERVICES

FEE SCHEDULE FOR:

LEWIS COUNTY

October 10, 2024

Presented by
Jason Kester
Wireless System Sales Representative

Day Wireless Systems
39 International Way
Longview, WA 98632

(503) 310-1401
jkester@daywireless.com

DAY WIRELESS SYSTEMS

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30 Offices in Six
Western States
200+ Tower Locations

BILL OF MATERIALS

Qty	Part Number	Description	Price
		BAWFAW BOISTFORT PEAK	
		LAW/ FIRE WEST COMPARATOR	
1	T8341	GRV 8000 COMPARATOR	$3,000.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
2	CA03084AA	ADD: COMPARATOR	$5,000.00
2	CA01949AC	ADD: ANALOG CONV ONLY SW	$9,000.00
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW	$6,000.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	SQM01SUM0333	MCG 8000 CONVENTIONAL GATEWAY	$5,000.00
1	CA03715AA	ADD: DC POWER	0
3	CA03718AA	ADD: ANALOG 4WIRE INTERFACE	$2,250.00
3	CA03720AA	ADD: ANALOG IP INTERFACE	0
1	DLN8038	FRU: MCG 8000 DC POWER MODULE	$750.00
1	DLN8039	FRU: MCG 8000 HD ENH CONV GATEWAY MODULE	$6,000.00
2	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS	$1,990.00
1	9902095	1U 3-UNIT RACK MOUNT	$75.00
2	9902096	1U RACK MOUNT BEZEL	$60.00
		LAW WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
01	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00

FIRE WEST GTR			
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
POWER DISTRIBUTION			
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
GPS SYNCH			
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
RACK LAN SWITCH			
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00

TX ANTENNA			
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
RX ANTENNA			
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
RF DISTRIBUTION			
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$4,920.14
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$2,236.43
2	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$53.00
10	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$28.10
2	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$54.00
2	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$28.60
10	LMR-240	LMR-240 FLE CABLE	$11.40
2	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$26.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98

12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
2	14-582	SITE HARDWARE KIT - STANDARD	$240.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
28	LMR195	LMR-195 COAX CABLE	$27.72
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75

2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
COOKS HILL			
PUBLIC WORKS GTR			
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0

1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00

2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$7,218.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$2,236.43
3	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$79.50
15	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$42.15

3	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$81.00
3	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$42.90
15	LMR-240	LMR-240 FLE CABLE	$17.10
3	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$39.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
3	14-582	SITE HARDWARE KIT - STANDARD	$360.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70

5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
36	LMR-240	LMR-240 Flex Cable	$35.64
6	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$71.28
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
4	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$19.80
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
36	LMR-400	3/8"" LMR400 Coaxial Cable	$71.28
6	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$83.16
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90

EQUIP CREGO HILL			
PUBLIC WORKS/ OPS COMPARATOR			
1	T8341	GRV 8000 COMPARATOR	$3,000.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
2	CA03084AA	ADD: COMPARATOR	$5,000.00
2	CA01949AC	ADD: ANALOG CONV ONLY SW	$9,000.00
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW	$6,000.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	CA00975AA	ADD: BATTERY TEMP SENSOR EXTENSION CABLE	$200.00
1	SQM01SUM0333	MCG 8000 CONVENTIONAL GATEWAY	$5,000.00
1	CA03715AA	ADD: DC POWER	0
3	CA03718AA	ADD: ANALOG 4WIRE INTERFACE	$2,250.00
3	CA03720AA	ADD: ANALOG IP INTERFACE	0
1	DLN8038	FRU: MCG 8000 DC POWER MODULE	$750.00
1	DLN8039	FRU: MCG 8000 HD ENH CONV GATEWAY MODULE	$6,000.00
2	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS	$1,990.00
1	9902095	1U 3-UNIT RACK MOUNT	$75.00
2	9902096	1U RACK MOUNT BEZEL	$60.00
FIRE PAGE SYNC			
1	T8341	GRV 8000 COMPARATOR	$3,000.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	CA03084AA	ADD: COMPARATOR	$2,500.00
1	CA01949AC	ADD: ANALOG CONV ONLY SW	$4,500.00
1	CA01952AC	ADD: ANALOG CONV SIMULCAST SW	$3,000.00
1	CA01400AA	ADD: POWER CABLE, DC	0
PUBLIC WORKS GTR			
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00

1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00

1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00

1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$7,218.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$2,236.43
3	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$79.50
15	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$42.15
3	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$81.00
3	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$42.90
15	LMR-240	LMR-240 FLE CABLE	$17.10
3	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$39.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00

4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
28	LMR195	LMR-195 COAX CABLE	$27.72
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80

2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		DOG MOUNTAIN	
		LAW EAST VOTING/ FIRE EAST VOTING	
1	T8341	GRV 8000 COMPARATOR	$3,000.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
2	CA03084AA	ADD: COMPARATOR	$5,000.00
2	CA01949AC	ADD: ANALOG CONV ONLY SW	$9,000.00
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW	$6,000.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	CA00975AA	ADD: BATTERY TEMP SENSOR EXTENSION CABLE	$200.00
		CONSOLE INTERFACE	
1	SQM01SUM0333	MCG 8000 CONVENTIONAL GATEWAY	$5,000.00
1	CA03715AA	ADD: DC POWER	0
3	CA03718AA	ADD: ANALOG 4WIRE INTERFACE	$2,250.00
3	CA03720AA	ADD: ANALOG IP INTERFACE	0
1	DLN8038	FRU: MCG 8000 DC POWER MODULE	$750.00
1	DLN8039	FRU: MCG 8000 HD ENH CONV GATEWAY MODULE	$6,000.00
2	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS	$1,990.00
1	9902095	1U 3-UNIT RACK MOUNT	$75.00
2	9902096	1U RACK MOUNT BEZEL	$60.00
		LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0

1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00

1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	$600.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	

1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$11,434.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$4,472.86
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$132.50
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$70.25
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$135.00
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$71.50
25	LMR-240	LMR-240 FLE CABLE	$28.50
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$65.00

2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
28	LMR195	LMR-195 COAX CABLE	$27.72
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80

6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		HOPKINS	
		LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00

1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	

1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
POWER DISTRIBUTION			
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
GPS SYNCH			
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
RACK LAN SWITCH			
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00

TX ANTENNA			
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
RX ANTENNA			
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
RF DISTRIBUTION			
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$11,434.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$4,472.86
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$132.50
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$70.25
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$135.00
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$71.50
25	LMR-240	LMR-240 FLE CABLE	$28.50
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$65.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98

12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75

2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		MANNERS	
		LAW WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0

1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00

1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00

1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$11,434.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$4,472.86
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$132.50
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$70.25
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$135.00
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$71.50
25	LMR-240	LMR-240 FLE CABLE	$28.50
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$65.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00

RACK & INTERCONNECT			
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92

1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		MERIDIAN	
		LAW WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00

1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00

15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$4,920.14
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$2,236.43
2	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$53.00
10	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$28.10
2	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$54.00
2	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$28.60
10	LMR-240	LMR-240 FLE CABLE	$11.40
2	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$26.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
2	14-582	SITE HARDWARE KIT - STANDARD	$240.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94

8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
24	LMR-240	LMR-240 Flex Cable	$23.76
4	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$47.52
4	3190-6141	BNC Male Crimp for LMR-195	$43.56
2	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$9.90
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
24	LMR-400	3/8"" LMR400 Coaxial Cable	$47.52
4	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$55.44
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88

8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		MINERAL	
		LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0

1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	

1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
GPS SYNCH			
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
RACK LAN SWITCH			
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
TX ANTENNA			
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12

RX ANTENNA			
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
RF DISTRIBUTION			
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$11,434.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$4,472.86
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$132.50
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$70.25
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$135.00
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$71.50
25	LMR-240	LMR-240 FLE CABLE	$28.50
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$65.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00
RACK & INTERCONNECT			
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76

1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80

4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		PACKWOOD	
		LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0

2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
0	TRN7343	SEVEN AND A HALF FOOT RACK	0
		PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00

5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94

1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$11,434.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$4,472.86
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$132.50
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$70.25
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$135.00
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$71.50
25	LMR-240	LMR-240 FLE CABLE	$28.50
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$65.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60

25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80

8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		RANDLE FIRE	
		LAW EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE EAST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
0	TRN7343	SEVEN AND A HALF FOOT RACK	0
		PUBLIC WORKS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00

1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		OPS GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE PAGE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
3	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00

1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00

RF DISTRIBUTION			
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$11,434.57
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$4,472.86
5	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$132.50
25	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$70.25
5	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$135.00
5	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$71.50
25	LMR-240	LMR-240 FLE CABLE	$28.50
5	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$65.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
5	14-582	SITE HARDWARE KIT - STANDARD	$600.00
RACK & INTERCONNECT			
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00
4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84

4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
48	LMR-240	LMR-240 Flex Cable	$47.52
10	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$118.80
6	3190-6141	BNC Male Crimp for LMR-195	$65.34
5	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$24.75
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
48	LMR-400	3/8"" LMR400 Coaxial Cable	$95.04
10	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$138.60
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80
2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62

2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		TOLEDO	
		LAW WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
0	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		FIRE WEST GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
0	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
1	T8343	GSERIES SOFTWARE LICENSING	0
2	UA00412AA	ADD: GSERIES BR-P25 DIG CONV	0
0	TRN7343	SEVEN AND A HALF FOOT RACK	0
		POWER DISTRIBUTION	
1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICTCB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICTCB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00

1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICTCB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
		GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		RACK LAN SWITCH	
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
		TX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TDF-PSA 1/2 IN 7/16 DIN F	$20.00
1	VHF50D-MA-PGR	VHF50D-MA-PGR VHF HIGH POWER COMBINER PROTECTOR, DIN M-DIN F	$235.99
1	L4TDM-PSA	L4TDM-PSA 1/2 IN 7/16 DIN M	$18.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00
1	L4HM-D	L4HM-D 4.3-10 MALE CONNECTOR FOR 1/2 IN HELIAX AL4RPV-50, LDF4-50A, HL4RPV-50 CABLE	$26.12
		RX ANTENNA	
1	DSBA4041P	RFI BA40-41-DIN DIPOLE ARRAY 3DBD 136-174MHZ 4.3-10F	$2,961.00
1	L4HM-D	L4HM-D 4.3-10F MALE CONNECTOR 1/2	$26.12
100	LDF4RK-50A	LDF4RK-50A 1/2 IN	$320.00
1	L4TDF-PSA	L4TNF-PSA 1/2 IN NF	$22.94
1	VHF50D-MA-PGR	IS-50NX-C2-MA ARRESTOR NM TO NF	$78.99
1	L4TDM-PSA	L4TNM-PSA 1/2 IN NM	$20.00
15	LDF4RK-50A	LDF4RK-50A 1/2 IN	$48.00

1	L4HM-D	L4TNM-PSA 1/2 IN NM	$20.00
		RF DISTRIBUTION	
1	W64522-4.3/4C	COMBINER FF VHF 2CH DL 125W	$4,920.14
1	24102-0/P-5(05)	MULTICOUPLER VHF 2N P-5	$2,236.43
2	F4HM-D	4.3-10 MALE CONNECTOR, STRAIGHT FOR 1/2 IN HELIAX FSJ4-50B CABLE	$53.00
10	FSJ4-50B	FSJ4-50B 1/2 IN SUPERFLEX	$28.10
2	F4PNMV2-HC	F4PNMV2-HC N MALE STRAIGHT CONNECTOR FOR 1/2 IN FSJ4-50B CABLE	$54.00
2	EZ-240-NMH-X	EZ-240-NMH-X NM LMR 240	$28.60
10	LMR-240	LMR-240 FLE CABLE	$11.40
2	EZ-240-BM-X	EZ-240-BM-X BM LMR 240	$26.00
2	PSA3	PSA3 MOUNTS	$1,261.98
2	HG12	HOISTING GRIP	$43.98
12	CXB12	1/2" BLOCKS	$202.56
12	CH35	3/8" ALL THREAD	$450.00
6	GK-C12	1/2" GROUND KIT	$219.00
1	BA123	BOOT ASSEMBLY	$40.69
2	14-582	SITE HARDWARE KIT - STANDARD	$240.00
		RACK & INTERCONNECT	
2	55053-703	Standard Rack 3 in. D (80 mm), 7 ft. H (2.1m) x 19 in. W (483 mm), Grounded, UL Listed, Black	$599.94
8	10559-500	Stand-Off Tie Bracket, Aluminum, 0.88 H x 1 W x 6 in. L, Clear	$110.88
2	10605-019	Rack Base Insulator Kit, 19 in. Rack	$221.76
1	3182602	GROUNDING BUS BAR - Vertical connection across U-Frame CBL support bracket	$100.98
4	784469	BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
70	56967901	#10 TelcoFlex Black	$138.60
70	56968301	#10 TelcoFlex Red	$138.60
25	56976001	#2 TelcoFlex Green	$148.50
50	56975801	#2 TelcoFlex Red	$297.00
50	56975901	#2 TelcoFlex Black	$297.00

4	IZY22-38	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$15.84
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$11.88
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$11.88
4	BRNYA2C	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$15.84
5	879-75LOKR	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$39.60
10	879-5915	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT - One (1) Each	$29.70
5	879-75LOKB	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$39.60
24	LMR195	LMR-195 COAX CABLE	$23.76
24	LMR-240	LMR-240 Flex Cable	$23.76
4	EZ-240-BM-X	BNC Male (Plug) Crimp for LMR-240	$47.52
4	3190-6141	BNC Male Crimp for LMR-195	$43.56
2	031208RFX	Coaxial 50 Ohm T Adapter BNC F/M/F	$9.90
2	DB8922	50 OHM Load BNC 1/4W	$19.80
4	RG179BUBMBM	6" RG-179BU BNC Male to BNC Male	$134.64
24	LMR-400	3/8"" LMR400 Coaxial Cable	$47.52
4	EZ400NMHX	N Male Hex/Knurl Combo No Braid Trim LMR400	$55.44
1	ZCM1001/2-10	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	ZA1200HS 10	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
2	SECA-B2-20	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
8	866018	Everbilt 1/2 in.-13 Yellow Zinc Hex Nut 1-Piece	$15.84
20	866038	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$19.80
4	866028	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
4	810058	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	810088	Everbilt 1/2 in.-13 x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
10	866168	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$19.80
8	04002-001	Washers: Type A Plain 5/8 in. Wide, Gold	$15.84
10	866148	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$19.80
10	866158	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$19.80

2	4200S6	Insulator 1/2" Threaded "Cherry" Grounding Accessories, Red, 2 x 2 in., 2 in L, 2500 V, 2 in. W	$37.62
2	10562-001	Universal Earthquake Bracing Kit	$134.64
2	11440-001	Threaded Drop Rod 72 in. L, Gold	$63.36
2	11592-701	CHATSWORTH Rack Seismic Gusset Kit, Black	$702.90
		SYSTEM WIDE	
		SPARE GTR	
1	T7039	GTR 8000 BASE RADIO	0
1	CA03089AA	ADD: ANALOG CONV IP VOTING/SIMUL	$13,050.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
1	X530BG	ADD: VHF (136-174 MHZ)	$6,300.00
1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE	0
1	CA01400AA	ADD: POWER CABLE, DC	0
1	X153AW	ADD: RACK MOUNT HARDWARE	$50.00
		SPARE GPS SYNCH	
1	2406-613	SECURESYNC MODEL 2406-613	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	1204-08	SECURESYNC 5 MHZ OUT OPTION CARD	$900.00
1	8230	GNSS OUTDOOR ANTENNA	$330.00
1	8226	GPS ANTENNA SURGE PROTECTOR	$340.00
		SPARE GRV	
1	T8341	GRV 8000 COMPARATOR	$3,000.00
1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1	0
2	CA03084AA	ADD: COMPARATOR	$5,000.00
2	CA01949AC	ADD: ANALOG CONV ONLY SW	$9,000.00
2	CA01952AC	ADD: ANALOG CONV SIMULCAST SW	$6,000.00
1	CA01400AA	ADD: POWER CABLE, DC	0
1	CA00975AA	ADD: BATTERY TEMP SENSOR EXTENSION CABLE	$200.00
		GTR POWER SUPPLY	
2	DLN6781	FRU: POWER SUPPLY	$4,400.00
		POWER DIST. SPARE	

1	ICT200DB-12IRC	ICT200DB-12IRC INTELLIGENT DUAL BUS BREAKER PANEL WITH TCP/IP 2 BUS 6 SLOTS PER BUS	$1,110.00
5	ICT-CB25	ICT-CB25 25 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$125.00
2	ICT-CB15	ICT-CB15 15 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
2	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$50.00
1	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
1	ICT-CB5	ICT-CB5 5 AMP BREAKER FOR ICT DISTRIBUTION SERIES 3	$25.00
RACK LAN SWITCH SPARE			
1	IES3110-24TF	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH, 24 X 10/100/1000BASE-T, WITH 4 X 1GB COMBO, -40 TO 75°C OPERATING TEMPERATURE	$599.00
MONITOR AND CONTROL			
2	DELL-C2423HA	DELL 24 VIDEO CONFERENCING MONITOR C2423H - LED MONITOR - FULL HD (1080P) - 24"	$497.98
2	329N2UT#ABA	HP DESKTOP COMPUTER Z2 MINI G5 WORKSTATION INTEL CORE I5-10500 8GB DDR4 256 GB PCIE SSD INTEL UHD GRAPHICS 630 WINDOWS 10 PRO 64-BIT	$1,538.00
1	DDN1289A	MCN SERVER 8000 SW LICENSE FOR MOTOROLA IP COMPARATORS	$9,556.00
1	DDN1288A	MCN GRV 8000, GCM 8000 OR MLC 8000 COMPARATOR SUPPORT – QUAD	$2,100.00
AUDIO INTERFACE			
6	AVA-01-E	ANALOG VOICE ADAPTER -- FXS, FXO, E&M, OR RAW AUDIO OVER SERIAL OR ETHERNET LINKS	$5,970.00
2	9902095	1U 3-UNIT RACK MOUNT	$150.00
6	9902096	1U RACK MOUNT BEZEL	$180.00

Equipment additions per July 2024 design edits are outlined below.

Bennett			
Quantity	**Part**	**Description**	**Price**
1	131800	Threaded Drop Rod, 5/8" 72 in. L	$59.23
1	160299	Threaded Rod Cover, 10' Length	$40.42
1	24104-0/CUST24416 (4Ch RX_Lewis Co_NO:0015379-Item: 002-A_x5)	4Ch RX_MULTICOUPLER DL VHF 2N/2N AT2	$4,816.92
1	138515	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH	$921.54
1	89027042	19in Rack Base Insulator Kit. Black	$150.05
1	88316046	Universal Earthquake Bracing Kit	$67.32
1	94058665	Standard Rack 45RU-3 in. D, 7 ft. H x 19 in. W, Grounded, UL Listed	$306.63
1	89026581	Washers: Type A Plain 5/8 in. Wide, Gold	$1.98
1	96093565	Rack Seismic Gusset Kit, Black	$351.45
4	89027053	Stand-off Tie Bracket	$56.32
1	25366157	Insulator 1/2" Threaded "Cherry" Grounding Accessories	$18.81
2	323371198	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$3.96
2	204274279	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$7.92
2	204274282	Everbilt 1/2 in. x 13 tpi x 2 in. Zinc-Plated Grade 8 Cap Screw	$7.92
1	323369288	Everbilt 1/2 in. x 13 tpi_ Yellow Zinc Hex Nut 1-Piece	$1.98
2	323371218	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$7.92
4	323369983	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$3.96
2	323369476	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$3.96
4	323371963	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$7.92
1	1002151010	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	100125003	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
1	205659838	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$5.94
1	542914	ICT - ICT200DB-12IRC distribution Intelligent dual bus breaker panel with TCP/IP, Dual Buss 100amp	$1,050.00
2	543931	ICT 15 Amp Breaker - ICT-CB15	$76.60
5	513911	ICT 5 Amp Breaker - ICT-CB5	$172.50
4	555235	ICT blank_ ICT-BLP - space holder in breaker / load panels	$28.28
2	CA01953AB	Motorola - ADD: POWER EFFICIENCY PACKAGE	$1,000.00
2	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$100.00

2	CA01949AB	Motorola - ADD: ANALOG ONLY CONV SW R/X ONLY	$0.00
2	CA03111AA	Motorola - ADD: CEC COMPLIANCE	$0.00
2	X301AR	Motorola - ADD: QTY 1 GPW 8000 RECEIVER	$0.00
2	CA02310AA	Motorola - ADD: R&TTE CERTIFICATION	$0.00
2	X530BH	Motorola - ADD: VHF (136-174 MHZ)	$3,200.00
4	0784469Y02	BRACKET,BRKT, CBL SUPPORT	$490.76
2	T7540	Motorola - GPW 8000 RECEIVER - Base Chassis can be loaded with Qty# 2 Receivers.	$1,000.00
1	3182602Y06	Grounding Bus Bar - GROUNDING BUS BAR	$119.31
1	DSBA4041P	DIN Dipole Array Antenna, Gain 3dbd, Freq. Range 136-174Mhz, 4.3-10 Female connector	$2,961.00
5	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$55.00
5	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$55.00
10	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$35.20
1	8230	GNSS OUTDOOR ANTENNA - GPS/GNSS Outdoor Antenna	$424.29
1	8226	GPS ANTENNA SURGE PROTECTOR - GPS Surge protector	$437.14
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	2406-613	SECURESYNC MODEL 2406-613 - SecureSync 2400 Time & Frequency synchronization system	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
70	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$129.50
70	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$129.50
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$16.00
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$16.00
4	IZY22-38-1-I	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$18.56
4	BRNYA2CLBOX	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$21.36
50	TFX407870468	#2 TelcoFlex Black - 56975901 TelcoFlex	$322.50
15	TFX407405778	#2 TelcoFlex Green - 56976001 TelcoFlex	$96.75
50	TFX407405745	#2 TelcoFlex Red - 56975801 TelcoFlex	$322.50
2	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$24.66
1	593507	4.3-10 DIN Male Straight - LDF4-50 1/2"	$26.71
1	587552	4.3-10 DIN Male Straight	$28.14
1	441175	FSJ4 - 1/2" Superflex - N-Male Captivated Connector	$27.60
15	430174	FSJ-4-50 1/2" - 50 Ohm Superflex Coax Cable	$48.75
1	288028	1/4W_BNC Load Termination	$10.00
100	429150	LDF4-50A 1/2 in Foam Heliax Cable - Black PE Jacket	$263.00
1	307941	N Female - LDF4-50 1/2"_ N-Female Positive Stop	$24.40

1	58966	125-1000_MHz Flange Mount Arrestor	$90.88
32	35065	LMR-240 Coaxial Cable - 0.178" OD	$29.76
1	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$36.10
8	591121	BNC Male (Plug) _240 - LMR-240	$98.56
		Bawfaw	
Quantity	**Part**	**Description**	**Price**
1	24104-0/CUST24416 (4Ch RX_Lewis Co_NO:0015379-Item: 002-B_x2)	4Ch RX_MULTICOUPLER DL VHF 2N/2N AT2	$4,816.92
1	W64552-4.3/4C (5Ch TX_ Lewis Co_No:0015379-Item:001-A_x5)	5Ch COMBINER FF VHF 5CH DL 125W	$12,314.15
1	X530BG	GTR8000 - ADD - VHF (136-174)	$5,355.00
1	T7039A	GTR8000 Base Radio	$0.00
1	542914	ICT - ICT200DB-12IRC distribution Intelligent dual bus breaker panel with TCP/IP, Dual Buss 100amp	$1,050.00
3	543931	ICT 15 Amp Breaker - ICT-CB15	$114.90
5	513930	ICT 25 Amp Breaker - ICT-CB25	$177.85
11	513911	ICT 5 Amp Breaker - ICT-CB5	$379.50
1	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$50.00
1	CA03089AA	Motorola - ADD: ANALOG CONV IP VOTING/SIMUL - Base Radio Software	$13,050.00
1	CA01952AA	Motorola - ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE - Conventional Software System Configuration	$0.00
1	CA03678AA	Motorola - ADD: ASTRO SYSTEM RELEASE 2021.1 _ One (1) Astro System Release License per Chassis	$0.00
1	CA01503AA	Motorola - ADD: FALL BACK IN SIMULCAST CABINET REPEAT - Conventional Features	$600.00
1	CA01400AA	Motorola - ADD: POWER CABLE, DC	$0.00
1	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$11.00
1	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$11.00
2	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$7.04
30	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$55.50
30	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$55.50
1	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$12.33
1	587552	4.3-10 DIN Male Straight	$28.14
1	441175	FSJ4 - 1/2" Superflex - N-Male Captivated Connector	$27.60

8	430174	FSJ-4-50 1/2" - 50 Ohm Superflex Coax Cable	$26.00
1	288028	DB SPECTRA - M#DB8922 - 1/4W_BNC Load Termination	$10.00
8	35065	LMR-240 Coaxial Cable - 0.178" OD	$7.44
1	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$36.10
2	591121	BNC Male (Plug) _240 - LMR-240	$24.64
		Democrat	
Quantity	**Part**	**Description**	**Price**
2	131800	Threaded Drop Rod, 5/8" 72 in. L	$118.46
2	160299	Threaded Rod Cover, 10' Length	$80.84
1	24104-0/CUST24416 (4Ch RX_Lewis Co_NO:0015379-Item: 002-B_x2)	4Ch RX_MULTICOUPLER DL VHF 2N/2N AT2	$4,816.92
1	138515	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH	$921.54
2	89027042	19in Rack Base Insulator Kit. Black	$300.10
2	88316046	Universal Earthquake Bracing Kit	$134.64
2	94058665	Standard Rack 45RU-3 in. D, 7 ft. H x 19 in. W, Grounded	$613.26
2	89026581	Washers: Type A Plain 5/8 in. Wide, Gold	$3.96
2	96093565	Rack Seismic Gusset Kit, Black	$702.90
8	89027053	Stand-off Tie Bracket	$112.64
2	25366157	Insulator 1/2" Threaded "Cherry" Grounding Accessories	$37.62
1	X530BG	GTR8000 - ADD - VHF (136-174)	$6,300.00
1	T7039A	GTR8000 Base Radio	$0.00
4	323371198	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$7.92
4	204274279	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	204274282	Everbilt 1/2 in. x 13 tpi x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
2	323369288	Everbilt 1/2 in. x 13 tpi_ Yellow Zinc Hex Nut 1-Piece	$3.96
4	323371218	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
8	323369983	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$7.92
4	323369476	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$7.92
8	323371963	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$15.84
2	1002151010	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$15.84
2	100125003	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$102.96
2	205659838	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
1	542914	ICT - ICT200DB-12IRC distribution Intelligent dual bus breaker panel with TCP/IP, Dual Buss 100amp	$1,175.99

2	543931	ICT 15 Amp Breaker - ICT-CB15	$76.60
1	513930	ICT 25 Amp Breaker - ICT-CB25	$35.57
5	513911	ICT 5 Amp Breaker - ICT-CB5	$172.50
4	555235	ICT blank_ ICT-BLP - space holder in breaker / load panels	$28.28
3	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$150.00
1	CA03089AA	Motorola - ADD: ANALOG CONV IP VOTING/SIMUL - Base Radio Software	$13,050.00
1	CA01952AA	Motorola - ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE - Conventional Software System Configuration	$0.00
3	CA03678AA	Motorola - ADD: ASTRO SYSTEM RELEASE 2021.1 _ One (1) Astro System Release License per Chassis	$0.00
3	CA01400AA	Motorola - ADD: POWER CABLE, DC	$0.00
2	X302AR	Motorola - ADD: QTY 2 GPW 8000 RECEIVER	$1,600.00
4	CA03090AB	Motorola - ADD: RX ANALOG CONV IP VOTING/SIMUL	$6,000.00
4	X530BH	Motorola - ADD: VHF (136-174 MHZ)	$12,800.00
4	0784469Y02	Cable Support Bracket - BRACKET,BRKT, CBL SUPPORT	$490.76
2	T7540	Motorola - GPW 8000 RECEIVER	$2,000.00
1	3182602Y06	GROUNDING BUS BAR	$119.31
2	DSBA4041P	Motorola Drop Ship - RFI M#BA40-41-DIN Dipole Array Antenna, Gain 3dbd, Freq. Range 136-174Mhz, 4.3-10 Female connector	$5,922.00
5	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$55.00
5	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$55.00
10	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$35.20
1	8230	GNSS OUTDOOR ANTENNA - GPS/GNSS Outdoor Antenna	$424.29
1	8226	GPS ANTENNA SURGE PROTECTOR	$437.14
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	2406-613	SECURESYNC MODEL 2406-613 - SecureSync 2400 Time & Frequency synchronization system	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
70	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$129.50
70	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$129.50
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$16.00
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$16.00
4	IZY22-38-1-I	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$18.56
4	BRNYA2CLBOX	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$21.36

50	TFX407870468	#2 TelcoFlex Black - 56975901 TelcoFlex	$322.50
15	TFX407405778	#2 TelcoFlex Green - 56976001 TelcoFlex	$96.75
50	TFX407405745	#2 TelcoFlex Red - 56975801 TelcoFlex	$322.50
3	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$36.99
2	593507	4.3-10 DIN Male Straight - LDF4-50 1/2"	$53.42
3	587552	4.3-10 DIN Male Straight	$84.42
1	337367	7/16 DIN Female - LDF4-50 1/2"	$20.20
1	452194	7/16 DIN Male - FSJ4	$27.11
2	441175	FSJ4 - 1/2" Superflex - N-Male	$55.20
38	430174	FSJ-4-50 1/2" - 50 Ohm Superflex Coax Cable	$123.50
1	288028	1/4W_BNC Load Termination	$10.00
200	429150	LDF4-50A 1/2 in Foam Heliax Cable - Black PE Jacket	$526.00
1	307941	N Female - LDF4-50 1/2"	$24.40
1	58966	125-1000_MHz Flange Mount Arrestor	$90.88
1	379267	VHF High Power Combiner Protector	$269.35
32	35065	LMR-240 Coaxial Cable - 0.178" OD	$29.76
2	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$72.20
8	591121	BNC Male (Plug) _240 - LMR-240	$98.56
		Hopkins	
Quantity	**Part**	**Description**	**Price**
1	24102-0/P-5(05) (2Ch RX_Lewis Co_NO:0015379-Item: 006)	2Ch RX_MULTICOUPLER VHF 2N P-5_Frequency: 150 - 152	$2,408.46
1	24104-0/CUST24416 (4Ch RX_Lewis Co_NO:0015379-Item: 002-A_x5)	4Ch RX_MULTICOUPLER DL VHF 2N/2N AT2	$4,816.92
1	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$50.00
1	CA03678AA	Motorola - ADD: ASTRO SYSTEM RELEASE 2021.1 _ One (1) Astro System Release License per Chassis	$0.00
1	CA01400AA	Motorola - ADD: POWER CABLE, DC	$0.00
1	X302AR	Motorola - ADD: QTY 2 GPW 8000 RECEIVER	$800.00
2	CA03090AB	Motorola - ADD: RX ANALOG CONV IP VOTING/SIMUL	$3,000.00
2	X530BH	Motorola - ADD: VHF (136-174 MHZ)	$6,400.00
1	T7540	Motorola - GPW 8000 RECEIVER	$1,000.00
1	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$11.00
1	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$11.00
2	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$7.04

30	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$55.50
30	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$55.50
1	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$12.33
1	288028	1/4W_BNC Load Termination	$10.00
16	35065	LMR-240 Coaxial Cable - 0.178" OD	$14.88
1	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$36.10
4	591121	BNC Male (Plug) _240 - LMR-240	$49.28
		Meridian	
Quantity	**Part**	**Description**	**Price**
1	W64532-4.3/4C (3Ch TX_Lewis Co_No:0015379-Item: 005)	3Ch TX COMBINER FF VHF 3CH	$7,773.85
1	24104-0/CUST24416 (4Ch RX_Lewis Co_NO:0015379-Item: 002-B_x2)	4Ch RX_MULTICOUPLER DL VHF 2N/2N AT2	$4,816.92
1	X530BG	GTR8000 - ADD - VHF (136-174)	$6,300.00
1	T7039A	GTR8000 Base Radio	$0.00
2	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$100.00
1	CA03089AA	Motorola - ADD: ANALOG CONV IP VOTING/SIMUL - Base Radio Software	$13,050.00
1	CA01952AA	Motorola - ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE - Conventional Software System Configuration	$0.00
2	CA03678AA	Motorola - ADD: ASTRO SYSTEM RELEASE 2021.1 _ One (1) Astro System Release License per Chassis	$0.00
2	CA01400AA	Motorola - ADD: POWER CABLE, DC	$0.00
1	X302AR	Motorola - ADD: QTY 2 GPW 8000 RECEIVER	$800.00
2	CA03090AB	Motorola - ADD: RX ANALOG CONV IP VOTING/SIMUL	$3,000.00
2	X530BH	Motorola - ADD: VHF (136-174 MHZ)	$6,400.00
1	T7540	Motorola - GPW 8000 RECEIVER	$1,000.00
2	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$22.00
2	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$22.00
4	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$14.08
30	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$55.50
30	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$55.50
3	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$36.99
1	587552	4.3-10 DIN Male Straight	$28.14

1	441175	FSJ4 - 1/2" Superflex - N-Male	$27.60
8	430174	FSJ-4-50 1/2" - 50 Ohm Superflex Coax Cable	$26.00
2	288028	1/4W_BNC Load Termination	$20.00
32	35065	LMR-240 Coaxial Cable - 0.178" OD	$29.76
3	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$108.30
8	591121	BNC Male (Plug) _240 - LMR-240	$98.56
Onalaska			
Quantity	**Part**	**Description**	**Price**
1	131800	Threaded Drop Rod, 5/8" 72 in. L	$59.23
1	160299	Threaded Rod Cover, 10' Length	$40.42
1	24104-0/CUST24416 (4Ch RX_Lewis Co_NO:0015379-Item: 002-B_x2)	4Ch RX_MULTICOUPLER DL VHF 2N/2N AT2	$4,816.92
1	138515	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH	$921.54
1	89027042	19in Rack Base Insulator Kit. Black	$150.05
1	88316046	Universal Earthquake Bracing Kit	$67.32
1	94058665	Standard Rack 45RU-3 in. D, 7 ft. H x 19 in. W, Grounded	$306.63
1	89026581	Washers: Type A Plain 5/8 in. Wide,	$1.98
1	96093565	Rack Seismic Gusset Kit, Black	$351.45
4	89027053	Stand-off Tie Bracket	$56.32
1	25366157	Insulator 1/2" Threaded "Cherry" Grounding Accessories	$18.81
2	323371198	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$3.96
2	204274279	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$7.92
2	204274282	Everbilt 1/2 in. x 13 tpi x 2 in. Zinc-Plated Grade 8 Cap Screw	$7.92
1	323369288	Everbilt 1/2 in. x 13 tpi_ Yellow Zinc Hex Nut 1-Piece	$1.98
2	323371218	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$7.92
4	323369983	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$3.96
2	323369476	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$3.96
4	323371963	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$7.92
1	1002151010	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$7.92
1	100125003	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$51.48
1	205659838	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$5.94
1	542914	ICT - ICT200DB-12IRC distribution Intelligent dual bus breaker panel with TCP/IP, Dual Buss 100amp	$1,175.99
2	543931	ICT 15 Amp Breaker - ICT-CB15	$76.60

5	513911	ICT 5 Amp Breaker - ICT-CB5	$172.50
1	555235	ICT blank_ ICT-BLP - space holder in breaker / load panels	$7.07
2	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$100.00
2	CA03678AA	Motorola - ADD: ASTRO SYSTEM RELEASE 2021.1 _ One (1) Astro System Release License per Chassis	$0.00
2	CA01400AA	Motorola - ADD: POWER CABLE, DC	$0.00
2	X302AR	Motorola - ADD: QTY 2 GPW 8000 RECEIVER	$1,600.00
4	CA03090AB	Motorola - ADD: RX ANALOG CONV IP VOTING/SIMUL	$6,000.00
4	X530BH	Motorola - ADD: VHF (136-174 MHZ)	$12,800.00
4	0784469Y02	BRACKET,BRKT, CBL SUPPORT	$490.76
2	T7540	Motorola - GPW 8000 RECEIVER	$2,000.00
1	3182602Y06	GROUNDING BUS BAR	$119.31
1	DSBA4041P	DIN Dipole Array Antenna, Gain 3dbd, Freq. Range 136-174Mhz, 4.3-10 Female connector	$2,961.00
2	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$22.00
2	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, RED	$22.00
4	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$14.08
1	8230	GPS/GNSS Outdoor Antenna supporting GPS	$424.29
1	8226	GPS ANTENNA SURGE PROTECTOR - GPS Surge protector	$437.14
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE	$1,780.00
1	2406-613	SECURESYNC MODEL 2406-613 - SecureSync 2400 Time & Frequency synchronization system	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
70	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$129.50
70	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$129.50
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$16.00
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$16.00
4	IZY22-38-1-I	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$18.56
4	BRNYA2CLBOX	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$21.36
50	TFX407870468	#2 TelcoFlex Black - 56975901 TelcoFlex	$322.50
15	TFX407405778	#2 TelcoFlex Green - 56976001 TelcoFlex	$96.75
50	TFX407405745	#2 TelcoFlex Red - 56975801 TelcoFlex	$322.50
2	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$24.66
1	593507	4.3-10 DIN Male Straight - LDF4-50 1/2"_ DIN	$26.71
1	587552	4.3-10 DIN Male Straight	$28.14
1	441175	FSJ4 - 1/2" Superflex - N-Male	$27.60
15	430174	FSJ-4-50 1/2" - 50 Ohm Superflex Coax Cable	$48.75

1	288028	1/4W_BNC Load Termination	$10.00
100	429150	LDF4-50A 1/2 in Foam Heliax Cable - Black PE Jacket	$263.00
1	307941	N Female - LDF4-50 1/2"	$24.40
1	58966	125-1000_MHz Flange Mount Arrestor	$90.88
32	35065	LMR-240 Coaxial Cable - 0.178" OD	$29.76
1	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$36.10
8	591121	BNC Male (Plug) _240 - LMR-240	$98.56
Dispatch			
Quantity	**Part**	**Description**	**Price**
2	131800	Threaded Drop Rod, 5/8" 72 in. L	$118.46
2	160299	Threaded Rod Cover, 10' Length	$80.84
1	138515	24-PORT GIGABIT ETHERNET L2+ MANAGED INDUSTRIAL SWITCH	$921.54
2	89027042	19in Rack Base Insulator Kit. Black	$300.10
2	88316046	Universal Earthquake Bracing Kit	$134.64
2	94058665	Standard Rack 45RU-3 in. D, 7 ft. H x 19 in. W, Grounded	$613.26
2	89026581	Washers: Type A Plain 5/8 in.	$3.96
2	96093565	Rack Seismic Gusset Kit, Black	$702.90
8	89027053	Chatsworth Stand-off Tie Bracket	$112.64
2	25366157	Insulator 1/2" Threaded "Cherry" Grounding Accessories	$37.62
6	X530BG	GTR8000 - ADD - VHF (136-174)	$37,800.00
6	T7039A	GTR8000 Base Radio	$0.00
4	323371198	5/8 in. Yellow Zinc Lock Washer 2-Pieces	$7.92
4	204274279	Everbilt 1/2 in. x 13 tpi x 1 in. Zinc-Plated Grade 8 Cap Screw	$15.84
4	204274282	Everbilt 1/2 in. x 13 tpi x 2 in. Zinc-Plated Grade 8 Cap Screw	$15.84
2	323369288	Everbilt 1/2 in. x 13 tpi_ Yellow Zinc Hex Nut 1-Piece	$3.96
4	323371218	Everbilt 1/2 in. Yellow Zinc Flat Washer 3-Pieces	$15.84
8	323369983	Everbilt 1/2 in. Yellow Zinc Lock Washer 1-Piece	$7.92
4	323369476	Everbilt 5/8 in. Yellow Zinc Flat Washer 2-Pieces	$7.92
8	323371963	Everbilt 5/8 in.-11 Yellow Zinc Hex Nut 1-Piece	$15.84
2	1002151010	Superstrut 1/2 in. Nylon Strut Cone Nut - Gold Galvanized - Strut Fitting (5-Pack)	$15.84
2	100125003	Superstrut 10 ft. 12-Gauge Half Slotted Metal Framing Strut Channel in Gold Galvanized	$102.96
2	205659838	Superstrut 12-Gauge Blue Strut End Cap for A Series Channel (2-Pack)	$11.88
2	542914	ICT - ICT200DB-12IRC distribution Intelligent dual bus breaker panel with TCP/IP, Dual Buss 100amp	$2,351.98
1	543931	ICT 15 Amp Breaker - ICT-CB15	$38.30
6	513930	ICT 25 Amp Breaker - ICT-CB25	$213.42

11	513911	ICT 5 Amp Breaker - ICT-CB5	$379.50
6	555235	ICT blank_ ICT-BLP - space holder in breaker / load panels	$42.42
6	X153AW	Motorola - ADD: RACK MOUNT HARDWARE	$300.00
6	CA03089AA	Motorola - ADD: ANALOG CONV IP VOTING/SIMUL - Base Radio Software	$78,300.00
6	CA01952AA	Motorola - ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE - Conventional Software System Configuration	$0.00
6	CA03678AA	Motorola - ADD: ASTRO SYSTEM RELEASE 2021.1 _ One (1) Astro System Release License per Chassis	$0.00
6	CA01400AA	Motorola - ADD: POWER CABLE, DC	$0.00
4	0784469Y02	Motorola - Cable Support Bracket - BRACKET,BRKT, CBL SUPPORT - U-Frame Horseshoe Bracket	$490.76
1	3182602Y06	GROUNDING BUS BAR	$119.31
6	879-75LOKBLK	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY, BLACK	$66.00
6	879-75LOKRED	Heavy Duty Power Connectors LOCKING PP75 HOUSING ONLY	$66.00
12	879-5915-BK	Heavy Duty Power Connectors PP75 #10-12 AWG CONTACT	$42.24
1	8230	GPS/GNSS Outdoor Antenna	$424.29
1	8226	GPS ANTENNA SURGE PROTECTOR	$437.14
2	2400-HS-D2	SECURESYNC HOT SWAP 24/48 VDC POWER SUPPLY MODULE - Hot Swappable 24/48 VDC Power Supply	$1,780.00
1	2406-613	SECURESYNC MODEL 2406-613 - SecureSync 2400 Time & Frequency synchronization system	$5,650.00
1	1204-17	SECURESYNC PROGRAMMABLE TTL OUTPUT OPTION CARD	$1,300.00
70	TFX407405679	#10 TelcoFlex Black - 56967901 TelcoFlex	$129.50
70	TFX407405588	#10 TelcoFlex Red - 56968301 TelcoFlex	$129.50
4	IZY2-14	#2 AWG Lug, One 1/4" Hole, Long Barrel	$16.00
4	IZY2-38	#2 AWG Lug, One 3/8" Hole, Long Barrel	$16.00
4	IZY22-38-1-I	#2 Lug Two 3/8 Holes @ 1" OC Inspect Window	$18.56
4	BRNYA2CLBOX	#2 Stranded 1-Hole Lug 5/16" Stud, Std Barrel	$21.36
50	TFX407870468	#2 TelcoFlex Black - 56975901 TelcoFlex	$322.50
15	TFX407405778	#2 TelcoFlex Green - 56976001 TelcoFlex	$96.75
50	TFX407405745	#2 TelcoFlex Red - 56975801 TelcoFlex	$322.50
5	R/FRFB-1130	BNC T_Adapter F-M-F/ Jack-Plug-Jack 50 Ohm	$61.65
6	67527	Single folded dipole antenna covers the 138 - 174 MHz	$5,148.48
12	441175	FSJ4 - 1/2" Superflex - N-Male Captivated Connector	$331.20
150	430174	FSJ-4-50 1/2" - 50 Ohm Superflex Coax Cable	$487.50
1	288028	1/4W_BNC Load Termination	$10.00
600	429150	LDF4-50A 1/2 in Foam Heliax Cable - Black PE Jacket	$1,578.00

12	307941	N Female - LDF4-50 1/2"	$292.80
6	40756	Polyphaser 10 - 1000 MHz Bulkhead Arrestor	$725.16
4	593333	6" RG-179BU - RF Connector Style: BNC Male Straight to BNC Male Straight - Jumper	$144.40

PRICE PROPOSAL

Please note that the pricing listed below does not include taxes. Any applicable taxes will be calculated at the time of purchase.

BAWFAW BOISTFORT PEAK

Description	Quote
Equipment & Shipping	$113,784.33
Technical Services	$22,442.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$158,671.19**

COOKS HILL

Description	Quote
Equipment & Shipping	$95,230.73
Technical Services	$23,846.36
Tower Services	$19,305.00
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$143,452.09**

CREGO HILL

Description	Quote
Equipment & Shipping	$149,743.24
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$209,021.10**

DOG MOUNTAIN

Description	Quote
Equipment & Shipping	$183,396.77
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$242,674.63**

HOPKINS

Description	Quote
Equipment & Shipping	$141,067.81
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$200,345.67**

MANNERS

Description	Quote
Equipment & Shipping	$141,067.81
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$200,345.67**

MERIDIAN

Description	Quote
Equipment & Shipping	$73,192.95
Technical Services	$22,442.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$118,079.81**

MINERAL

Description	Quote
Equipment & Shipping	$141,067.81
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$200,345.67**

PACKWOOD

Description	Quote
Equipment & Shipping	$141,067.81
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$200,345.67**

RANDLE FIRE

Description	Quote
Equipment & Shipping	$141,067.81
Technical Services	$36,833.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$200,345.67**

TOLEDO

Description	Quote
Equipment & Shipping	$73,192.95
Technical Services	$22,442.36
Tower Services	$17,374.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$118,079.81**

SPARE EQUIPMENT

Description	Quote
Equipment & Shipping	$80,134.31
MSRP TOTAL	**$80,134.31**

TRAINING AND SOFTWARE SUPPORT

Description	Quote
Motorola and Day Wireless Training	$28,385.50
TOTAL	**$28,385.50**

PROJECT TOTAL

Description	Quote
Equipment and labor for all sites including tower services, licensing coordination, project management, spare equipment, and technician training	$2,100,226.80
Existing Motorola CAD Customer Discount, Existing Motorola Call Taking Customer Discount Existing Motorola Console Discount, Day Wireless Existing Customer Loyalty Discount	**-$539,980.69**
PROJECT TOTAL	**$1,560,246.11**

Additions per July 2024 design edits are outlined below.

DOG

Description	Quote
Equipment & Shipping	$2,907.41
Technical Services	$5,541.67
Tower Services	$0.00
Administrative	$0.00
Project Management	$0.00
MSRP TOTAL	**$8,449.08**

CREGO

Description	Quote
Equipment & Shipping	$0.00
Technical Services	$16,677.67
Tower Services	$0.00
Administrative	$0.00
Project Management	$0.00
MSRP TOTAL	**$16,677.67**

BAWFAW

Description	Quote
Equipment & Shipping	$26,980.62
Technical Services	$4,375.00
Tower Services	$0.00
Administrative	$0.00
Project Management	$0.00
MSRP TOTAL	**$31,355.62**

BENNETT

Description	Quote
Equipment & Shipping	$50,177.48
Technical Services	$22,662.67
Tower Services	$15,015.00
Administrative	$1,560.00
Project Management	$2,835.00
MSRP TOTAL	**$92,250.15**

DEMOCRAT

Description	Quote
Equipment & Shipping	$75,726.45
Technical Services	$34,422.67
Tower Services	$25,025.00
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$140,244.12**

HOPKINS

Description	Quote
Equipment & Shipping	$16,786.55
Technical Services	$11,924.67
Tower Services	$0.00
Administrative	$1,560.00
Project Management	$0.00
MSRP TOTAL	**$30,271.22**

MERIDIAN

Description	Quote
Equipment & Shipping	$44,242.20
Technical Services	$16,677.67
Tower Services	$0.00
Administrative	$1,560.00
Project Management	$0.00
MSRP TOTAL	**$62,479.87**

ONALASKA

Description	Quote
Equipment & Shipping	$50,156.27
Technical Services	$22,662.66
Tower Services	$15,015.00
Administrative	$1,560.00
Project Management	$2,835.00
MSRP TOTAL	**$92,228.93**

TOLEDO

Description	Quote
Equipment & Shipping	$44,242.20
Technical Services	$16,677.66
Tower Services	$0.00
Administrative	$1,560.00
Project Management	$0.00
MSRP TOTAL	**$62,479.86**

DISPATCH

Description	Quote
Equipment & Shipping	$145,852.24
Technical Services	$41,247.66
Tower Services	$35,262.50
Administrative	$1,560.00
Project Management	$3,510.00
MSRP TOTAL	**$227,432.40**

SPARE EQUIPMENT

Description	Quote
Equipment & Shipping	$13,087.00
MSRP TOTAL	**$13,087.00**

PROJECT TOTAL (PER JULY 2024 DESIGN EDITS)

Description	Quote
Equipment and labor for all sites including tower services, licensing coordination, project management, spare equipment, and technician training	$776,955.92
Existing Motorola CAD Customer Discount, Existing Motorola Call Taking Customer Discount Existing Motorola Console Discount, Day Wireless Existing Customer Loyalty Discount	**-$96,677.50**
PROJECT TOTAL	**$671,351.22**

PROJECT TOTALS - COMBINED W/ PROJECT TOTAL (PER JULY 2024 DESIGN EDITS)

Description	Quote
Equipment and labor for all sites including tower services, licensing coordination, project management, spare equipment, and technician training	$2,877,182.72
Existing Motorola CAD Customer Discount, Existing Motorola Call Taking Customer Discount Existing Motorola Console Discount, Day Wireless Existing Customer Loyalty Discount	**-$636,658.19**
COMPLETE PROJECT TOTAL	**$2,231,597.33**

OPTIONAL MAINTENANCE PLANS

Description	Quote
Five Years Complete System Maintenance-Standard Business Hours (M-F, 8a-5p)	$60,378.00
TOTAL	**$60,378.00**
After Hours Call-Out Rate	**$225.00/ hour**

Description	Quote
Five Years Complete System Maintenance-All Hours (24 hours/day, 7 days/week)	$90,570.00
TOTAL	**$90,570.00**

Lewis County 911
Radio Infrastructure Project 2024-2026

Vendor: Day Wireless Systems

Site Evaluation Checklist

Project: VHF Radio System Upgrade
Site Location: [Specify Site Name/ID]
Date of Evaluation: [Date]
Evaluator(s): [Names of Evaluation Team Members]

1. Equipment Installation and Configuration		
Evaluation Criteria	**Yes/No**	**Comments**
All equipment installed as per project specifications.		
Proper grounding and lightning protection in place.		
Power systems (main and backup) are fully operational.		
Antenna alignment and height as per design specifications.		
Cabling and connectors properly installed and secure.		
Site environment (rack space, cooling, security) meets requirements.		

2. Functional Testing		
Evaluation Criteria	**Yes/No**	**Comments**
Power-up test: Equipment starts without errors.		
Transmit and receive functions work as expected.		
System interfaces with existing communication infrastructure.		
Failover functionality operates properly (if applicable).		
Control systems, alarms, and monitoring systems function as required.		

3. Coverage Testing		
Evaluation Criteria	**Yes/No**	**Comments**
Coverage matches projected area per site design.		

Signal strength at designated test points meets or exceeds minimum levels.		
Inbound signal quality within acceptable limits across the area.		
Outbound signal quality within acceptable limits across the area.		
Coverage maps (if applicable) completed and saved for documentation.		

4. Audio Quality Testing		
Evaluation Criteria	**Yes/No**	**Comments**
Audio clarity meets project requirements across coverage area.		
Minimal background noise or interference in audio signal.		
No noticeable distortion in received audio.		
User feedback on audio quality is positive (if applicable).		

5. Reliability and Redundancy Testing		
Evaluation Criteria	**Yes/No**	**Comments**
Backup power system tested and functioning correctly.		
Redundancy features (e.g., backup channels, failover) are operational.		
System recovers automatically from simulated malfunctions.		
Site can maintain operations without interruption in case of main power loss.		

6. Interference Testing		
Evaluation Criteria	**Yes/No**	**Comments**
Interference survey completed with no significant issues detected.		
EMI (electromagnetic interference) levels within acceptable limits.		
No other radio frequency sources impact the VHF signal.		

7. Integration and Interoperability		
Evaluation Criteria	**Yes/No**	**Comments**
Site integrates seamlessly with other sites and central system.		
System is interoperable with other agencies or partners as required.		
Communications from this site to other systems tested and confirmed.		

8. Regulatory Compliance		
Evaluation Criteria	**Yes/No**	**Comments**
Site meets FCC licensing and frequency requirements.		
System adheres to power output and signal strength regulations.		
All safety standards and legal compliance requirements are met.		

Overall Site Evaluation Result

Pass / **Fail** (Circle one)

If Fail, list required corrective actions:

1
2
3

Evaluator(s) Signature(s):

_____ Date: _____

_____ Date: _____

DEPARTMENT OF THE TREASURY

31 CFR Part 35

RIN 1505–AC77

Coronavirus State and Local Fiscal Recovery Funds

AGENCY: Department of the Treasury.

ACTION: Final rule.

SUMMARY: The Secretary of the Treasury (Treasury) is adopting as final the interim final rule published on May 17, 2021, with amendments. This rule implements the Coronavirus State Fiscal Recovery Fund and the Coronavirus Local Fiscal Recovery Fund established under the American Rescue Plan Act.

DATES: The provisions in this final rule are effective April 1, 2022.

FOR FURTHER INFORMATION CONTACT: Katharine Richards, Director, Coronavirus State and Local Fiscal Recovery Funds, Office of Recovery Programs, Department of the Treasury, (844) 529–9527.

SUPPLEMENTARY INFORMATION:

I. Introduction

Overview

Since the first case of coronavirus disease 2019 (COVID–19) was discovered in the United States in January 2020, the pandemic has caused severe, intertwined public health and economic crises. In March 2021, as these crises continued, the American Rescue Plan Act of 2021 (ARPA)[1] established the Coronavirus State and Local Fiscal Recovery Funds (SLFRF) to provide state, local, and Tribal governments[2] with the resources needed to respond to the pandemic and its economic effects and to build a stronger, more equitable economy during the recovery. The U.S. Department of the Treasury (Treasury) issued an interim final rule implementing the SLFRF program on May 10, 2021[3] and has since disbursed over $240 billion to state, local, and Tribal governments and received over 1,500 public comments on the interim final rule. Treasury is now issuing this final rule which responds to public comments, implements the ARPA statutory provisions on eligible and ineligible uses of SLFRF funds, and makes several changes to the provisions of the interim final rule, summarized below in the section Executive Summary of Major Changes.

Since Treasury issued the interim final rule in May 2021, both the public health and economic situations facing the country have evolved. On the public health front, the United States has made tremendous progress in the fight against COVID–19, including a historic vaccination campaign that has reached over 80 percent of adults with at least one dose and is reaching millions of children as well.[4] However, the disease continues to present an imminent threat to public health, especially among unvaccinated individuals. As the Delta variant spread across the country this summer and fall, the United States faced another severe wave of cases, deaths, and strain on the healthcare system, with the risk of hospitalization and mortality exponentially greater to unvaccinated Americans. COVID–19 has now infected over 50 million and killed over 800,000 Americans since January 2020; tens of thousands of Americans continue to be infected each day.[5] Even as the nation recovers, new and emerging COVID–19 variants may continue to pose threats to both public health and the economy. Moving forward, state, local, and Tribal governments will continue to play a major role in responding through vaccination campaigns, testing, and other services.

The economic recovery similarly has made tremendous progress but faces continued risks from the disease and the disruptions it has caused. In the early months of the pandemic, the United States experienced the sharpest economic downturn on record, with unemployment spiking to 14.8 percent in April 2020.[6] The economy has gradually added back jobs, with growth accelerating in the first half of 2021.[7] However, as the Delta variant spread, the intensified health risks and renewed disruptions slowed growth, demonstrating the continued risks from the virus. By fall 2021, the economy had exceeded its pre-pandemic size[8] and unemployment had fallen below 5 percent,[9] but despite this progress, too many Americans remain unemployed, out of the labor force, or unable to pay their bills, with this pain particularly acute among lower-income Americans and communities of color. Again, moving forward, state, local, and Tribal governments will remain on the frontlines of the economic response and rebuilding a stronger economy in the aftermath of the pandemic.

However, as state, local, and Tribal governments continue to face substantial needs to respond to public health and economic conditions, they have also experienced severe impacts from the pandemic and resulting recession. State, local, and Tribal governments cut over 1.5 million jobs in the early months of the pandemic amid sharp declines in revenue and remain over 950,000 jobs below their pre-pandemic levels.[10] As the Great Recession demonstrated, austerity among state, local, and Tribal governments can hamper overall economic growth and severely curtail the ability of governments to serve their constituents.

Recognizing these imperatives, the SLFRF program provides vital resources for state, local, and Tribal governments to respond to the pandemic and its economic effects and to replace revenue lost due to the public health emergency, preventing cuts to government services. Specifically, the ARPA provides that SLFRF funds[11] may be used:

(a) To respond to the public health emergency or its negative economic impacts, including assistance to households, small businesses, and nonprofits, or aid to impacted industries such as tourism, travel, and hospitality;

(b) To respond to workers performing essential work during the COVID–19

[1] Public Law 117–2. *https://www.congress.gov/117/plaws/publ2/PLAW-117publ2.pdf.*

[2] Throughout this Supplementary Information, Treasury uses ''state, local, and Tribal governments'' or ''recipients'' to refer generally to governments receiving SLFRF funds; this includes states, territories, Tribal governments, counties, metropolitan cities, and nonentitlement units of local government.

[3] 86 FR 26786 (May 17, 2021).

[4] Centers for Disease Control and Prevention, COVID Data Tracker: COVID–19 Vaccinations in the United States, *https://covid.cdc.gov/covid-data-tracker/#vaccinations* (last visited December 31, 2021).

[5] Centers for Disease Control and Prevention, COVID Data Tracker, *http://www.covid.cdc.gov/covid-data-tracker/#datatracker-home* (last visited December 7, 2021).

[6] U.S. Bureau of Labor Statistics, Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis; *https://fred.stlouisfed.org/series/UNRATE* (last visited December 7, 2021).

[7] *Id.*

[8] U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis, *https://fred.stlouisfed.org/series/GDPC1* (last visited December 7, 2021).

[9] U.S. Bureau of Labor Statistics, *supra* note 6.

[10] U.S. Bureau of Labor Statistics, All Employees, State Government [CES9092000001] and All Employees, Local Government [CES9093000001], retrieved from FRED, Federal Reserve Bank of St. Louis, *https://fred.stlouisfed.org/series/CES9092000001* and *https://fred.stlouisfed.org/series/CES9093000001* (last visited December 7, 2021).

[11] The ARPA adds section 602 of the Social Security Act, which creates the State Fiscal Recovery Fund, and section 603 of the Social Security Act, which creates the Local Fiscal Recovery Fund (together, SLFRF). Sections 602 and 603 contain substantially similar eligible uses; the primary difference between the two sections is that section 602 establishes a fund for states, territories, and Tribal governments and section 603 establishes a fund for metropolitan cities, nonentitlement units of local government, and counties.

public health emergency by providing premium pay to eligible workers;

(c) For the provision of government services to the extent of the reduction in revenue due to the COVID–19 public health emergency relative to revenues collected in the most recent full fiscal year prior to the emergency; and

(d) To make necessary investments in water, sewer, or broadband infrastructure.

In addition, Congress specified two types of ineligible uses of funds: funds may not be used for deposit into any pension fund or, for states and territories only, to directly or indirectly offset a reduction in net tax revenue resulting from a change in law, regulation, or administrative interpretation.

Issued May 10, 2021, Treasury's interim final rule provided further detail on eligible uses of funds within the four statutory categories, ineligible uses of funds, and administration of the program. The interim final rule provided state, local, and Tribal governments substantial flexibility to determine how best to use payments from the SLFRF program to meet the needs of their communities. The interim final rule aimed to facilitate swift and effective implementation by establishing a framework for determining the types of programs and services that are eligible under the ARPA along with examples of eligible uses of funds that state, local, and Tribal governments may consider.

State, local, and Tribal governments are already deploying SLFRF funds to make an impact in their communities. The SLFRF program ensures that state, local, and Tribal governments have the resources needed to fight the pandemic, sustain and strengthen the economic recovery, maintain vital public services, and make investments that support long-term growth, opportunity, and equity. Treasury looks forward to supporting and engaging with state, local, and Tribal governments as they use these funds to make transformative investments in their communities. Finally, with so many pressing and effective ways to use SLFRF funds, there is no excuse for waste, fraud, or abuse of these funds.

Treasury received over 1,500 comments spanning nearly all aspects of the interim final rule. The final rule considers and responds to comments, provides clarification to many aspects of the interim final rule, and makes several changes to eligible uses under the program, summarized immediately below.

Executive Summary of Major Changes and Clarifications

The final rule provides broader flexibility and greater simplicity in the program, in response to public comments. Among other clarifications and changes, the final rule provides for the following:

- *Public Health and Negative Economic Impacts:* In addition to programs and services, the final rule clarifies that recipients may use funds for capital expenditures that support an eligible COVID–19 public health or economic response. For example, recipients may build certain affordable housing, childcare facilities, schools, hospitals, and other projects consistent with the requirements in this final rule and the Supplementary Information.

In addition, the final rule presumes that an expanded set of households and communities are ''impacted'' or ''disproportionately impacted'' by the pandemic, thereby allowing recipients to provide responses to a broad set of households and entities without requiring additional analysis. Further, the final rule provides a broader set of enumerated eligible uses available for these communities as part of COVID–19 public health and economic response, including making affordable housing, childcare, and early learning services eligible in all impacted communities and making certain community development and neighborhood revitalization activities eligible for disproportionately impacted communities.

Further, the final rule allows for a broader set of uses to restore and support government employment, including hiring above a recipient's pre-pandemic baseline, providing funds to employees that experienced pay cuts or furloughs, avoiding layoffs, and providing retention incentives.

- *Premium Pay:* The final rule offers more streamlined options to provide premium pay, by broadening the share of essential workers who can receive premium pay without a written justification while maintaining a focus on lower-income and frontline essential workers.
- *Revenue Loss:* The final rule offers a standard allowance for revenue loss of up to $10 million, not to exceed a recipient's SLFRF award amount, allowing recipients to select between a standard amount of revenue loss or complete a full revenue loss calculation. Recipients that select the standard allowance may use that amount for government services.
- *Water, Sewer, and Broadband Infrastructure:* The final rule significantly broadens eligible broadband infrastructure investments to address challenges with broadband access, affordability, and reliability, and adds additional eligible water and sewer infrastructure investments, including a broad range of lead remediation and stormwater management projects.

Structure of the Supplementary Information

In addition to this Introduction, this Supplementary Information is organized into four sections: (1) Eligible Uses, (2) Restrictions on Use, (3) Program Administration Provisions, and (4) Regulatory Analyses.

The Eligible Uses section describes the standards to determine eligible uses of funds in each of the four eligible use categories:

(1) Responding to the public health and negative economic impacts of the pandemic (which includes several sub-categories)

(2) Providing premium pay to essential workers

(3) Providing government services to the extent of revenue loss due to the pandemic, and

(4) Making necessary investments in water, sewer, and broadband infrastructure.

Each eligible use category has separate and distinct standards for assessing whether a use of funds is eligible. Standards, restrictions, or other provisions in one eligible use category do not apply to the others. Therefore, recipients should first determine which eligible use category a potential use of funds fits within, then assess whether the potential use of funds meets the eligibility standard or criteria for that category. In the case of uses to respond to the public health and negative economic impacts of the pandemic, recipients should also determine which sub-category the eligible use fits within (*i.e.,* public health, assistance to households, assistance to small businesses, assistance to nonprofits, aid to impacted industries, or public sector capacity and workforce), then assess whether the potential use of funds meets the eligibility standard for that sub-category. Treasury does not pre-approve uses of funds; recipients are advised to review the final rule and may pursue eligible projects under it.

In some sections of the rule, Treasury identifies specific uses of funds that are eligible, called ''enumerated eligible uses''; for example, Treasury provides many enumerated eligible uses of funds to respond to the public health and negative economic impacts of the pandemic. Uses of funds that are not specifically named as eligible in this

final rule may still be eligible in two ways. First, under the revenue loss eligible use category, recipients have broad latitude to use funds for government services up to their amount of revenue loss due to the pandemic. A potential use of funds that does not fit within the other three eligible use categories may be permissible as a government service, which recipients can fund up to their amount of revenue loss. For example, transportation infrastructure projects are generally ineligible as a response to the public health and negative economic impacts of the pandemic; however, a recipient could fund these projects as a government service up to its amount of revenue loss, provided that other restrictions on use do not apply. See sections Revenue Loss and Restrictions on Use for further information. Second, the eligible use category for responding to the public health and negative economic impacts of the pandemic provides a non-exhaustive list of enumerated eligible uses, which means that the listed eligible uses include some, but not all, of the uses of funds that could be eligible. The Eligible Uses section provides a standard for determining if other uses of funds, beyond those specifically enumerated, are eligible. If a recipient would like to pursue a use of funds that is not specifically enumerated, the recipient should use the standard and other guidance provided in the section Public Health and Negative Economic Impacts to assess whether the use of funds is eligible.

Next, the Restrictions on Use section describes limitations on how funds may be used. Treasury has divided the Restriction on Use section into (A) statutory restrictions under the ARPA, which include (1) offsetting a reduction in net tax revenue, and (2) deposits into pension funds, and (B) other restrictions on use, which include (1) debt service and replenishing reserves, (2) settlements and judgments, and (3) general restrictions. These restrictions apply to all eligible use categories; however, some restrictions apply only to certain types of recipient governments, and recipients are advised to review the final rule to determine which restrictions apply to their type of government (*e.g.,* state, territory, Tribal government, county, metropolitan city, or nonentitlement unit of government). To reiterate, for recipient governments covered by a specific restriction, that restriction applies to all eligible use categories and any use of funds under the SLFRF program. Specifically:

- For states and territories only, funds may not be used to offset directly or indirectly a reduction in net tax revenue resulting from a change in state or territory law.
- For all recipients except Tribal governments, funds may not be used for deposits into a pension fund.
- For all recipients, funds may not be used for debt service or replenishing financial reserves.
- All recipients must also comply with three general restrictions. First, a recipient may not use SLFRF funds for a program, service, or capital expenditure that conflicts with or contravenes the statutory purpose of ARPA, including a program, service, or capital expenditure that includes a term or condition that undermines efforts to stop the spread of COVID–19. Second, recipients may not use SLFRF funds in violation of the conflict-of-interest requirements contained in the Award Terms and Conditions, including any self-dealing or violation of ethics rules. Lastly, recipients should be aware that federal, state, and local laws and regulations, outside of SLFRF program requirements, also apply, including for example, environmental laws and federal civil rights and nondiscrimination requirements, which include prohibitions on discrimination on the basis of race, color, national origin, sex (including sexual orientation and gender identity), religion, disability, age, or familial status (having children under the age of 18).

The Program Administration Provisions section describes the processes and requirements for administering the program on an ongoing basis, specifically as relates to the following: Distribution of funds, timeline for using funds, transfer of funds from a recipient to different organizations, use of funds for program administration, reporting on use of funds, and remediation and recoupment of funds used for ineligible purposes. Of note, SLFRF funds may only be used for costs incurred within a specific time period, beginning March 3, 2021, with all funds obligated by December 31, 2024 and all funds spent by December 31, 2026. Recipients are advised to also consult Treasury's Reporting and Compliance Guidance for additional information on program administration processes and requirements, including applicability of the Uniform Guidance.

Finally, the section Regulatory Analyses provides Treasury's analysis of the impacts of this rulemaking, as required by several laws, regulations, and Executive Orders.

Throughout this Supplementary Information, statements using the terms ''should'' or ''must'' refer to requirements, except when used in summarizing opinions expressed in public comments. Statements using the term ''encourage'' refer to recommendations, not requirements.

II. Eligible Uses

A. Public Health and Negative Economic Impacts

Background

Since the first case of COVID–19 was discovered in the United States in January 2020, the disease has infected over 50 million and killed over 800,000 Americans.[12] The disease—and necessary measures to respond—have had an immense public health and economic impact on millions of Americans across many areas of life, as detailed below in the respective sections on Public Health and Negative Economic Impacts. Since the release of the interim final rule in May 2021, the country has made major progress in fighting the disease and rebuilding the economy but faces continued risks, as illustrated by the spread of the Delta variant and the resulting slowdown in the economic recovery. The SLFRF program, and Treasury's interim final rule, provide substantial flexibility to recipients to respond to pandemic impacts in their local community; this flexibility is designed to help state, local, and Tribal governments adapt to the evolving public health emergency and tailor their response as needs evolve and to the particular local needs of their communities.

Indeed, state, local, and Tribal governments face continued needs to respond at scale to the public health emergency. This includes continued public health efforts to slow the spread of the disease, to increase vaccination rates and provide vaccinations to new populations as they become eligible, to protect individuals living in congregate facilities, and to address the broader impacts of the pandemic on public health. Similarly, while a strong economic recovery is underway, the economy remains 3.9 million jobs below its pre-pandemic level, pointing to the continued need for response efforts, with low-income workers and communities of color facing elevated rates of unemployment and economic hardship.[13] Long-standing disparities in health and economic outcomes in

[12] Centers for Disease Control and Prevention, COVID Data Tracker, *http://www.covid.cdc.gov/covid-data-tracker/#datatracker-home* (last visited December 31, 2021).

[13] U.S. Bureau of Labor Statistics, All Employees, Total Nonfarm [PAYEMS] *https://fred.stlouisfed.org/series/PAYEMS* (last visited December 7, 2021).

underserved [14] communities, that amplified and exacerbated the impacts of the pandemic, also present continued barriers to full and equitable recovery.

As state, local, and Tribal governments work to meet the public health and economic needs of their communities, these governments are also confronting the need to rebuild their own capacity. Facing severe budget challenges during the pandemic, many state, local, and Tribal governments have been forced to make cuts to services or their workforces, including cutting over 1.5 million jobs from February to May 2020, or delay critical investments. As of fall 2021, state, local, and Tribal government employment remained over 950,000 jobs below pre-pandemic levels.[15] In the recovery from the Great Recession, cuts to state, local, and Tribal governments became a meaningful drag on economic growth for several years, and the SLFRF program provides the resources needed to re-invest in vital public services and workers to avoid this outcome.[16]

1. General Provisions: Structure and Standards

Background: Sections 602(c)(1)(A) and 603(c)(1)(A) of the Social Security Act establish that recipients may use funds ''to respond to the public health emergency with respect to COVID–19 or its negative economic impacts, including assistance to households, small businesses, and nonprofits, or aid to impacted industries such as tourism, travel, and hospitality.'' The interim final rule established three categories within this eligible use: (1) Public health responses for those impacted by the pandemic, including the general public; (2) responses to the negative economic impacts that were experienced by those impacted as a result of the pandemic; and (3) additional services, either as a public health response or a response to the negative economic impacts of the pandemic, for disproportionately impacted communities.

The interim final rule established the method to determine which specific programs or services may be eligible to respond to the public health emergency or to respond to the negative economic impacts of the public health emergency within this framework. The interim final rule included multiple enumerated uses that are eligible within each of these categories when provided to eligible populations, including populations that the interim final rule presumed to have been *impacted* (in the case of public health responses and responses to negative economic impacts) or *disproportionately impacted* (in the case of disproportionately impacted communities). Finally, the interim final rule also allowed recipients to designate additional individuals or classes as impacted or disproportionately impacted. The standards for each of these criteria under the interim final rule are discussed below.

To assess whether a program or service would be eligible to respond to the public health emergency or its negative economic impacts, the interim final rule stated that, ''the recipient [is required] to, first, identify a need or negative impact of the COVID–19 public health emergency and, second, identify how the program, service, or other intervention addresses the identified need or impact [. . . .] [E]ligible uses under this category must be in response to the disease itself or the harmful consequences of the economic disruptions resulting from or exacerbated by the COVID–19 public health emergency.'' The enumerated eligible uses were presumed to meet this criterion.

With respect to uses not specifically enumerated in the interim final rule as eligible public health responses, the interim final rule stated that, ''[t]o assess whether additional uses would be eligible under this category, recipients should identify an effect of COVID–19 on public health, including either or both of immediate effects or effects that may manifest over months or years, and assess how the use would respond to or address the identified need.''

With respect to uses not specifically enumerated in the interim final rule as eligible responses to a negative economic impact of the public health emergency, the interim final rule stated that ''[e]ligible uses that respond to the negative economic impacts of the public health emergency must be designed to address an economic harm resulting from or exacerbated by the public health emergency. In considering whether a program or service would be eligible under this category, the recipient should assess whether, and the extent to which, there has been an economic harm, such as loss of earnings or revenue, that resulted from the COVID–19 public health emergency and whether, and the extent to which, the use would respond to or address this harm.[17] A recipient should first consider whether an economic harm exists and whether this harm was caused or made worse by the COVID–19 public health emergency.'' The interim final rule went on to say that: ''In addition, the eligible use must 'respond to' the identified negative economic impact. Responses must be related and reasonably proportional to the extent and type of harm experienced; uses that bear no relation or are grossly disproportionate to the type or extent of harm experienced would not be eligible uses.''

Throughout this final rule, Treasury refers to households, communities, small businesses, nonprofits, and industries that experienced public health or negative economic impacts of the pandemic as ''impacted.'' The first section in the interim final rule under this eligible use category included public health responses for these impacted classes. The second category in the interim final rule under this eligible use category included responses to the negative economic impacts that were experienced by these impacted classes as a result of the pandemic.

The interim final rule further recognized that certain populations have experienced disproportionate health or negative economic impacts during the pandemic, as pre-existing disparities in these communities amplified the impacts of the pandemic. For example, the interim final rule recognized that the negative economic effects of the pandemic were particularly pronounced among lower-income families, who were more likely to experience income loss and more likely to have a job that required in-person work. The interim final rule recognized the role of pre-existing social vulnerabilities and disparities in driving the disparate health and economic outcomes and presumed that programs designed to address these health or economic disparities are responsive to the public health or negative economic impacts of the COVID–19 public health emergency, when provided in disproportionately impacted communities. In addition to identifying certain populations and communities

[14] Treasury uses ''underserved'' to refer to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life. In the interim final rule, Treasury generally used the term ''disadvantaged'' to refer to these same populations and communities.

[15] U.S. Bureau of Labor Statistics, All Employees, State Government [CES9092000001] and All Employees, Local Government [CES9093000001], retrieved from FRED, Federal Reserve Bank of St. Louis, *https://fred.stlouisfed.org/series/CES9092000001* and *https://fred.stlouisfed.org/series/CES9093000001* (last visited December 7, 2021).

[16] Tracy Gordon, State and Local Budgets and the Great Recession, Brookings Institution (Dec. 31, 2012), *http://www.brookings.edu/articles/state-and-local-budgets-and-the-great-recession.*

[17] In some cases, a use may be permissible under another eligible use category even if it falls outside the scope of section (c)(1)(A) of section 602 and 603 of the Social Security Act.

presumed to be disproportionately impacted, it also empowered recipients to identify other disproportionately impacted households, populations, communities, or small businesses. The interim final rule provided that, in identifying these disproportionately impacted communities, recipients should be able to support their determination that the pandemic resulted in disproportionate public health or economic outcomes to the specific populations, households, or geographic areas to be served.

Throughout this final rule, Treasury refers to those households, communities, small businesses, and nonprofits that experienced disproportionate public health or negative economic impacts of the pandemic as ''disproportionately impacted.'' The third category in the interim final rule under this eligible use included public health responses and responses to the negative economic impacts for these disproportionately impacted classes.

The interim final rule provided significant flexibility for recipients to determine which households, populations, communities, or small businesses have been impacted and/or disproportionately impacted by the pandemic and to identify appropriate responses. The interim final rule included several provisions to provide simple methods for recipients to identify impacts and design programs to address those impacts. First, the interim final rule allowed recipients to demonstrate a negative economic impact on a population or class and provide assistance to households or small businesses that fall within that population or class. In such cases, the recipient need only demonstrate that an individual household or business is within the class that experienced a negative economic impact, rather than requiring a recipient to demonstrate that each individual household or small business experienced a negative economic impact, because the impact was already identified for the class.

Second, in the interim final rule, Treasury presumed that certain populations have been impacted or disproportionately impacted and are thus eligible for services that respond to these impacts or disproportionate impacts. Specifically, the interim final rule permitted recipients to presume that households that experienced unemployment, increased food or housing insecurity, or are low- or moderate-income experienced a negative economic impact from the pandemic. The interim final rule also permitted recipients to presume that certain services provided in Qualified Census Tracts (QCTs), to individuals living in QCTs, or by Tribal governments are responsive to disproportionate impacts of the pandemic. In addition to the populations presumed to be impacted or disproportionately impacted, under the interim final rule, recipients could identify other impacted households or classes, as described above, as well as other populations, households, or geographic areas that are disproportionately impacted by the pandemic.

Third, as mentioned previously, the interim final rule included a non-exhaustive list of uses of funds that Treasury identified as responsive to the impacts or disproportionate impacts of the pandemic. Treasury refers to these as ''enumerated eligible uses.''

To summarize, the interim final rule identified certain populations that are presumed to be *impacted* by the pandemic (and specific enumerated uses of funds that are responsive to that impact) and populations that are presumed to be *disproportionately impacted* by the pandemic (and specific enumerated uses of funds that are responsive to those disproportionate impacts). In addition, the interim final rule provided standards for recipients to assess whether additional uses of funds, beyond the enumerated eligible uses, are eligible for impacted and disproportionately impacted populations and permitted recipients to identify other households or classes that experienced impacts of the pandemic or disproportionate impacts of the pandemic.

Rule Structure

Public Comment: Many commenters expressed concern regarding the structure of the eligible uses, indicating they found the structure of the public health and negative economic impacts section of the interim final rule to be confusing or difficult to navigate. Other commenters indicated that they understood the enumerated uses to be the only eligible uses and/or the presumed eligible populations to be the only eligible populations. Several commenters expressed frustration about the number of eligible uses specifically enumerated in the interim final rule, which they considered too few, and commenters proposed a wide range of additional enumerated eligible uses (for further discussion, see the section Public Health and section Negative Economic Impacts). Commenters expressed concern with pursuing uses of funds not explicitly enumerated in the eligible use section or uncertainty regarding the broad flexibility provided under the interim final rule to pursue additional programs that respond to the public health or negative economic impacts of the pandemic or the process for doing so.

Treasury Response: Treasury recognizes that many commenters felt the structure of the interim final rule could be clarified. These comments are consistent with many of the questions that Treasury has received from recipients, which requested clarification regarding the category their desired response fits into. Treasury observes that these comments and questions generally fall into four categories: (1) How to identify the correct public health or negative economic impact category for a particular response, (2) how to identify whether a particular use is eligible, (3) how to identify an impacted or disproportionately impacted class, and (4) whether an enumerated use can be provided to a class other than those presumed impacted or disproportionately impacted. In response to comments, Treasury is adjusting the structure of the public health and negative economic impacts eligible use section of the final rule to improve clarity and make it easier for recipients to interpret and apply the final rule.

Specifically, Treasury is restructuring the rule to aid recipients in determining whether a particular response is eligible and how the particular response might be eligible under a particular category. This restructuring reinforces the fundamental criteria that a use of funds is eligible based on its responsiveness to a public health or negative economic impact experienced by individuals, households, small businesses, nonprofits, or impacted industries (together ''beneficiaries'').[18] This restructuring is intended to make the rule easier to navigate and to implement, including any criteria or conditions on particular uses of funds.

The reorganization of the public health and negative economic impacts section of the final rule is also intended to clarify the enumerated eligible uses described in the interim final rule. The reorganization itself is not intended to change the scope of the enumerated uses that were included in the interim final rule or that were allowable under the interim final rule. In some cases, specific enumerated uses are being altered, and those changes are discussed

[18] Note that small businesses, nonprofits, and industries may also function as subrecipients. For additional information on these distinctions see section Distinguishing Subrecipients versus Beneficiaries.

as changes within the section on that enumerated use.

The final rule streamlines and aligns services and standards that are generally applicable or are provided for public health purposes. Under this approach, eligible uses to respond to the public health emergency are organized based on the type of public health problem: (1) COVID–19 mitigation and prevention, (2) medical expenses, (3) behavioral health care, and (4) preventing and responding to violence. Under this approach, eligible uses to respond to the negative economic impacts of the public health emergency are organized based on the type of beneficiary: (1) Assistance to households, (2) assistance to small businesses, and (3) assistance to nonprofits, alongside a fourth standalone eligibility category for aid to travel, tourism, hospitality, and other impacted industries. The first three categories, assistance to households, small businesses, and nonprofits, include enumerated eligible uses for impacted and disproportionately impacted beneficiaries. This change in structure is intended to provide a framework that clearly identifies the intended beneficiaries of uses of funds and provides clarity about what types of assistance are ''responsive to the pandemic or its negative economic impacts'' for these beneficiaries.

a. Standards for Identifying a Public Health or Negative Economic Impact

Standards: Designating a Public Health Impact

Public Comment: Many commenters expressed uncertainty about how to determine whether a use of funds, beyond those specifically enumerated as eligible, might be an eligible public health response. For example, many commenters submitted questions asking whether specific uses of funds would be eligible. Others described what they considered to be impacts of the pandemic and argued that uses of funds to respond to these issues should be eligible. Some commenters requested that Treasury provide additional detail to guide their assessments of eligible uses of funds. For example, a commenter requested more clarification around exactly what and whose medical expenses can be covered. These comments ranged in their specificity and covered the full range of the enumerated eligible uses.

Treasury Response: Treasury is clarifying that when assessing whether a program or service is an eligible use to respond to the public health impacts of the COVID–19 public health emergency, the Department will consider the two eligibility requirements discussed below. These standards apply to all proposed public health uses.

First, there must be a negative public health impact or harm experienced by an individual or a class. For ease of administration, the interim final rule allowed, and the final rule maintains the ability for, recipients to identify a public health impact on a population or group of individuals, referred to as a ''class,'' and to provide assistance to that class. In determining whether an individual is eligible for a program designed to address a harm experienced by a class, the recipient need only document that the individual is within the class that experienced a public health impact, see section Standards: Designating Other Impacted Classes. In the case of some impacts, for example impacts of COVID–19 itself that are addressed by providing prevention and mitigation services, such a class could reasonably include the general public.

Second, the program, service, or other intervention must address or respond to the identified impact or harm. The final rule maintains the interim final rule requirement that eligible uses under this category must be in response to the disease itself or other public health harms that it caused.[19]

Responses must be reasonably designed to benefit the individual or class that experienced the public health impact or harm. Uses of funds should be assessed based on their responsiveness to their intended beneficiaries and the ability of the response to address the impact or harm experienced by those beneficiaries.

Responses must also be related and reasonably proportional to the extent and type of public health impact or harm experienced. Uses that bear no relation or are grossly disproportionate to the type or extent of harm experienced would not be eligible uses. Reasonably proportional refers to the scale of the response compared to the scale of the harm. It also refers to the targeting of the response to beneficiaries compared to the amount of harm they experienced. In evaluating whether a use is reasonably proportional, recipients should consider relevant factors about the harm identified and the response. For example, recipients may consider the size of the population impacted and the severity, type, and duration of the impact. Recipients may also consider the efficacy, cost, cost-effectiveness, and time to delivery of the response.

If a recipient intends to fund capital expenditures in response to the public health impacts of the pandemic, recipients should refer to the section Capital Expenditures for details about the eligibility of capital expenditures.

Standards: Designating a Negative Economic Impact

Public Comment: Many commenters expressed uncertainty about how to determine whether uses of funds, beyond those specifically enumerated as eligible, might be eligible responses to negative economic impacts. For example, many commenters submitted questions asking whether specific uses of funds would be eligible. Others described what they considered to be impacts of the pandemic and argued that uses of funds to respond to these issues should be eligible. Some commenters requested that Treasury provide additional detail to guide their assessments of eligible uses of funds. These comments ranged in their specificity and covered the full range of eligible uses to respond to negative economic impacts. Several commenters asked for clarification about what types of food assistance would be considered eligible. Another commenter requested that the establishment of outdoor dining be eligible. Many commenters inquired about homeless shelters as an eligible use of SLFRF funds.

Commenters also expressed uncertainty about the ability to establish classes, including geographic areas, that experienced a negative economic impact or disagreed with the requirement that an individual entity be impacted by the pandemic in order to receive assistance. For example, a commenter argued that interventions should not be limited to individuals or businesses that experienced an economic impact and should instead be used broadly to support economic growth. These commenters argued that an expenditure that supports a more robust economy may help combat the pandemic's negative economic impacts, and it can do so even if funding is provided to individuals or entities that did not themselves experience a negative economic impact during the pandemic.

Treasury Response: The final rule maintains the standard articulated in

[19] In designing an intervention to mitigate COVID–19, the recipient should consider guidance from public health authorities, particularly the Centers for Disease Control and Prevention (CDC), in assessing appropriate COVID–19 mitigation and prevention strategies (*see* Centers for Disease Control and Prevention, COVID–19, *https://www.cdc.gov/coronavirus/2019-ncov/index.html*). A program or service that imposes conditions on participation in or acceptance of the service that would undermine efforts to stop the spread of COVID–19 or discourage compliance with practices in line with CDC guidance for stopping the spread of COVID–19 is not a permissible use of funds.

the interim final rule. For clarity, the final rule re-articulates that when assessing whether a program or service is an eligible use to respond to the negative economic impacts of the COVID–19 public health emergency, Treasury will consider the two eligibility requirements discussed below.

First, there must be a negative economic impact, or an economic harm, experienced by an individual or a class. The recipient should assess whether, and the extent to which, there has been an economic harm, such as loss of earnings or revenue, that resulted from the COVID–19 public health emergency. A recipient should first consider whether an economic harm exists and then whether this harm was caused or made worse by the COVID–19 public health emergency. This approach is consistent with the text of the statute, which provides that funds in this category must be used to ''respond to the public health emergency with respect to . . . its negative economic impacts.''

While economic impacts may either be immediate or delayed, individuals or classes that did not experience a negative economic impact from the public health emergency would not be eligible beneficiaries under this category. As noted above, the interim final rule permitted recipients to presume that households that experienced unemployment, increased food or housing insecurity, or are low- or moderate-income experienced a negative economic impact from the pandemic. For discussion of the final rule's approach to this presumption, see section Populations Presumed Eligible.

The final rule also maintains several provisions included in the interim final rule and subsequent guidance that are intended to ease administration of identifying that the beneficiary experienced a negative economic impact or harm. For example, the interim final rule allowed, and the final rule maintains the ability for, recipients to demonstrate a negative economic impact on a population or group, referred to as a ''class,'' and to provide assistance to households, small businesses, or nonprofits that fall within that class. In such cases, the recipient need only demonstrate that the household, small business, or nonprofit is within the class that experienced a negative economic impact, see section Standards: Designating Other Impacted Classes. This would allow, for example, an internet access assistance program for all households with children to support those households' ability to participate in healthcare, work, and educational activities like extending learning opportunities, among other critical activities. In that case, the recipient would only need to identify a negative economic impact to the class of ''households with children'' and would not need to document or otherwise demonstrate that each individual household served experienced a negative economic impact.

Second, the response must be designed to address the identified economic harm or impact resulting from or exacerbated by the public health emergency. In selecting responses, the recipient must assess whether, and the extent to which, the use would respond to or address this harm or impact. This approach is consistent with the text of the statute, which provides that funds may be used to ''respond to'' the ''negative economic impacts'' of the public health emergency ''including assistance to households, small businesses, and nonprofits, or aid to impacted industries such as tourism, travel, and hospitality.'' The list of potential responses (''assistance'' or ''aid'') suggests that responses should address the ''negative economic impacts'' of particular types of beneficiaries (*e.g.,* households or small businesses).

Responses must be reasonably designed to benefit the individual or class that experienced the negative economic impact or harm. Uses of funds should be assessed based on their responsiveness to their intended beneficiary and the ability of the response to address the impact or harm experienced by that beneficiary.[20]

Responses must also be related and reasonably proportional to the extent and type of harm experienced; uses that bear no relation or are grossly disproportionate to the type or extent of harm experienced would not be eligible uses.[21] Reasonably proportional refers to the scale of the response compared to the scale of the harm. It also refers to the targeting of the response to beneficiaries compared to the amount of harm they experienced; for example, it may not be reasonably proportional for a cash assistance program to provide assistance in a very small amount to a group that experienced severe harm and in a much larger amount to a group that experienced relatively little harm. In evaluating whether a use is reasonably proportional, recipients should consider relevant factors about the harm identified and the response. For example, recipients may consider the size of the population impacted and the severity, type, and duration of the impact. Recipients may also consider the efficacy, cost, cost-effectiveness, and time to delivery of the response.

Finally, recipients should be aware of the distinction between beneficiaries of funds and subrecipients; a recipient may provide services to beneficiaries through subrecipients that did not experience a negative economic impact, see section Distinguishing Subrecipients versus Beneficiaries. That is, a recipient may award SLFRF funds to an entity that did not experience a negative economic impact in order to implement a program or provide a service to beneficiaries on its behalf. Such transfers, when implementing a public health or negative economic impact response, should be responsive to and designed to benefit individuals, households, small businesses, nonprofits, or impacted industries that did experience a public health or negative economic impact.

Determining the Appropriate Eligible Use Category

Public Comment: Some commenters expressed uncertainty about how to analyze negative economic impacts to different entities (*e.g.,* households, small businesses, nonprofits). For example, commenters asked whether a nonprofit, which did not experience a negative economic impact itself, could be granted funds to provide services to individuals experiencing homelessness, who did experience negative economic impacts. Other commenters proposed providing assistance to support the expansion of small businesses, under the theory that this would create more job opportunities for unemployed workers who experienced negative economic impacts.

Treasury Response: In the final rule, Treasury is clarifying that recipients should assess a potential use of funds based on which beneficiary experienced the negative economic impact, in other words, the households, small businesses, nonprofits, or impacted industries that experienced the negative economic impact.

Treasury notes that recipients may award SLFRF funds to many different types of organizations to carry out eligible uses of funds and serve beneficiaries on behalf of a recipient.

[20] For example, expenses such as excessive compensation to employees or expenses which have already been reimbursed through another federal program, are not reasonably designed to address a negative economic impact to a beneficiary.

[21] For example, a program or service that imposes conditions on participation in or acceptance of the service that would undermine efforts to stop the spread of COVID–19 or discourage compliance with practices in line with CDC guidance for stopping the spread of COVID–19 is not a permissible use of funds.

When a recipient provides funds to another entity to carry out eligible uses of funds and serve beneficiaries the entity becomes a subrecipient (see section Distinguishing a Subrecipient versus a Beneficiary). For example, a recipient may grant funds to a nonprofit organization to provide food assistance (an eligible use) to low-income households (the beneficiaries). Recipients only need to assess whether the beneficiaries experienced a negative economic impact and whether the eligible use responds to that impact, consistent with the two-part framework described above; the organization carrying out the eligible use does not need to have experienced a negative economic impact if it is serving as the vehicle for reaching the beneficiaries. When making determinations about how to implement a program, recipients should consider whether that method of program implementation is an effective and efficient method to implement the program and do so in accordance with the Uniform Guidance provisions that govern procurements and sub-granting of federal funds, as applicable.

As noted above, recipients should analyze eligible uses based on the beneficiary of the assistance or the entity that experienced a negative economic impact. Assistance to a small business or to an impacted industry must respond to a negative economic impact experienced by that small business or industry. Recipients may not provide assistance to small businesses or impacted industries that did not experience a negative economic impact, although recipients can identify negative economic impacts for classes, rather than individual businesses, and may also presume that small businesses in certain areas experienced impacts; see section General Provisions: Structure and Standards and section Assistance to Small Businesses for details.

Several examples illustrate the application of these concepts. For example, a recipient could provide assistance to households via a contract with a business to create subsidized jobs for the long-term unemployed; in this case the business is a subrecipient and need not have experienced a negative economic impact, but the recipient would need to identify a specific connection between the assistance provided and addressing the negative economic impact experienced by the unemployed households. The recipient could, for instance, document the subsidized jobs created under the contract and their reservation for long-term unemployed individuals. Similarly, a recipient might provide assistance to a small business that experienced a pandemic-related loss of revenue. This small business is a beneficiary and may use those funds in many ways, potentially including hiring or retaining staff. However, general assistance to a business that did not experience a negative economic impact under the theory that this assistance generally grows the economy and therefore enhances opportunities for unemployed workers would not be an eligible use, because such assistance is not reasonably designed to impact the individuals or classes that experienced a negative economic impact. In other words, there is not a reasonable connection between the assistance provided and an impact on the beneficiaries. Such an activity would be attenuated from and thus not reasonably designed to benefit the households that experienced the negative economic impact.

b. Populations Presumed Eligible

Presumed Eligibility: Impacted and Disproportionately Impacted Households and Communities

Background: As noted above, the interim final rule allowed recipients to presume that certain households were impacted or disproportionately impacted by the pandemic and thus eligible for responsive programs or services. Specifically, under the interim final rule, recipients could presume that a household or population that experienced unemployment, experienced increased food or housing insecurity, or is low- or moderate-income experienced negative economic impacts resulting from the pandemic, and recipients may provide services that respond to these impacts.

The interim final rule also recognized that pre-existing health, economic, and social disparities contributed to disproportionate pandemic impacts in certain communities and allowed for a broader list of enumerated eligible uses to respond to the pandemic in disproportionately impacted communities. Under the interim final rule, recipients were allowed to presume that families residing in QCTs or receiving services provided by Tribal governments were disproportionately impacted by the pandemic.

Definition of Low- and Moderate-Income

Public Comment: As noted earlier, many commenters sought a definition for ''low- and moderate-income'' to provide recipients greater clarity on which specific households could be presumed to be impacted by the pandemic.

Treasury Response: The final rule maintains the presumptions identified in the interim final rule and defines low- and moderate-income for the purposes of determining which households and populations recipients may presume to have been impacted. To simplify the administration of this presumption, the final rule adopts a definition of low- and moderate-income based on thresholds established and used in other federal programs.

Definitions. The final rule defines a household as *low income* if it has (i) income at or below 185 percent of the Federal Poverty Guidelines (FPG) for the size of its household based on the most recently published poverty guidelines by the Department of Health and Human Services (HHS) or (ii) income at or below 40 percent of the Area Median Income (AMI) for its county and size of household based on the most recently published data by the Department of Housing and Urban Development (HUD).[22]

The final rule defines a household as *moderate income* if it has (i) income at or below 300 percent of the FPG for the size of its household based on the most recently published poverty guidelines by HHS or (ii) income at or below 65 percent of the AMI for its county and size of household based on the most recently published data by HUD.[23]

Recipients may determine whether to measure income levels for specific households or for a geographic area based on the type of service to be provided. For example, recipients developing a program that serves specific households (*e.g.,* a subsidy for internet access, a childcare program) may measure income at the household level. Recipients providing a service that reaches a general geographic area (*e.g.,* a park) may measure median income of that area.

Further, recipients should generally use the income threshold for the size of the household to be served (*e.g.,* when providing childcare to a household of five, recipients should reference the income threshold for a household of five); however, recipients may use the income threshold for a default household size of three if providing

[22] AMI is also often referred to as median family income for the area. Since AMI is synonymous with this term and used more generally, the final rule refers to AMI.

[23] For the six New England states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, HUD provides AMI for towns rather than counties. Recipients in these states should use the AMI corresponding to their town when determining thresholds for both low and moderate income.

services that reach a general geographic area or if doing so would simplify administration of the program to be provided (*e.g.,* when developing a park, recipients should use the income threshold for a household size of three and compare it to median income of the geographic area to be served).

Note that recipients can also identify and serve other classes of households that experienced negative economic impacts or disproportionate impacts from the pandemic; recipients can identify these classes based on their income levels, including above the levels defined as low- and moderate-income in the final rule. For example, a recipient may identify that households in their community with incomes above the final rule threshold for low-income nevertheless experienced disproportionate impacts from the pandemic and provide responsive services. See section General Provisions: Standards for Identifying Other Eligible Populations for details on applicable standards.

Applicable levels. For reference, the FPG is commonly referred to as the federal poverty level (FPL) and is related to—although distinct from—the U.S. Census Bureau's poverty threshold. The final rule uses the FPG when referring specifically to the HHS guidelines, as these are the quantitative metrics used for determining low- and moderate-income households.

The FPG by household size for 2021 is included in the table below. Recipients should refer to HHS Poverty Guidelines for this information, which is updated annually and available on the HHS website.[24] For calculating the thresholds of 40 percent and 65 percent of AMI, recipients should refer to the annual HUD Section 8 50 percent income limits by county and household size published by HUD and available on the HUD website; in particular, recipients should calculate the 40 percent threshold as 0.8 times the 50 percent income limit, and recipients should calculate the 65 percent threshold as 1.3 times the 50 percent income limit.[25] Finally, for median income of Census Tracts and other geographic areas, recipients should refer to the most recent American Community Survey 5-year estimates available through the Census website.[26]

2021 Federal Poverty Guidelines

Household size	48 contiguous states and the District of Columbia	Alaska	Hawaii
1	$12,880	$16,090	$14,820
2	17,420	21,770	20,040
3	21,960	27,450	25,260
4	26,500	33,130	30,480
5	31,040	38,810	35,700
6	35,580	44,490	40.920
7	40,120	50,170	46,140
8	44,660	55,850	51,360

For families/households with more than 8 persons, add the following amounts for each additional person:
48 Contiguous States and the District of Columbia: $4,540.
Alaska: $5,680.
Hawaii: $5,220.
Source: "HHS Poverty Guidelines for 2021," available at *https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines.*

Rationale. In defining low income, the final rule uses both the FPG and AMI to account for national trends and regional differences. The metric of 185 percent of FPG aligns with some other programs; for instance, under the National School Lunch Program, students with household incomes under 185 percent of FPG qualify for free or reduced-price lunch, and schools often use eligibility for free or reduced-price lunch as an indicator of low-income status under Title 1–A of the Elementary and Secondary Education Act. Eligibility for other programs, such as the Federal Communications Commission's e-Rate program and the Special Supplemental Nutrition Program for Women, Infants and Children employ this metric as well. In addition, 185 percent of the FPG for a family of four is $49,025, which is approximately the wage earnings for a two-earner household in which both earners receive the median wage in occupations, such as waiters and waitresses and hotel clerks, that were heavily impacted by COVID–19.[27] This measure is targeted toward those at the bottom of the income distribution and thus helps to promote use of SLFRF funds towards populations with the greatest needs. At the same time, with approximately one-quarter of Americans below 185 percent of the poverty threshold, this approach is broad enough to facilitate use of SLFRF funds across many jurisdictions.[28] Because regions have different cost and income levels, this definition also allows for upward adjustment based on AMI for those regions where 40 percent of AMI exceeds 185 percent of FPG. The metric of 40 percent of AMI is based on the midpoint of values often used to designate certain categories of low-income households; specifically, it is the midpoint of the 30 percent income limit and the 50 percent income limit

[24] U.S. Department of Health and Human Service, HHS Poverty Guidelines for 2021, *available at https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines.*

[25] U.S. Department of Housing and Urban Development, FY 2021 Section 8 Income Limits, *available at https://www.huduser.gov/portal/datasets/il/il21/Section8-FY21.xlsx.* Recipients may refer to the list of counties (and New England towns) identified by state and metropolitan area for identifying the appropriate area. U.S. Department of Housing and Urban Development, FY 2021 List of Counties (and New England Towns) Identified by State and Metropolitan Area, *available at https://www.huduser.gov/portal/datasets/il/il21/area-definitions-FY21.pdf.*

[26] The U.S. Census Bureau provides an interactive map: U.S. Census Bureau, Median Household Income State Selection Map, *available at https://data.census.gov/cedsci/map?q=Median%20Household%20Income&g=0100000US%2404000%24001&tid=ACSST5Y2019.S1901&cid=S1901_C01_012E&vintage=2019.* The U.S. Census Bureau also provides an interactive table: U.S. Census Bureau, Median Household Income In The Past 12 Months (In 2019 Inflation-Adjusted Dollars), *available at https://data.census.gov/cedsci/table?q=b19013&tid=ACSDT5Y2019.B19013&hidePreview=true.*

[27] *See* U.S. Bureau of Labor Statistics, Occupational Employment and Wage Estimates, *https://www.bls.gov/oes/current/oes_nat.htm* (last visited December 7, 2021).

[28] U.S. Census Bureau, Poverty Status by State, *https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pov/pov-46.html* (last visited December 7, 2021).

used in programs such as the Community Development Block Grant (CDBG) Program.

In defining moderate income, the final rule uses both the FPG and AMI to account for national trends and regional differences. While there are different definitions of moderate income, 300 percent of FPG falls within the range commonly used by researchers.[29] Analysis of median wages among a sample of occupations likely impacted by the pandemic also suggests that an income cutoff of 300 percent of FPG would include many households with workers in such occupations.[30] Moreover, the metric of 300 percent of FPG covers households that, while above the poverty line, often lack economic security.[31] Treasury determined the AMI threshold for moderate income by maintaining the same ratio of FPG multiplier to AMI multiplier as in the definition of low income. This anchors the threshold to the existing definitions of moderate income from the literature while taking into account geographical variation in income and expenses in the same manner as the definition of low income.

Eligibility Presumptions

Public Comment: Many commenters believed that a broader range of groups should be considered presumptively impacted and disproportionately impacted, arguing that many households had been affected by the pandemic and that broader presumed eligibility would help recipients provide assistance quickly and effectively.

Treasury also received many comments on the presumption that families living in QCTs or receiving services from Tribal governments were disproportionately impacted by the pandemic. While many commenters supported the interim final rule's recognition of disproportionate impacts of the pandemic on low-income communities, many commenters disagreed with treating QCTs as the only presumed eligible group of disproportionately impacted households, apart from households served by Tribal governments. While acknowledging a potential increase in administrative burden, commenters recommended that Treasury presume other households or geographic areas, in addition to QCTs, were disproportionately impacted; suggestions included all low- and moderate-income households, geographic areas designated as Opportunity Zones, Difficult Development Areas (DDAs), areas with a certain amount of Real Estate Advantage Program (REAP) recipients, or use of eligibility criteria from the Community Reinvestment Act. One commenter generally recommended that a clearer definition of ''disproportionately impacted'' should be provided and that any definition should include communities of color and people of limited means. Another recommended specific eligibility for people that had recently interacted with the criminal justice system. Many commenters representing Tribal governments and groups recommended a presumption of eligibility for all Tribal uses of funds, clarification that off reservation members remained eligible, and broad flexibility on use of funds.

Additionally, commenters noted that some areas are technically eligible to be QCTs but fall short because of the aggregate population of eligible tracts. One commenter noted that these areas should be considered the same as QCTs for the purpose of SLFRF funds. Some commenters argued that rural counties typically have few QCTs despite high levels of poverty and disruption caused by the COVID–19 pandemic. Other rural commenters recommended that the designation be by county rather than at a more granular level, arguing that the QCT designation is biased towards urban areas and understates the harm done to rural America. Many commenters representing Tribal governments supported the presumption that services provided by Tribal governments respond to disproportionate impacts.

Treasury Response

Summary: While households residing in QCTs or served by Tribal governments were presumed to be disproportionately impacted, Treasury emphasizes that under the interim final rule recipients could also identify other households, populations, or geographic areas that were disproportionately impacted by the pandemic and provide services to respond.

The final rule maintains the presumptions identified in the interim final rule, as well as recipients' ability to identify other impacted or disproportionately impacted classes. The final rule also allows recipients to presume that low-income households were disproportionately impacted, and as discussed above, defines low- and moderate-income. Finally, under the final rule recipients may also presume that households residing in the U.S. territories or receiving services from territorial governments were disproportionately impacted.

Households presumed to be impacted: Impacted households are those that experienced a public health or negative economic impact from the pandemic.

With regard to public health impacts, recipients may presume that the general public experienced public health impacts from the pandemic for the purposes of providing services for COVID–19 mitigation and behavioral health. In other words, recipients may provide a wide range of enumerated eligible uses in these categories to the general public without further analysis. As discussed in the introduction, COVID–19 as a disease has directly affected the health of tens of millions of Americans, and efforts to prevent and mitigate the spread of the disease are needed and in use across the country. Further, the stress of the pandemic and resulting recession have affected nearly all Americans. Accordingly, the final rule presumes that the general public are impacted by and eligible for services to respond to COVID–19 mitigation and prevention needs, as well as behavioral health needs.

With regard to negative economic impacts, as with the interim final rule, under the final rule recipients may presume that a household or population that experienced unemployment, experienced increased food or housing insecurity, or is low- or moderate-income experienced negative economic impacts resulting from the pandemic. The final rule's definition of low- and moderate-income, by providing standard metrics based on widely available data, is intended to simplify administration for recipients.

Households presumed to be disproportionately impacted: Disproportionately impacted households are those that experienced a

[29] For instance, Melissa Kearney et al. (2013) cap the ''struggling lower middle-income class'' at 250 percent of the federal poverty level, while Isabel Sawhill and Edward Rodrigue (2015) define the ''middle class'' as those with incomes of at least 300 percent of the poverty line. Melissa Kearney et al., ''A Dozen Facts about America's Struggling Lower-Middle Class,'' The Hamilton Project (December 2013), *https://www.hamiltonproject.org/assets/legacy/files/downloads_and_links/THP_12LowIncomeFacts_Final.pdf;* Isabel Sawhill and Edward Rodrigue, ''An Agenda for Reducing Poverty and Improving Opportunity,'' Brookings Institution, *https://www.brookings.edu/wp-content/uploads/2016/07/Sawhill_FINAL.pdf.*

[30] Data on median annual wages from: U.S. Bureau of Labor and Statistics, Occupational Employment and Wage Statistics, *available at https://www.bls.gov/oes/current/oes_nat.htm* (last visited December 7, 2021).

[31] For instance, households earning between 200 and 300 percent of the FPG have significantly higher rates of food and housing insecurity than those earning above 300 percent of the FPG. Table 1, Kyle J. Caswell and Stephen Zuckerman, Food Insecurity, Housing Hardship, and Medical Care Utilization, Urban Institute (June 2018), *https://www.urban.org/sites/default/files/publication/98701/2001896_foodinsecurity_housinghardship_medicalcareutilization_finalized.pdf.*

disproportionate, or meaningfully more severe, impact from the pandemic. As discussed in the interim final rule, pre-existing disparities in health and economic outcomes magnified the impact of the COVID–19 public health emergency on certain households and communities. As with the interim final rule, under the final rule recipients may presume that households residing in QCTs or receiving services provided by Tribal governments were disproportionately impacted by the pandemic. In addition, under the final rule recipients may presume that low-income households were disproportionately impacted by the pandemic. Finally, under the final rule recipients may also presume that households residing in the U.S. territories or receiving services from territorial governments were disproportionately impacted.

Treasury notes that households presumed to be disproportionately impacted would also be presumptively impacted, as these households have not only experienced pandemic impacts but have experienced disproportionate pandemic impacts; as a result, these households are presumptively eligible for responsive services for both impacted and disproportionately impacted households.

Many different geographic, income-based, or poverty-based presumptions could be used to designate disproportionately impacted populations. The combination of permitting recipients to use QCTs, low-income households, and services provided by Tribal or territorial governments as presumptions balances these varying methods. Specifically, QCTs are a commonly used designation of geographic areas based on low incomes or high poverty rates of households in the community; for recipients providing geographically targeted services, QCTs may provide a simple metric with readily available maps for use. However, Treasury recognizes that QCTs do not capture all underserved populations, including for reasons noted by commenters. By allowing recipients to also presume that low-income households were disproportionately impacted, the final rule provides greater flexibility to serve underserved households or communities. Data on household incomes is also readily available at varying levels of geographic granularity (*e.g.,* Census Tracts, counties), again permitting flexibility to adapt to local circumstances and needs. Finally, Treasury notes that, as discussed further below, recipients may also identify other households, populations, and communities disproportionately impacted by the pandemic, in addition to those presumed to be disproportionately impacted.

Additionally, Tribal and territorial governments may face both disproportionate impacts of the pandemic and administrability challenges with operationalizing the income-based standard; therefore, Treasury has presumed that services provided by these governments respond to disproportionate pandemic impacts. Given a lack of regularly published data on household incomes in most territories,[32] as well as a lack of poverty guidelines developed for these jurisdictions,[33] it may be highly challenging to assess disproportionate impact in these communities according to an income- or poverty-based standard. Similarly, data on incomes in Tribal communities are not readily available.[34] Finally, as described in the sections on Public Health and Negative Economic Impacts, Tribal communities have faced particularly severe health and economic impacts of the pandemic. Similarly, available research suggests that preexisting health and economic disparities in the territories amplified the impact of the pandemic on these communities.[35]

Categorical Eligibility

Public Comment: Several commenters suggested that the final rule permit recipients to rely on a beneficiary's eligibility for other federal benefits programs as an easily administrable proxy for identifying a group or population that experienced a negative economic impact as a result of the COVID–19 public health emergency (*i.e.,* categorical eligibility). In other words, a recipient would determine that individuals or households are eligible for an SLFRF-funded program based on the individual or household's eligibility in another program, typically another federal benefit program. Commenters noted that categorical eligibility is a common policy in program administration that can significantly ease administrative burden on both program administrators and beneficiaries.

Treasury Response: Treasury agrees that allowing recipients to identify impacted and disproportionately impacted beneficiaries based on their eligibility for other programs with similar income tests would ease administrative burden. To the extent that the other program's eligibility criteria align with a population or class that experienced a negative economic impact of the pandemic, this approach is also consistent with the process allowed under the final rule for recipients to determine that a class has experienced a negative economic impact, and then document that an individual receiving services is a member of the class. For these reasons, the final rule recognizes categorical eligibility for the following programs and populations:

- *Impacted households.* Treasury will recognize a household as impacted if it otherwise qualifies for any of the following programs:
  - Children's Health Insurance Program (CHIP)
  - Childcare Subsidies through the Child Care and Development Fund (CCDF) Program
  - Medicaid
  - National Housing Trust Fund (HTF), for affordable housing programs only
  - Home Investment Partnerships Program (HOME), for affordable housing programs only
- *Disproportionately impacted households.* Treasury will recognize a household as disproportionately impacted if it otherwise qualifies for any of the following programs:
  - Temporary Assistance for Needy Families (TANF)
  - Supplemental Nutrition Assistance Program (SNAP)
  - Free and Reduced-Price Lunch (NSLP) and/or School Breakfast (SBP) programs
  - Medicare Part D Low-income Subsidies
  - Supplemental Security Income (SSI)
  - Head Start and/or Early Head Start
  - Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
  - Section 8 Vouchers
  - Low-Income Home Energy Assistance Program (LIHEAP)
  - Pell Grants
  - For services to address educational disparities, Treasury will recognize Title

[32] For instance, the American Community Survey does not include all territories. U.S. Census Bureau, Areas Published, *https://www.census.gov/programs-surveys/acs/geography-acs/areas-published.html* (last visited November 9, 2021).

[33] U.S. Department of Health and Human Services, *supra* note 24.

[34] For instance, data from the American Community Survey is based on geographical location rather than Tribal membership. U.S. Census Bureau, My Tribal Area, *https://www.census.gov/Tribal/Tribal_glossary.php.*

[35] Lina Stoylar et. al., Challenges in the U.S. Territories: COVID–19 and the Medicaid Financing Cliff, Kaiser Family Foundation (May 18, 2021), *https://www.kff.org/coronavirus-covid-19/issue-brief/challenges-in-the-u-s-territories-covid-19-and-the-medicaid-financing-cliff/.*

I eligible schools [36] as disproportionately impacted and responsive services that support the school generally or support the whole school as eligible

c. Standards for Identifying Other Eligible Populations

Standards: Designating Other Impacted Classes

Public Comment: Treasury received multiple comments requesting additional clarification about how classes of impacted individuals may be designated, as well as questions asking whether recipients must demonstrate a specific public health or negative economic impact to each entity served (*e.g.,* each household receiving assistance under a program). There were several comments requesting that specific geographic designations, like a county or Impact Zone, be eligible to use as a determining boundary.

Treasury Response: The interim final rule allowed, and the final rule maintains, the ability for recipients to demonstrate a public health or negative economic impact on a class and to provide assistance to beneficiaries that fall within that class. Consistent with the scope of beneficiaries included in sections 602(c)(1)(A) and 603(c)(1)(A) of the Social Security Act, Treasury is clarifying that a recipient may identify such impacts for a class of households, small businesses, or nonprofits. In such cases, the recipient need only demonstrate that the household, small business, or nonprofit is within the relevant class. For example, a recipient could determine that restaurants in the downtown area had generally experienced a negative economic impact and provide assistance to those small businesses to respond. When providing this assistance, the recipient would only need to demonstrate that the small businesses receiving assistance were restaurants in the downtown area. The recipient would not need to demonstrate that each restaurant served experienced its own negative economic impact.

In identifying an impacted class and responsive program, service, or capital expenditure, recipients should consider the relationship between the definition of the class and proposed response. Larger and less-specific classes are less likely to have experienced similar harms and thus the responses are less likely to be responsive to the harms identified. That is, as the group of entities being served by a program has a wider set of fact patterns, or the type of entities, their circumstances, or their pandemic experiences differ more substantially, it may be more difficult to determine that the class has actually experienced the same or similar negative economic impact and that the response is appropriately tailored to address that impact.

Standard: Designating Other Disproportionately Impacted Classes

Summary of Interim Final Rule: As noted above, the interim final rule provided a broad set of enumerated eligible uses of funds in disproportionately impacted communities, including to address pre-existing disparities that contributed to more severe pandemic impacts in these communities. The interim final rule presumed that these services are eligible uses when provided in a QCT, to families and individuals living in QCTs, or when these services are provided by Tribal governments. Recipients may also provide these services to ''other populations, households, or geographic areas disproportionately impacted by the pandemic'' and, in identifying these disproportionately impacted communities, should be able to support their determination that the pandemic resulted in disproportionate public health or economic outcomes to the group identified.

Public Comment: A significant number of commenters expressed uncertainty regarding the process for determining eligibility for disproportionately impacted communities beyond QCTs. A commenter noted that a clearer definition of ''disproportionately impacted'' should be delineated and that any definition should include communities of color and people of limited means. Some commenters suggested a template or checklist to see if an area meets the standard for disproportionately impacted communities outside of QCTs. Some commenters stated that QCT and non-QCT beneficiaries should be treated the same.

Treasury Response: Under the interim final rule, presuming eligibility for services in QCTs, for populations living in QCTs, and for Tribal governments was intended to ease administrative burden, providing a simple path for recipients to offer services in underserved communities, and is not an exhaustive list of disproportionately impacted communities. To further clarify, the final rule codifies the interpretive framework discussed above, including presumptions of groups disproportionately impacted, as well as the ability to identify other disproportionately impacted populations, households, or geographies (referred to here as disproportionately impacted classes).

As discussed in the interim final rule, in identifying other disproportionately impacted classes, recipients should be able to support their determination that the pandemic resulted in disproportionate public health or economic outcomes to the specific populations, households, or geographic areas to be served. For example, the interim final rule considered data regarding the rate of COVID–19 infections and deaths in low-income and socially vulnerable communities, noting that these communities have experienced the most severe health impacts, compared to national averages. Similarly, the interim final rule considered the high concentration of low-income workers performing essential work, the reduced ability to socially distance, and other pre-existing public health challenges, all of which correlate with more severe COVID–19 outcomes. The interim final rule also considered the disproportionate economic impacts of the pandemic, citing, for example, the rate of job losses among low-income persons as compared to the general population. The interim final rule then identified QCTs, a common, readily accessible, and geographically granular method of identifying communities with a large proportion of low-income residents, as presumed to be disproportionately impacted by the pandemic.

In other words, the interim final rule identified disproportionately impacted populations by assessing the impacts of the pandemic and finding that some populations experienced meaningfully more severe impacts than the general public. Similarly, to identify disproportionately impacted classes, recipients should compare the impacts experienced by that class to the typical or average impacts of the pandemic in their local area, state, or nationally.

Recipients may identify classes of households, communities, small businesses, nonprofits, or populations that have experienced a disproportionate impact based on academic research or government research publications, through analysis of their own data, or through analysis of other existing data sources. To augment their analysis, or when quantitative data is not readily available, recipients may also consider qualitative research and sources like resident interviews or

[36] *Title I eligible schools* means schools eligible to receive services under section 1113 of Title I, Part A of the Elementary and Secondary Education Act of 1965, as amended (20 U.S.C. 6313), including schools served under section 1113(b)(1)(C) of that Act.

feedback from relevant state and local agencies, such as public health departments or social services departments. In both cases, recipients should consider the quality of the research, data, and applicability of analysis to their determination.

In designing a program or service that responds to a disproportionately impacted class, a recipient must first identify the impact and then identify an appropriate response. To assess disproportionate impact, recipients should rely on data or research that measures the public health or negative economic impact. An assessment of the effects of a response (*e.g.,* survey data on levels of resident support for various potential responses) is not a substitute for an assessment of the impact experienced by a particular class. Data about the appropriateness or desirability of a response may be used to assess the reasonableness of a response, once an impact or disproportionate impact has been identified but should not be the basis for assessing impact.

2. Public Health

Background

On January 21, 2020, the Centers for Disease Control and Prevention (CDC) identified the first case of novel coronavirus in the United States.[37] Since that time, and through present day, the United States has faced numerous waves of the virus that have brought acute strain on health care and public health systems. At various points in the pandemic, hospitals and emergency medical services have seen significant influxes of patients; response personnel have faced shortages of personal protective equipment; testing for the virus has been scarce; and congregate living facilities like nursing homes have seen rapid spread.

Since the initial wave of the COVID–19 pandemic, the United States has faced several additional major waves that continued to impact communities and stretch public health services. The summer 2020 wave impacted communities in the south and southwest. As the weather turned colder and people spent more time indoors, a wave throughout fall and winter 2020 impacted communities in almost every region of the country as the virus reached a point of uncontrolled spread and over 3,000 people died per day due to COVID–19.[38]

In December 2020, the Food and Drug Administration (FDA) authorized COVID–19 vaccines for emergency use, and soon thereafter, mass vaccination in the United States began. At the time of the interim final rule publication in May 2021, the number of daily new infections was steeply declining as rapid vaccination campaigns progressed across the country. By summer 2021, COVID–19 cases had fallen to their lowest level since early months of the pandemic, when testing was scarce. However, throughout late summer and early fall, the Delta variant, a more infectious and transmittable variant of the SARS–CoV–2 virus, sparked yet another surge. From June to early September, the seven-day moving average of reported cases rose from 12,000 to 165,000.[39]

As of December 2021, COVID–19 in total has infected over 50 million and killed over 800,000 Americans.[40] Preventing and mitigating the spread of COVID–19 continues to require a major public health response from federal, state, local, and Tribal governments.

First, state, local, and Tribal governments across the country have mobilized to support the national vaccination campaign. As of December 2021, more than 80 percent of adults have received at least one dose, with more than 470 million total doses administered.[41] Additionally, more than 15 million children over the age of 12 have received at least one dose of the vaccine and over 47 million people have received a booster dose.[42] Vaccines for younger children, ages 5 through 11, have been approved and are reaching communities and families across the country. As new variants continue to emerge globally, the national effort to administer vaccinations and other COVID–19 mitigation strategies will be a critical component of the public health response.

In early reporting on uses of SLFRF funds, recipients have indicated that they plan to put funds to immediate use to support continued vaccination campaigns. For example, one recipient has indicated that it plans to use SLFRF funds to support a vaccine incentive program, providing $100 gift cards to residents at community vaccination clinics. The program aimed to target communities with high public health needs.[43] Another recipient reported that it is partnering with multiple agencies, organizations, and providers to distribute COVID–19 vaccinations to homebound residents in assisted living facilities.[44]

State, local, and Tribal governments have also continued to execute other aspects of a wide-ranging public health response, including increasing access to COVID–19 testing and rapid at-home tests, contact tracing, support for individuals in isolation or quarantine, enforcement of public health orders, new public communication efforts, public health surveillance (*e.g.,* monitoring case trends and genomic sequencing for variants), enhancement to health care capacity through alternative care facilities, and enhancement of public health data systems to meet new demands or scaling needs.

State, local, and Tribal governments have also supported major efforts to prevent COVID–19 spread through safety measures at key settings like nursing homes, schools, congregate living settings, dense worksites, incarceration settings, and in other public facilities. This has included, for example, implementing infection prevention measures or making ventilation improvements.

In particular, state, local, and Tribal governments have mounted significant efforts to safely reopen schools. A key factor in school reopening is the ability to implement COVID–19 mitigation strategies such as providing masks and other hygiene resources, improving air-quality and ventilation, increasing outdoor learning and eating spaces, testing and contact tracing protocols, and a number of other measures.[45] For example, one recipient described plans to use SLFRF funds to further invest in school health resources that were critical components of school reopening and reducing the spread of COVID–19 in schools. Those investments include the increasing school nurses and social

[37] Press Release, Centers for Disease Control and Prevention, First Travel-related Case of 2019 Novel Coronavirus Detected in United States (Jan. 21, 2020), *https://www.cdc.gov/media/releases/2020/p0121-novel-coronavirus-travel-case.html.*

[38] Centers for Disease Control and Prevention, COVID Data Tracker: Trends in Number of COVID–19 Cases and Deaths in the US Reported to CDC, by State/Territory, *https://covid.cdc.gov/covid-data-tracker/#trends_dailytrendscases* (last visited December 7, 2021).

[39] *Id.*

[40] Centers for Disease Control and Prevention, COVID Data Tracker, *http://www.covid.cdc.gov/covid-data-tracker/#datatracker-home* (last visited December 31, 2021).

[41] Centers for Disease Control and Prevention, COVID Data Tracker: COVID–19 Vaccinations in the United States, *https://covid.cdc.gov/covid-data-tracker/#vaccinations* (last visited December 7, 2021).

[42] *Id.*

[43] Columbus, Ohio Recovery Plan, *https://www.columbus.gov/recovery/.*

[44] Luzerne County, Pennsylvania Recovery Plan, *https://www.luzernecounty.org/DocumentCenter/View/26304/Final-Interim-Recovery-Plan-Performance-Report-83121.*

[45] This includes implementing mitigation strategies consistent with the Centers for Disease Control and Prevention's (CDC) Guidance for COVID–19 Prevention in K–12 Schools (November 5, 2021), *available at https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/k-12-guidance.html.*

workers, improved ventilation systems, and other health and safety measures.

The need for public health measures to respond to COVID–19 will continue moving forward. This includes the continuation of vaccination campaigns for the general public, booster doses, and children. This also includes monitoring the spread of COVID–19 variants, understanding the impact of these variants, developing approaches to respond, and monitoring global COVID–19 trends. Finally, the long-term health impacts of COVID–19 will continue to require a public health response, including medical services for individuals with ''long COVID,'' and research to understand how COVID–19 impacts future health needs and raises risks for the tens of millions of Americans who have been infected.

The COVID–19 pandemic also negatively impacted other areas of public health, particularly mental health and substance use. In January 2021, over 40 percent of American adults reported symptoms of depression or anxiety, up from 11 percent in the first half of 2019.[46] The mental health impacts of the pandemic have been particularly acute for adults ages 18 to 24, racial and ethnic minorities, caregivers for adults, and essential workers, with all reporting significantly higher rates of considering suicide.[47] The proportion of children's emergency department visits related to mental health has also risen noticeably.[48] Similarly, rates of substance use and overdose deaths have spiked: Preliminary data from the CDC show a nearly 30 percent increase in drug overdose mortality from April 2020 to April 2021, bringing the estimated overdose death toll for a 12-month period over 100,000 for the first time ever.[49] The CDC also found that 13 percent of adults started or increased substance use to cope with stress related to COVID–19 and 26 percent reported having symptoms of trauma- and stressor-related disorder (TRSD) related to the pandemic.[50]

Another public health challenge exacerbated by the pandemic was violent crime and gun violence, which increased during the pandemic and has disproportionately impacted low-income communities.[51] According to the Federal Bureau of Investigation (FBI), although the property crime rate fell 8 percent in 2020, the violent crime rate increased 6 percent in 2020 compared to 2019 data.[52] In particular, the estimated number of aggravated assault offenses rose 12 percent, while murder and manslaughter increased 30 percent from 2019 to 2020.[53] The proportion of homicides committed with firearms rose from 73 percent in 2019 to 76 percent in 2020.[54] Exposure to violence can create serious short-term and long-term harmful effects to health and development, and repeated exposure to violence may be connected to negative health outcomes.[55] Addressing community violence as a public health issue may help prevent and even reduce additional harm to individuals, households, and communities.[56]

Many communities are using SLFRF funds to invest in holistic approaches in violence prevention that are rooted in targeted outreach and addressing root causes. For example, the City of St. Louis is planning to invest in expanding a ''community responder'' model designed to provide clinical help and to divert non-violent calls away from the police department. Additionally, the city will expand access to mental health services, allowing residents to seek support at city recreation centers, libraries, and other public spaces.[57] Similarly, Los Angeles County will further invest in its ''Care First, Jails Last'' program which seeks to replace ''arrest and incarceration'' responses with health interventions.[58]

While the pandemic affected communities across the country, it disproportionately impacted some demographic groups and exacerbated health inequities along racial, ethnic, and socioeconomic lines.[59] The CDC has found that racial and ethnic minorities are at increased risk for infection, hospitalization, and death from COVID–19, with Hispanic or Latino and Native American or Alaska Native patients at highest risk.[60]

Similarly, low-income and socially vulnerable communities have seen the most severe health impacts. For example, counties with high poverty rates also have the highest rates of infections and deaths, with 308 deaths per 100,000 compared to the U.S. average of 238 deaths per 100,000, as of December 2021.[61] Counties with high social vulnerability, as measured by factors such as poverty and educational attainment, have also fared more poorly than the national average, with 325 deaths per 100,000 as of December 2021.[62] Over the course of the

[46] Nirmita Panchal et al., The Implications of COVID–19 for Mental Health and Substance Abuse (Feb. 10, 2021), *https://www.kff.org/coronavirus covid-19/issue-brief/the-implications-of-covid-19-for-mental-health-and-substance-use/#:~:text=Older%20adults%20are%20also%20 more, prior%20to%20the%20current%20crisis;* Mark É. Czeisler et al., Mental Health, Substance Abuse, and Suicidal Ideation During COVID–19 Pandemic—United States, June 24–30 2020, Morb. Mortal. Wkly. Rep. 69(32):1049–57 (Aug. 14, 2020), *https://www.cdc.gov/mmwr/volumes/69/wr/mm6932a1.htm.*

[47] *Id.*

[48] Rebecca T. Leeb et al., Mental Health-Related Emergency Department Visits Among Children Aged <18 Years During the COVID Pandemic—United States, January 1–October 17, 2020, Morb. Mortal. Wkly. Rep. 69(45):1675–80 (Nov. 13, 2020), *https://www.cdc.gov/mmwr/volumes/69/wr/mm6945a3.htm.*

[49] Centers for Disease Prevention and Control, National Center for Health Statistics, Provisional Drug Overdose Death Counts, *https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm* (last visited May 8 December 6, 2021).

[50] Panchal, *supra* note 46; Mark É. Czeisler et al., *supra* note 46.

[51] The White House, FACT SHEET: More Details on the Biden-Harris Administration's Investments in Community Violence Interventions (April 7, 2021), *https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/07/fact-sheet-more-details-on-the-biden-harris-administrations-investments-in-community-violence-interventions/.*

[52] Federal Bureau of Investigation, FBI Releases 2020 Crime Statistics (September 27, 2021) *https://www.fbi.gov/news/pressrel/press-releases/fbi-releases-2020-crime-statistics.*

[53] *Id.*

[54] *Id.*

[55] The Educational Fund to Stop Gun Violence, Community Gun Violence, *https://efsgv.org/learn/type-of-gun-violence/community-gun-violence/* (last visited November 9, 2021).

[56] Giffords Law Center, Healing Communities in Crisis: Lifesaving Solutions to the Urban Gun Violence Epidemic (March 2016), *https://giffords.org/wp-content/uploads/2019/01/Healing-Communities-in-Crisis.pdf.*

[57] St. Louis, MO Recovery Plan, *https://www.stlouis-mo.gov/government/recovery/covid-19/arpa/plan/.*

[58] Los Angeles County, CA Recovery Plan, *http://file.lacounty.gov/SDSInter/bos/supdocs/160391.pdf.*

[59] Office of the White House, National Strategy for the COVID–19 Response and Pandemic Preparedness (Jan. 21, 2021), *https://www.whitehouse.gov/wp-content/uploads/2021/01/National-Strategy-for-the-COVID-19-Response-and-Pandemic-Preparedness.pdf.*

[60] In a study of 13 states from October to December 2020, the CDC found that Hispanic or Latino and Native American or Alaska Native individuals were 1.7 times more likely to visit an emergency room for COVID–19 than White individuals, and Black individuals were 1.4 times more likely to do so than White individuals. *See* Sebastian D. Romano et al., Trends in Racial and Ethnic Disparities in COVID–19 Hospitalizations, by Region—United States, March–December 2020, MMWR Morb Mortal Wkly Rep 2021, 70:560–565 (Apr. 16, 2021), *https://www.cdc.gov/mmwr/volumes/70/wr/mm7015e2.htm?s_cid=mm7015e2_w.*

[61] Centers for Disease Control and Prevention, COVID Data Tracker: Trends in COVID–19 Cases and Deaths in the United States, by County-level Population Factors, *https://covid.cdc.gov/covid-data-tracker/#pop-factors_totaldeaths* (last visited December 7, 2021).

[62] The CDC's Social Vulnerability Index includes fifteen variables measuring social vulnerability, including unemployment, poverty, education levels, single-parent households, disability status, non-English speaking households, crowded housing, and transportation access.

Centers for Disease Control and Prevention, COVID Data Tracker: Trends in COVID–19 Cases and Deaths in the United States, by Social

Continued

pandemic, Native Americans have experienced more than one and a half times the rate of COVID–19 infections, more than triple the rate of hospitalizations, and more than double the death rate compared to White Americans.[63] Low-income and minority communities also exhibit higher rates of pre-existing conditions that may contribute to an increased risk of COVID–19 mortality.[64] In addition, individuals living in low-income communities may have had more limited ability to socially distance or to self-isolate when ill, resulting in faster spread of the virus, and were over-represented among essential workers, who face greater risk of exposure.[65]

Social distancing measures in response to the pandemic may have also exacerbated pre-existing public health challenges. For example, for children living in homes with lead paint, spending substantially more time at home raises the risk of developing elevated blood lead levels, while screenings for elevated blood lead levels declined during the pandemic.[66] The combination of these underlying social and health vulnerabilities may have contributed to more severe public health outcomes of the pandemic within these communities, resulting in an exacerbation of pre-existing disparities in health outcomes.[67]

Summary of the Interim Final Rule Approach to Public Health

Summary: As discussed above, the interim final rule provided flexibility for recipients to pursue a wide range of eligible uses to ''respond to'' the COVID–19 public health emergency. Uses of funds to ''respond to'' the public health emergency address the SARS-CoV–2 virus itself, support efforts to prevent or decrease spread of the virus, and address other impacts of the pandemic on public health. The interim final rule implemented these provisions by identifying a non-exhaustive list of programs or services that may be funded as responding to COVID–19 (''enumerated eligible uses''), along with considerations for evaluating other potential uses of funds not explicitly listed. Enumerated eligible uses are discussed below. For guidance on how to determine whether a particular use is allowable, beyond those enumerated, see section Standards: Identifying a Public Health Impact.

Enumerated eligible uses under this section built and expanded upon permissible expenditures under the Coronavirus Relief Fund; for clarity, the interim final rule expressly listed as eligible uses the uses permissible under the Coronavirus Relief Fund, with minor exceptions.[68] The interim final rule also recognized that the nature of the COVID–19 public health emergency, and responsive policy measures, programs, and services, had changed over time and is expected to continue evolving.

The interim final rule categorized enumerated eligible uses to respond to the public health emergency into several categories: (1) COVID–19 mitigation and prevention, (2) medical expenses, (3) behavioral health care, (4) public health and safety staff, (5) expenses to improve the design and execution of health and public health programs, and (6) eligible uses to address disparities in public health outcomes. For each category in turn, this section describes public comments received and Treasury's responses, as well as comments received proposing additional enumerated eligible uses.

Reorganizations and Cross-References: In some cases, enumerated eligible uses included in the interim final rule under responding to the public health emergency have been re-categorized in the organization of the final rule to enhance clarity. For discussion of eligible uses for public health and safety staff and to improve the design and execution of public health programs, please see section Public Sector Capacity and Workforce in General Provisions: Other. For discussion of eligible uses to address disparities in public health outcomes, please see section Assistance to Households in Negative Economic Impacts.

Conversely, discussion of eligible assistance to small businesses and nonprofits to respond to public health impacts has been moved from Assistance to Small Businesses and Assistance to Nonprofits in Negative Economic Impacts to this section. This change is consistent with the interim final rule, which provides that appropriate responses to address the public health impacts of COVID–19 may be provided to any type of entity.

a. COVID–19 Mitigation and Prevention

COVID–19 public health response and mitigation tactics. Recognizing the broad range of services and programming needed to contain COVID–19, the interim final rule provided an extensive list of enumerated eligible uses to prevent and mitigate COVID–19 and made clear that the public health response to the virus is expected to continue to evolve over time, necessitating different uses of funds.

Enumerated eligible uses of funds in this category included: Vaccination programs; medical care; testing; contact tracing; support for isolation or quarantine; supports for vulnerable populations to access medical or public health services; public health surveillance (*e.g.,* monitoring case trends, genomic sequencing for variants); enforcement of public health orders; public communication efforts; enhancement to health care capacity, including through alternative care facilities; purchases of personal protective equipment; support for prevention, mitigation, or other services in congregate living facilities (*e.g.,* nursing homes, incarceration settings, homeless shelters, group living facilities) and other key settings like schools; ventilation improvements in congregate settings, health care settings, or other key locations; enhancement of

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Vulnerability Index, *https://covid.cdc.gov/covid-data-tracker/#pop-factors_totaldeaths* (last visited December 7, 2021).

[63] Centers for Disease Control and Prevention, Risk for COVID–19 Infection, Hospitalization, and Death By Race/Ethnicity, *https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html* (last visited December 7, 2021).

[64] *See, e.g.,* Centers for Disease Control and Prevention, Risk of Severe Illness or Death from COVID–19 (Dec. 10, 2020), *https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/disparities-illness.html* (last visited December 7, 2021).

[65] Milena Almagro et al., Racial Disparities in Frontline Workers and Housing Crowding During COVID–19: Evidence from Geolocation Data (Sept. 22, 2020), NYU Stern School of Business (forthcoming), *available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3695249;* Grace McCormack et al., Economic Vulnerability of Households with Essential Workers, JAMA 324(4):388–90 (2020), *available at https://jamanetwork.com/journals/jama/fullarticle/2767630.*

[66] *See, e.g.,* Joseph G. Courtney et al., Decreases in Young Children Who Received Blood Lead Level Testing During COVID–19—34 Jurisdictions, January–May 2020, Morb. Mort. Wkly. Rep. 70(5):155–61 (Feb. 5, 2021), *https://www.cdc.gov/mmwr/volumes/70/wr/mm7005a2.htm;* Emily A. Benfer & Lindsay F. Wiley, Health Justice Strategies to Combat COVID–19: Protecting Vulnerable Communities During a Pandemic, Health Affairs Blog (Mar. 19, 2020), *https://www.healthaffairs.org/do/10.1377/hblog20200319.757883/full/.*

[67] *See, e.g.,* Centers *for Disease Control and Prevention, supra note 62;* Benfer & Wiley, *supra* note 66; Nathaniel M. Lewis et al., Disparities in COVID–19 Incidence, Hospitalizations, and Testing, by Area-Level Deprivation—Utah, March 3–July 9, 2020, Morb. Mortal. Wkly. Rep. 69(38):1369–73 (Sept. 25, 2020), *https://www.cdc.gov/mmwr/volumes/69/wr/mm6938a4.htm.*

[68] Generally, funding uses eligible under CRF as a response to the direct public health impacts of COVID–19 will continue to be eligible under the ARPA, including those not explicitly listed in the final rule, with the following two exceptions: (1) The standard for eligibility of public health and safety payrolls has been updated (see section Public Sector Capacity and Workforce in General Provisions: Other) and (2) expenses related to the issuance of tax-anticipation notes are no longer an eligible funding use (see section Restrictions on Use: Debt Service).

public health data systems; other public health responses; and capital investments in public facilities to meet pandemic operational needs, such as physical plant improvements to public hospitals and health clinics or adaptations to public buildings to implement COVID–19 mitigation tactics. These enumerated uses are consistent with guidance from public health authorities, including the CDC.

Public Comment: Many commenters were supportive of expansive enumerated eligible uses for mitigating and preventing COVID–19, noting the wide range of activities that governments may undertake and the continued changing landscape of pandemic response. Some commenters requested that Treasury engage in ongoing consideration of and consultation on evolving public health needs and resulting eligible expenses. Some commenters noted that their jurisdiction does not have an official public health program, for example smaller jurisdictions or those that do not have a health department, and requested clarification on whether their public health expenses would still be eligible in compliance with program rules.

Treasury Response: In the final rule, Treasury is maintaining an expansive list of enumerated eligible uses to mitigate and prevent COVID–19, given the wide-ranging activities that governments may take to further these goals, including ''other public health responses.'' Note that the final rule discusses several of these enumerated uses in more detail below.

Treasury is further clarifying that when providing COVID–19 prevention and mitigation services, recipients can identify the impacted population as the general public. Treasury presumes that all enumerated eligible uses for programs and services, including COVID–19 mitigation and prevention programs and services, are reasonably proportional responses to the harm identified unless a response is grossly disproportionate to the type or extent of harm experienced. Note that capital expenditures are not considered ''programs and services'' and are not presumed to be reasonably proportional responses to an identified harm except as provided in section Capital Expenditures in General Provisions: Other. In other words, recipients can provide any COVID–19 prevention or mitigation service to members of the general public without any further analysis of impacts of the pandemic on those individuals and whether the service is responsive.

This approach gives recipient governments an extensive set of eligible uses that can adapt to local needs, as well as evolving response needs and developments in understanding of transmission of COVID–19. Treasury emphasizes how the enumerated eligible uses can adapt to changing circumstances. For example, when the interim final rule was released, national daily COVID–19 cases were at relatively low levels and declining;[69] as the Delta variant spread and cases peaked in many areas of the country, particularly those with low vaccination rates, government response needs and tactics evolved, and the SLFRF funds provided the ability to quickly and nimbly adapt to new public health needs. Treasury also notes that funds may be used to support compliance with and implementation of COVID–19 safety requirements, including vaccination requirements, testing programs, or other required practices.

Recipient governments do not need to have an official health or public health program in order to utilize these eligible uses; any recipient can pursue these eligible uses, though Treasury recommends consulting with health and public health professionals to support effective implementation.

The CDC has provided recommendations and guidelines to help mitigate and prevent COVID–19. The interim final rule and final rule help support recipients in stopping the spread of COVID–19 through these recommendations and guidelines.[70] The final rule reflects changing circumstances of COVID–19 and provides a broad range of permissible uses for mitigating and preventing the spread of the disease, in a manner consistent with CDC guidelines and recommendations.

The purpose of the SLFRF funds is to mitigate the fiscal effects stemming from the COVID–19 public health emergency, including by supporting efforts to stop the spread of the virus. The interim final rule and final rule implement this objective by, in part, providing that recipients may use SLFRF funds for COVID–19 mitigation and prevention.[71] A program or service that imposes conditions on participation in or acceptance of the service that would undermine efforts to stop the spread of COVID–19 or discourage compliance with recommendations and guidelines in CDC guidance for stopping the spread of COVID–19 is not a permissible use of funds. In other words, recipients may not use funds for a program that undermines practices included in the CDC's guidelines and recommendations for stopping the spread of COVID–19. This includes programs that impose a condition to discourage compliance with practices in line with CDC guidance (*e.g.,* paying off fines to businesses incurred for violation of COVID–19 vaccination or safety requirements), as well as programs that require households, businesses, nonprofits, or other entities not to use practices in line with CDC guidance as a condition of receiving funds (*e.g.,* requiring that businesses abstain from requiring mask use or employee vaccination as a condition of receiving SLFRF funds).

Vaccination programs and vaccine incentives. At the time of the interim final rule release, many vaccination programs were using mass vaccination tactics to rapidly reach Americans en masse for first vaccine doses.[72] Since that time, the FDA has authorized booster vaccine doses for certain groups and certain vaccines and has also authorized vaccines for youths [73] [74] The inclusion of ''vaccination programs'' as an eligible use allows for adaptation as the needs of programs change or new groups become eligible for different types of vaccinations.

Public Comment: Since the release of the interim final rule, many recipient governments have also requested clarification on whether vaccine incentives are a permissible use of funds.

Treasury Response: Treasury issued guidance clarifying that ''[vaccine] programs that provide incentives reasonably expected to increase the number of people who choose to get vaccinated, or that motivate people to get vaccinated sooner than they otherwise would have, are an allowable

[69] *See* Centers for Disease Control and Prevention, COVID Data Tracker, *https://covid.cdc.gov/covid-data-tracker/#trends_dailycases* (last visited December 7, 2021).

[70] *See* Centers for Disease Control and Prevention, COVID–19, *https://www.cdc.gov/coronavirus/2019-ncov/index.html* (last visited November 8, 2021).

[71] *See* § 35.6(b); Coronavirus State and Local Fiscal Recovery Funds, 86 FR at 26786.

[72] Centers for Disease Control and Prevention, COVID Data Tracker: COVID–19 Vaccinations in the United States, *https://covid.cdc.gov/covid-data-tracker/#vaccinations* (last visited October 18, 2021).

[73] U.S. Food and Drug Administration, Coronavirus (COVID–19) Update: FDA Takes Additional Actions on the Use of a Booster Dose for COVID–19 Vaccines, *https://www.fda.gov/news-events/press-announcements/fda-authorizes-pfizer-biontech-covid-19-vaccine-emergency-use-children-5-through-11-years-age* (last visited November 8, 2021).

[74] U.S. Food and Drug Administration, FDA Authorizes Pfizer-BioNTech COVID–19 Vaccine for Emergency Use in Children 5 through 11 Years of Age, *https://www.fda.gov/news-events/press-announcements/fda-authorizes-pfizer-biontech-covid-19-vaccine-emergency-use-children-5-through-11-years-age* (last visited November 8, 2021).

use of funds so long as such costs are reasonably proportional to the expected public health benefit.'' [75] This use of funds remains permissible under the final rule.

Capital Expenditures

Public Comment: Many commenters requested clarification around the types and scope of permissible capital investments in public facilities to meet pandemic operational needs; ventilation improvements in congregate settings, health care settings, or other key locations; and whether support for prevention and mitigation in congregate facilities could include facilities renovations, improvements, or construction of new facilities, or if the facilities must solely be used for COVID–19 response.

Treasury Response: For clarity, Treasury has addressed the eligibility standard for capital expenditures, or investments in property, facilities, or equipment, in one section of this Supplementary Information; see section Capital Expenditures in General Provisions: Other. In recognition of the importance of capital expenditures in the COVID–19 public health response, Treasury enumerates that the following projects are examples of eligible capital expenditures, as long as they meet the standards for capital expenditures in section Capital Expenditures in General Provisions: Other:

- Improvements or construction of COVID–19 testing sites and laboratories, and acquisition of related equipment;
- Improvements or construction of COVID–19 vaccination sites;
- Improvements or construction of medical facilities generally dedicated to COVID–19 treatment and mitigation (*e.g.,* emergency rooms, intensive care units, telemedicine capabilities for COVID–19 related treatment);
- Expenses of establishing temporary medical facilities and other measures to increase COVID–19 treatment capacity, including related construction costs;
- Acquisition of equipment for COVID–19 prevention and treatment, including ventilators, ambulances, and other medical or emergency services equipment;
- Improvements to or construction of emergency operations centers and acquisition of emergency response equipment (*e.g.,* emergency response radio systems);
- Installation and improvements of ventilation systems;
- Costs of establishing public health data systems, including technology infrastructure;
- Adaptations to congregate living facilities, including skilled nursing facilities, other long-term care facilities, incarceration settings, homeless shelters, residential foster care facilities, residential behavioral health treatment, and other group living facilities, as well as public facilities and schools (excluding construction of new facilities for the purpose of mitigating spread of COVID–19 in the facility); and
- Mitigation measures in small businesses, nonprofits, and impacted industries (*e.g.,* developing outdoor spaces).

Other clarifications on COVID–19 mitigation: Medical care, supports for vulnerable populations, data systems, carceral settings. Based on public comments and questions received from recipients following the interim final rule, Treasury is making several further clarifications on enumerated eligible uses in this category.

Public Comment: Several commenters requested clarification on eligible uses of funds for medical care; Treasury addresses those comments in the section Medical Expenses below.

Public Comment: Recipients posed questions on the type and scope of activities eligible as ''supports for vulnerable populations to access medical or public health services.''

Treasury Response: Enumerated eligible uses should be considered in the context of the eligible use category or section where they appear; in this case, ''supports for vulnerable populations to access medical or public health services'' appears in the section COVID–19 Mitigation and Prevention. As such, these eligible uses should help vulnerable or high-risk populations access services that mitigate COVID–19, for example, transportation assistance to reach vaccination sites, mobile vaccination or testing programs, or on-site vaccination or testing services for homebound individuals, those in group homes, or similar settings.

Public Comment: Some commenters asked whether ''enhancement of public health data systems'' could include investments in software, databases, and other information technology resources that support responses to the COVID–19 public health emergency but also provide benefits for other use cases and long-term capacity of public health departments and systems.

Treasury Response: These are permissible uses of funds under the interim final rule and remain eligible under the final rule.

Assistance to Businesses and Nonprofits To Implement COVID–19 Mitigation Strategies

Background: As detailed above, Treasury received many public comments describing uncertainty about which eligible use category should be used to assess different potential uses of funds. As a result, Treasury has re-categorized some uses of funds in the final rule to provide greater clarity, consistent with the principle that uses of funds should be assessed based on their intended beneficiary. For example, COVID–19 mitigation and prevention serves the general public or specific populations within the public. However, in the interim final rule, assistance to small businesses, nonprofits, and impacted industries to implement COVID–19 mitigation and prevention strategies was categorized in the respective sections within Negative Economic Impacts. The final rule consolidates all COVID–19 mitigation and prevention within Public Health.

Public Comment: Treasury has received multiple comments and questions about which eligible use permits the recipient to provide assistance to businesses and nonprofits to address the public health impacts of COVID–19.

Treasury Response: In the final rule, these services have been re-categorized under COVID–19 mitigation and prevention to reflect the fact that this assistance responds to public health impacts of the pandemic rather than the negative economic impacts to a small business, nonprofit, or impacted industry. When providing COVID–19 mitigation and prevention services, recipients can identify the impacted entity as small businesses, nonprofits, or businesses in impacted industries in general. As with all enumerated eligible uses, recipients may presume that all COVID–19 mitigation and prevention programs and services are reasonably proportional responses to the harm identified unless a response is grossly disproportionate to the type or extent of harm experienced. Note that capital expenditures are not considered ''programs and services'' and are not presumed to be reasonably proportional responses to an identified harm except as provided in section Capital Expenditures in General Provisions: Other. In other words, recipients can provide any COVID–19 prevention or mitigation service to small businesses, nonprofits, and businesses in impacted

[75] Coronavirus State and Local Fiscal Recovery Funds, Frequently Asked Questions, as of July 19, 2021; *https://home.treasury.gov/system/files/136/SLFRPFAQ.pdf.* Note that programs may provide incentives to individuals who have already received a vaccination if the incentive is reasonably expected to increase the number of people who choose to get vaccinated or motivate people to get vaccinated sooner and the costs are reasonably proportional to the expected public health benefit.

industries without any further analysis of impacts of the pandemic on those entities and whether the service is responsive.

In some cases, this means that an entity not otherwise eligible to receive assistance to respond to negative economic impacts of the pandemic, for example an entity that did not experience a negative economic impact, may still be eligible to receive assistance under this category for COVID–19 mitigation and prevention services.

Uses of funds can include loans, grants, or in-kind assistance to small businesses, nonprofits, or other entities to implement COVID–19 prevention or mitigation tactics, such as vaccination; testing; contact tracing programs; physical plant changes to enable greater use of outdoor spaces or ventilation improvements; enhanced cleaning efforts; and barriers or partitions. For example, this would include assistance to a restaurant to establish an outdoor patio, given evidence showing much lower risk of COVID–19 transmission outdoors.[76] Uses of funds can also include aid to travel, tourism, hospitality, and other impacted industries to implement COVID–19 mitigation and prevention measures to enable safe reopening, for example, vaccination or testing programs, improvements to ventilation, physical barriers or partitions, signage to facilitate social distancing, provision of masks or personal protective equipment, or consultation with infection prevention professionals to develop safe reopening plans.

Recipients providing assistance to small businesses, nonprofits, or impacted industries that includes capital expenditures (*i.e.,* expenditures on property, facilities, or equipment) should also review the section Capital Expenditures in General Provisions: Other, which describes eligibility standards for these expenditures. Recipients providing assistances in the form of loans should review the section Treatment of Loans Made with SLFRF Funds in General Provisions: Other.

Recipients should also be aware of the difference between beneficiaries of assistance and subrecipients when working with small businesses, nonprofits, or impacted industries. As noted above, Treasury presumes that the general public, as well as small businesses, nonprofits, and impacted industries in general, has been impacted by the COVID–19 disease itself and is eligible for services that mitigate or prevent COVID–19 spread. As such, a small business, nonprofit, or impacted industry receiving assistance to implement COVID–19 mitigation measures is a beneficiary of assistance (*e.g.,* granting funds to a small business to develop an outdoor patio to reduce transmission). In contrast, if a recipient contracts with, or grants funds to, a small business, nonprofit, or impacted industry to carry out an eligible use for COVID–19 mitigation on behalf of the recipient, the entity is a subrecipient (*e.g.,* contracting with a small business to operate COVID–19 vaccination sites). For further information on distinguishing between beneficiaries and subrecipients, as well as the impacts of the distinction on reporting and other requirements, see section Distinguishing Subrecipients versus Beneficiaries.

b. Medical Expenses

Background: The interim final rule also included as an enumerated eligible use medical expenses, including medical care and services to address the near-term and potential longer-term impacts of the disease on individuals infected.

Public Comment: Some commenters sought clarification on the types of medical expenses eligible and for whom, including whether funds could be used under this category for expanding health insurance coverage (*e.g.,* subsidies for premiums, expanding a group health plan), improvements to healthcare facilities or establishment of new medical facilities, direct costs of medical services, and costs to a self-funded health insurance plan (*e.g.,* a county government health plan) for COVID–19 medical care.

Treasury Response: In the final rule, Treasury is maintaining this enumerated eligible use category and clarifying that it covers costs related to medical care provided directly to an individual due to COVID–19 infection (*e.g.,* treatment) or a potential infection (*e.g.,* testing). This can include medical costs to uninsured individuals; deductibles, co-pays, or other costs not covered by insurance; costs for uncompensated care at a health provider; emergency medical response costs; and, for recipients with a self-funded health insurance plan, excess health insurance costs due to COVID–19 medical care. These are medical expenses due to COVID–19 and distinguish this category of eligible uses from other related eligible uses, like COVID–19 mitigation and prevention and health insurance expenses to households, to provide greater clarity for recipients in determining which category of eligible uses they should review to assess a potential use of funds. For discussion of eligibility for programs to expand health insurance coverage, see section Assistance to Households.

c. Behavioral Health Care

Background: Recognizing that the public health emergency, necessary mitigation measures like social distancing, and the economic downturn have exacerbated mental health and substance use challenges for many Americans, the interim final rule included an enumerated eligible use for mental health treatment, substance use treatment, and other behavioral health services, including a non-exhaustive list of specific services that would be eligible under this category.

Public Comment: Many commenters expressed support for the interim final rule's recognition of behavioral health impacts of the pandemic and eligible uses under this category. Several commenters requested clarification on the types of eligible services under this category, specifically whether both acute and chronic care are included as well as services that often do not directly accept insurance payments, like peer support groups. Some commenters highlighted the importance of cultural competence in providing effective behavioral health services. Some commenters suggested that funding should be available broadly and quickly for this purpose, recommending that funding available for behavioral health not be tied to the amount of revenue loss experienced by the recipient.

Treasury Response: In the final rule, Treasury is maintaining this enumerated eligible use category and clarifying that it covers an expansive array of services for prevention, treatment, recovery, and harm reduction for mental health, substance use, and other behavioral health challenges caused or exacerbated by the public health emergency. The specific services listed in the interim final rule also remain eligible.[77]

Treasury is further clarifying that when providing behavioral health services, recipients can identify the impacted population as the general public and, as with all enumerated eligible uses, presume that all programs and services are reasonably proportional responses to the harm identified unless a response is grossly disproportionate to the type or extent of harm experienced. In contrast, capital expenditures are not

[76] *See* Centers for Disease Control and Prevention, Participate in Outdoor and Indoor Activities, *https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/outdoor-activities.html* (last visited November 8, 2021).

[77] Hotlines or warmlines, crisis intervention, overdose prevention, infectious disease prevention, and services or outreach to promote access to physical or behavioral health primary care and preventative medicine.

considered ''programs and services'' and are not presumed to be reasonably proportional responses to an identified harm except as provided in section Capital Expenditures in General Provisions: Other.

In other words, recipients can provide behavioral health services to members of the general public without any further analysis of impacts of the pandemic on those individuals and whether the service is responsive. Recipients may also use this eligible use category to respond to increased rates of behavioral health challenges at a population level or, at an individual level, new behavioral health challenges or exacerbation of pre-existing challenges, including new barriers to accessing treatment.

Services that respond to these impacts of the public health emergency may include services across the continuum of care, including both acute and chronic care, such as prevention, outpatient treatment, inpatient treatment, crisis care, diversion programs (*e.g.,* from emergency departments or criminal justice system involvement), outreach to individuals not yet engaged in treatment, harm reduction, and supports for long-term recovery (*e.g.,* peer support or recovery coaching, housing, transportation, employment services).

Recipients may also provide services for special populations, for example, enhanced services in schools to address increased rates of behavioral health challenges for youths, mental health first responder or law enforcement-mental health co-responder programs to divert individuals experiencing mental illness from the criminal justice system, or services for pregnant women with substance use disorders or infants born with neonatal abstinence syndrome. Finally, recipients may use funds for programs or services to support equitable access to services and reduce racial, ethnic, or socioeconomic disparities in access to high-quality treatment.

Eligible uses of funds may include services typically billable to insurance [78] or services not typically billable to insurance, such as peer support groups, costs for residence in supportive housing or recovery housing, and the 988 National Suicide Prevention Lifeline or other hotline services. Recipients may also use funds in conjunction with other federal grants or programs (see section Program Administration Provisions), though eligible services under SLFRF are not limited to those eligible under existing federal programs.

Given the public health emergency's exacerbation of the ongoing opioid and overdose crisis, Treasury highlights several ways that funds may be used to respond to opioid use disorder and prevent overdose mortality.[79] Specifically, eligible uses of funds include programs to expand access to evidence-based treatment like medications to treat opioid use disorder (*e.g.,* direct costs or incentives for emergency departments, prisons, jails, and outpatient providers to offer medications and low-barrier treatment), naloxone distribution, syringe service programs, outreach to individuals in active use, post-overdose follow up programs, programs for diversion from the criminal justice system, and contingency management interventions.

Finally, for clarity, Treasury has addressed the eligibility standard for capital expenditures, or investments in property, facilities, or equipment, in one section of this Supplementary Information; see section Capital Expenditures in General Provisions: Other. Examples of capital expenditures related to behavioral health that Treasury recognizes as eligible include behavioral health facilities and equipment (*e.g.,* inpatient or outpatient mental health or substance use treatment facilities, crisis centers, diversion centers), as long as they adhere to the standards detailed in the Capital Expenditures section.

d. Preventing and Responding to Violence

Background: The interim final rule highlighted that some types of violence had increased during the pandemic and that the ability of victims to access services had decreased, noting as an example the challenges that individuals affected by domestic violence face in accessing services. Accordingly, the interim final rule enumerated as an eligible use, in disproportionately impacted communities, evidence-based community violence intervention programs. Following the release of the interim final rule, Treasury received several recipient questions regarding whether and how funds may be used to respond to an increase in crime, violence, or gun violence in some communities during the pandemic. Treasury released further guidance identifying how enumerated eligible uses and eligible use categories under the interim final rule could support violence reduction efforts, including rehiring public sector staff, behavioral health services, and services to address negative economic impacts of the pandemic that may aid victims of crime. The guidance also identified an expanded set of enumerated eligible uses to address increased gun violence.

Public Comment: Several commenters expressed support for this use of funds.

Treasury Response: In the final rule, Treasury is maintaining enumerated eligible uses in this area and clarifying how to apply eligibility standards. Throughout the final rule, enumerated eligible uses should respond to an identified impact of the COVID–19 public health emergency in a reasonably proportional manner to the extent and type of harm experienced. Many of the enumerated eligible uses—like behavioral health services, services to improve employment opportunities, and services to address educational disparities in disproportionately impacted communities—that respond to the public health and negative economic impacts of the pandemic may also have benefits for reducing crime or aiding victims of crime. For example, the pandemic exacerbated the impact of domestic violence, sexual assault, and human trafficking; enumerated eligible uses like emergency housing assistance, cash assistance, or assistance with food, childcare, and other needs could be used to support survivors of domestic violence, sexual assault, or human trafficking who experienced public health or economic impacts due to the pandemic.

Public Comment: Several commenters expressed support for community violence intervention programs or argued that traditional public safety approaches had negatively impacted the social determinants of health in their communities. Several commenters recommended inclusion of approaches like mental health or substance use diversion programs.

Treasury Response: Treasury recognizes the importance of comprehensive approaches to challenges like violence. The final rule includes an enumerated eligible use for community violence intervention programs in all communities, not just the disproportionately impacted communities eligible under the interim final rule. Given the increased rate of violence during the pandemic, Treasury has determined that this enumerated

[78] However, SLFRF funds may not be used to reimburse a service that was also billed to insurance.

[79] In line with the Department of Health and Human Services, Overdose Prevention Strategy, *https://www.hhs.gov/overdose-prevention/,* and the Office of National Drug Control Policy, Administration's Statement on Drug Policy Priorities for Year One (April 1, 2021), *https://www.whitehouse.gov/wp-content/uploads/2021/03/BidenHarris-Statement-of-Drug-Policy-Priorities-April-1.pdf.*

eligible use is responsive to the impacts of the pandemic in all communities. The final rule incorporates guidance issued after the interim final rule on specifically types of services eligible, including:

- Evidence-based practices like focused deterrence, street outreach, violence interrupters, and hospital-based violence intervention models, complete with wraparound services such as behavioral therapy, trauma recovery, job training, education, housing and relocation services, and financial assistance; and
- Capacity-building efforts at community violence intervention programs like funding more intervention workers, increasing their pay, providing training and professional development for intervention workers, and hiring and training workers to administer the programs.

Public Comment: Some commenters sought further clarification on whether some of the enumerated eligible uses are considered responsive to all crime, violent crime, or gun violence.

Treasury Response: Enumerated eligible uses that respond to an increase in gun violence may be pursued in communities experiencing an increase in gun violence associated with the pandemic, specifically: (1) Hiring law enforcement officials—even above pre-pandemic levels—or paying overtime where the funds are directly focused on advancing community policing strategies for gun violence, (2) additional enforcement efforts to reduce gun violence exacerbated by the pandemic, including prosecuting gun traffickers, dealers, and other parties contributing to the supply of crime guns, as well as collaborative federal, state, and local efforts to identify and address gun trafficking channels, and (3) investing in technology and equipment to allow law enforcement to more efficiently and effectively respond to the rise in gun violence resulting from the pandemic, for example technology to assist in the identification of guns whose serial numbers have been damaged.

3. Negative Economic Impacts

a. Assistance to Households

Background

While the U.S. economy is now on the path to a strong recovery, the public health emergency, including the necessary measures taken to protect public health, resulted in significant economic and financial hardship for many Americans. As businesses closed, consumers stayed home, schools shifted to remote education, and travel declined precipitously, over 22 million jobs were lost in March and April 2020.[80] One year later, in April 2021, the economy still remained over 8 million jobs below its pre-pandemic peak,[81] and the unemployment rate hovered around 6 percent.[82]

In the months since Treasury issued the interim final rule in May 2021, the economy has made large strides in its recovery. The economy gained over 4 million jobs in the seven months from May to November 2021;[83] the unemployment rate fell more than 1.5 percentage points to 4.2 percent, which is the lowest rate since February 2020;[84] and the size of the nation's economy surpassed the pre-pandemic peak in the second quarter of 2021.[85]

While the economy has made immense progress in its recovery since May 2021, the economy has also faced setbacks that illustrate the continued risks to the recovery. As the Delta variant spread across the country this summer and fall, the United States faced another severe wave of cases, deaths, and strain on the healthcare system, which contributed to a slowdown in the pace of recovery in the third quarter.[86] Supply chain disruptions have also demonstrated the difficulties of restarting a global economy.[87] Moreover, although many Americans have returned to work as of November 2021, the economy remains 3.9 million jobs below its pre-pandemic peak,[88] and 2.4 million workers have dropped out of the labor market altogether relative to February 2020.[89] Thus, despite much progress, there is a continued need to respond to the pandemic's economic effects to ensure a full, broad-based, and equitable recovery.

Indeed, the pandemic's economic impacts continue to affect some demographic groups more than others. Rates of unemployment remain particularly severe among workers of color and workers with lower levels of educational attainment; for example, the overall unemployment rate in the United States was 4.2 percent in November 2021, but certain groups saw much higher rates: 6.7 percent for Black workers, 5.2 percent for Hispanic or Latino workers, and 5.7 percent for workers without a high school diploma.[90] Job losses have also been particularly steep among low-wage workers, with these workers remaining furthest from recovery as of the end of 2020.[91] A severe recession, and its concentrated impact among low-income workers, has amplified food and housing insecurity, with an estimated nearly 20 million adults living in households where there is sometimes or often not enough food to eat and an estimated 12 million adults living in households that were not current on rent.[92]

While economic effects have been seen across many communities, there are additional disparities by race and income. For example, approximately

[80] U.S. Bureau of Labor Statistics, All Employees, Total Nonfarm [PAYEMS], retrieved from FRED, Federal Reserve Bank of St. Louis; *https://fred.stlouisfed.org/series/PAYEMS* (last visited December 7, 2021).

[81] *Id.*

[82] U.S. Bureau of Labor Statistics, Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis; *https://fred.stlouisfed.org/series/UNRATE* (last visited December 7, 2021).

[83] U.S. Bureau of Labor Statistics, *supra* note 80.

[84] U.S. Bureau of Labor Statistics, *supra* note 82.

[85] U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis, *https://fred.stlouisfed.org/series/GDPC1* (last visited December 7, 2021).

[86] U.S. Department of the Treasury, Economy Statement by Catherine Wolfram, Acting Assistant Secretary for Economy Policy, for the Treasury Borrowing Advisory Committee (November 1, 2021), available at *https://home.treasury.gov/news/press-releases/jy0453.*

[87] Yuka Hayashi, IMF Cuts Global Growth Forecast Amid Supply-Chain Disruptions, Pandemic Pressures, Wall Street Journal (October 12, 2021), available at *https://www.wsj.com/articles/imf-cuts-global-growth-forecast-amid-supply-chain-disruptions-warns-of-inflation-risks-11634043601.*

[88] U.S. Bureau of Labor Statistics, *supra* note 80.

[89] U.S. Bureau of Labor Statistics, Civilian Labor Force Level [CLF16OV], retrieved from FRED, Federal Reserve Bank of St. Louis, *https://fred.stlouisfed.org/series/CLF16OV* (last visited December 7, 2021).

[90] U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey: Employment status of the civilian population by sex and age (December 6, 2021), *https://www.bls.gov/news.release/empsit.t01.htm* (last visited December 7, 2021); U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey: Employment status of the civilian noninstitutional population by race, Hispanic or Latino ethnicity, sex, and age (December 6, 2021), *https://www.bls.gov/web/empsit/cpseea04.htm* (last visited December 7, 2021); U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey: Employment status of the civilian noninstitutional population 25 years and over by educational attainment (December 6, 2021), *https://www.bls.gov/web/empsit/cpseea05.htm* (last visited December 7, 2021).

[91] Elise Gould & Jori Kandra, Wages grew in 2020 because the bottom fell out of the low-wage labor market, Economic Policy Institute (Feb. 24, 2021), *https://files.epi.org/pdf/219418.pdf. See also,* Michael Dalton et al., The K-Shaped Recovery: Examining the Diverging Fortunes of Workers in the Recovery from the COVID–19 Pandemic using Business and Household Survey Microdata, U.S. Bureau of Labor Statistics Working Paper Series (July 2021), *https://www.bls.gov/osmr/research-papers/2021/pdf/ec210020.pdf.*

[92] Center on Budget and Policy Priorities, Tracking the COVID–19 Recession's Effects on Food, Housing, and Employment Hardships, *https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-economys-effects-on-food-housing-and* (last visited December 17, 2021).

half of low-income, Black, and Hispanic parents reported difficulty covering costs related to food, housing, utility, or medical care.[93] Over the course of the pandemic, inequities also manifested along gender lines, as schools closed to in-person activities, leaving many working families without childcare during the day.[94] Women of color have been hit especially hard: The labor force participation rate for Black women has fallen by 3.6 percentage points [95] during the pandemic as compared to 1.3 percentage points for Black men [96] and 1.7 percentage points for White women.[97]

As the economy recovers, the effects of the pandemic-related recession may continue to impact households, including a risk of longer-term effects on earnings and economic potential. For example, unemployed workers, especially those who have experienced longer periods of unemployment, earn lower wages over the long term once rehired.[98] In addition to the labor market consequences for unemployed workers, recessions can also cause longer-term economic challenges through, among other factors, damaged consumer credit scores [99] and reduced familial and childhood wellbeing.[100] These potential long-term economic consequences underscore the continued need for robust policy support.

Low- and moderate-income households, those with income levels at or below 300 percent of the federal poverty level (FPL), face particular hardships and challenges. These households report much higher rates of food insecurity and housing hardships than households with higher incomes. For example, households with incomes at or below 300 percent FPL are several times more likely to have reported struggling with food insecurity compared to households with income above 300 percent FPL.[101] Similarly, low- and moderate-income households reported being housing insecure [102] at rates more than twice as high as higher-income households, and low- and moderate-income households reported housing quality hardship [103] at rates statistically significantly greater than the rate for higher-income households.[104] The economic crisis caused by the pandemic worsened economic outcomes for workers in many low- and moderate-income households. Industries that employed low-wage workers experienced a disproportionate level of job loss. For example, from February 2020 to February 2021, the hospitality and leisure industry lost nearly 3.5 million jobs.[105] While the entire industry was impacted, 72 percent of the job losses occurred in the lowest wage service occupations compared to only a 6 percent rate of job loss in the highest wage management and finance jobs.[106] Similar trends exist in other heavily impacted industries. In public education, the lowest wage occupations, service and transportation jobs, saw a job loss rate of 20 and 26 percent, respectively.[107] During that same time period, the highest wage occupations in public education, management, actually saw jobs increase by 7 percent.[108]

While many households suffered negative economic outcomes as a result of the COVID–19 pandemic and economic recession, households with low incomes were impacted in disproportionate and exceptional ways. From January 2020 to March 2021, low-wage workers experienced job loss at a rate five times higher than middle-wage workers, and high-wage workers actually experienced an increase in job opportunities.[109] Because workers in low-income households were more likely to lose their job or experience reductions in pay, those same households were also more likely to experience economic hardships like trouble paying utility bills, affording rent or mortgage payments, purchasing food, and paying for medical expenses.[110] The disproportionate negative impacts the pandemic has had on low-income families extend beyond financial insecurity. For example, low-income families have reported higher levels of social isolation, stress, and other negative mental health outcomes during the pandemic. While over half of all U.S. adults report that their mental health was negatively affected by the pandemic, adults with low incomes reported major negative mental health impacts at a rate nearly twice that of adults with high incomes.[111]

[93] Michael Karpman, Dulce Gonzalez, Genevieve M. Kenney, Parents Are Struggling to Provide for Their Families during the Pandemic, Urban Institute (May 2020), *https://www.urban.org/research/publication/parents-are-struggling-provide-their-families-during-pandemic?utm_source=urban_researcher&utm_medium=email&utm_campaign=covid_parents&utm_term=lhp.*

[94] Women have carried a larger share of childcare responsibilities than men during the COVID–19 crisis. *See, e.g.,* Gema Zamarro & María J. Prados, Gender differences in couples' division of childcare, work and mental health during COVID–19, Rev. Econ. Household 19:11–40 (2021), *available at https://link.springer.com/article/10.1007/s11150-020-09534-7;* Titan Alon et al., The Impact of COVID–19 on Gender Equality, National Bureau of Economic Research Working Paper 26947 (April 2020), *available at https://www.nber.org/papers/w26947.*

[95] U.S. Bureau of Labor Statistics, Labor Force Participation Rate—20 Yrs. & Over, Black or African American Women [LNS11300032], retrieved from FRED, Federal Reserve Bank of St. Louis; *https://fred.stlouisfed.org/series/LNS11300032* (last visited December 7, 2021).

[96] U.S. Bureau of Labor Statistics, Labor Force Participation Rate—20 Yrs. & Over, Black or African American Men [LNS11300031], retrieved from FRED, Federal Reserve Bank of St. Louis; *https://fred.stlouisfed.org/series/LNS11300031* (last visited December 7, 2021).

[97] U.S. Bureau of Labor Statistics, Labor Force Participation Rate—20 Yrs. & Over, White Women [LNS11300029], retrieved from FRED, Federal Reserve Bank of St. Louis; *https://fred.stlouisfed.org/series/LNS11300029* (last visited December 7, 2021).

[98] *See, e.g.,* Michael Greenstone & Adam Looney, Unemployment and Earnings Losses: A Look at Long-Term Impacts of the Great Recession on American Workers, Brookings Institution (Nov. 4, 2011), *https://www.brookings.edu/blog/jobs/2011/11/04/unemployment-and-earnings-losses-a-look-at-long-term-impacts-of-the-great-recession-on-american-workers/.*

[99] Chi Chi Wu, Solving the Credit Conundrum: Helping Consumers' Credit Records Impaired by the Foreclosure Crisis and Great Recession, National Consumer Law Center (Dec. 2013), *https://www.nclc.org/images/pdf/credit_reports/report-credit-conundrum-2013.pdf.*

[100] Irwin Garfinkel, Sara McLanahan, Christopher Wimer, eds., Children of the Great Recession, Russell Sage Foundation (Aug. 2016), *available at https://www.russellsage.org/publications/children-great-recession.*

[101] Kyle J. Casewell and Stephen Zuckerman, Food Insecurity, Housing Hardship, and Medical Care Utilization, Urban Institute (June 2018), available at *https://www.urban.org/sites/default/files/publication/98701/2001896_foodinsecurity_housinghardship_medicalcareutilization_finalized.pdf.*

[102] Housing insecurity is defined as not paying the full amount of rent or mortgage and/or utility bills (gas, oil, or electricity) sometime in the previous 12 months.

[103] Housing quality hardship is defined as an affirmative response to one or more questions related to problems with a respondent's physical dwelling: Pests and/or insects; leaking roof or ceiling; windows that are broken or cannot shut; exposed electrical wires; broken plumbing (toilet, hot water, other); holes in walls, ceiling, or floor; no appliances (refrigerator or stove); and no phone (of any kind).

[104] *Id.*

[105] Elise Gould and Melat Kassa. Low-wage, low-hours workers were hit hardest in the COVID–19 recession: The State of Working America 2020 employment report, Economic Policy Institute (May 2021), available at *https://www.epi.org/publication/swa-2020-employment-report/.*

[106] *Id.*

[107] *Id.*

[108] *Id.*

[109] R. Chetty, J. Friedman, N. Hendren, M. Stepner, & Team, T. O. I., The Economic Impacts of COVID–19: Evidence from a New Public Database Built Using Private Sector Data (No. w27431; p. w27431) (2020), National Bureau of Economic Research. *https://doi.org/10.3386/w27431.*

[110] M. Despard, Michal Grinstein-Weiss, Yung Chun, and Stephen Roll, COVID–19 job and income loss leading to more hunger and financial hardship, Brookings Institute (July 13, 2020), *https://www.brookings.edu/blog/upfront/2020/07/13/covid-19-job-and-income-loss-leading-to-more-hunger-and-financial-hardship/.*

[111] N. Panchal, R. Kamal, C. Muñana, & P. Chidambaram, The Implications of COVID–19 for Mental Health and Substance Use, Kaiser Family Foundation (February 10, 2021), *https://*

Summary of Interim Final Rule and Final Rule Structure

Summary: The interim final rule provided a non-exhaustive list of enumerated eligible uses to respond to the negative economic impacts of the pandemic through assistance to households, as well as a standard for assessing whether uses of funds beyond those enumerated are eligible.

The interim final rule described enumerated eligible uses for assistance to households in several categories: (1) Assistance to unemployed workers, (2) state Unemployment Insurance Trust Funds, (3) assistance to households, and (4) expenses to improve the efficacy of economic relief. Note that the interim final rule posed several questions to the public on enumerated eligible uses for assistance to households; comments on these questions are addressed in the relevant subject matter section below.

In addition, in recognition that pre-existing health, economic, and social disparities contributed to disproportionate pandemic impacts in certain communities, the interim final rule also provided a broader list of enumerated eligible uses to respond to the pandemic in disproportionately impacted communities, specifically: (1) Building stronger communities through investments in housing and neighborhoods, (2) addressing educational disparities, and (3) promoting healthy childhood environments. In the interim final rule, under the Public Health section, recipients could also provide services to address health disparities and increase access to health and social services; these eligible uses have been re-organized into the Assistance to Households section to consolidate responses in disproportionately impacted communities and enhance clarity.

This section addresses enumerated eligible uses in the final rule to respond to negative economic impacts to households. As a reminder, recipients may presume that a household or population that experienced unemployment, experienced increased food or housing insecurity, or is low or moderate income experienced negative economic impacts resulting from the pandemic, and recipients may provide services to them that respond to these impacts, including these enumerated eligible uses.

For guidance on how to determine whether a particular use, beyond those enumerated, is eligible; further detail on which households and communities are presumed eligible for services; and how to identify eligible households and communities beyond those presumed eligible, see section General Provisions: Structure and Standards.

Reorganizations and Cross-References: The final rule reorganizes all enumerated eligible uses for impacted and disproportionately impacted households into the section Assistance to Households, with the exception that expenses to improve the efficacy of economic relief has been re-categorized into a different section of the final rule for increased clarity; for discussion of that use category, see section General Provisions: Other.

Note that in conducting this reorganization, and based on further analysis and in response to comments, Treasury has determined that several enumerated uses included in the interim final rule for disproportionately impacted communities are directly responsive to negative economic impacts experienced by impacted households. In the final rule, these uses have been moved from ''disproportionately impacted'' to ''impacted'' households accordingly, making these services available to both disproportionately impacted and impacted households. These uses include assistance applying for public benefits or services; programs or services that address or mitigate the impacts of the COVID–19 public health emergency on childhood health or welfare, including childcare, early learning services, programs to provide home visits, and services for families involved in the child welfare system and foster youth; programs to address the impacts of lost instructional time for students; [112] and programs or services that address housing insecurity, lack of affordable housing, or homelessness.

The following activities remain enumerated eligible uses for disproportionately impacted households: Remediation of lead paint or other lead hazards; housing vouchers and assistance relocating to neighborhoods with higher levels of economic opportunity; and programs or services that address educational disparities, including assistance to high-poverty school districts to advance equitable funding across districts and geographies and evidence-based services to address the academic, social, emotional, and mental health needs of students.

Enumerated Eligible Uses for Impacted Households

The interim final rule included several enumerated eligible uses to provide assistance to households or populations facing negative economic impacts due to COVID–19. Enumerated eligible uses included: Food assistance; rent, mortgage, or utility assistance; counseling and legal aid to prevent eviction or homelessness; emergency assistance for burials, home repairs, weatherization, or other needs; internet access or digital literacy assistance; cash assistance; or job training to address negative economic or public health impacts experienced due to a worker's occupation or level of training. It also posed a question as to what other types of services or costs Treasury should consider as eligible uses to respond to the negative economic impacts of COVID–19.

This section addresses each of these enumerated eligible uses in turn, with the exception of job training, which has been re-categorized for increased clarity to the eligible use for ''assistance to unemployed and underemployed workers.'' In general, commenters supported inclusion of these enumerated eligible uses to address key economic needs among households due to the pandemic, and Treasury is maintaining these eligible uses in the final rule, in line with commenters' recommendations.

1. Food assistance. The interim final rule included an enumerated eligible use for food assistance. Some commenters expressed support for this eligible use and emphasized the importance of aid to address food insecurity. Some commenters raised questions as to whether food assistance funds could be used to augment services provided through organizations like food banks, churches, and other food delivery services, or generally be sub-awarded to these organizations.

Treasury Response: Treasury is maintaining this enumerated eligible use without change. Recipients may, as was the case under the interim final rule, administer programs through a wide range of entities, including nonprofit and for-profit entities, to carry out eligible uses on behalf of the recipient government (see section Distinguishing Subrecipients versus Beneficiaries). Further, Treasury is clarifying that capital expenditures related to food banks and other facilities primarily dedicated to addressing food insecurity are eligible; recipients seeking to use funds for capital expenditures should refer to the section Capital Expenditures in General

www.kff.org/coronavirus-covid-19/issue-brief/the-implications-of-covid-19-for-mental-health-and-substance-use/.

[112] For which recipients may presume that any student who did not have access to in-person instruction for a significant period of time was impacted by the pandemic.

Provisions: Other for additional eligibility standards that apply to uses of funds for capital expenditures.

2. Emergency housing assistance. The interim final rule included an enumerated eligible use for rent, mortgage, or utility assistance and counseling and legal aid to prevent eviction or homelessness.

Public Comment: Several commenters supported the inclusion of eviction prevention activities as an eligible use given the high number of households behind on rent and potentially at risk of eviction. Following release of the interim final rule, Treasury had also received requests for elaboration on the types of eligible services in this category. Some commenters also recommended including assistance to households for delinquent property taxes, for example to prevent tax foreclosures on homes, as an enumerated eligible use.

Treasury Response: In response to requests for elaboration on the types of eligible services for eviction prevention, Treasury has provided further guidance that these services include ''housing stability services that enable eligible households to maintain or obtain housing, such as housing counseling, fair housing counseling, case management related to housing stability, outreach to households at risk of eviction or promotion of housing support programs, housing related services for survivors of domestic abuse or human trafficking, and specialized services for individuals with disabilities or seniors that support their ability to access or maintain housing,'' as well as ''legal aid such as legal services or attorney's fees related to eviction proceedings and maintaining housing stability, court-based eviction prevention or eviction diversion programs, and other legal services that help households maintain or obtain housing.'' [113] Treasury also emphasized that recipients may work with court systems, nonprofits, and a wide range of other organizations to implement strategies to support housing stability and prevent evictions.

In the final rule, Treasury is maintaining these enumerated eligible uses, including those described in the interim final rule and later guidance, in line with commenters' recommendations. To enhance clarity, Treasury is also elaborating on some types of services included under this eligible use category; this remains a non-exhaustive list of eligible services. For example, eligible services under this use category include: Rent, rental arrears, utility costs or arrears (*e.g.,* electricity, gas, water and sewer, trash removal, and energy costs, such as fuel oil), reasonable accrued late fees (if not included in rental or utility arrears), mortgage payment assistance, financial assistance to allow a homeowner to reinstate a mortgage or to pay other housing-related costs related to a period of forbearance, delinquency, or default, mortgage principal reduction, facilitating mortgage interest rate reductions, counseling to prevent foreclosure or displacement, relocation expenses following eviction or foreclosure (*e.g.,* rental security deposits, application or screening fees). Treasury is clarifying that assistance to households for delinquent property taxes, for example to prevent tax foreclosures on homes, was permissible under the interim final rule and continues to be so under the final rule. In addition, Treasury is also clarifying that recipients may administer utility assistance or address arrears on behalf of households through direct or bulk payments to utility providers to facilitate utility assistance to multiple consumers at once, so long as the payments offset customer balances and therefore provide assistance to households.

This eligible use category also includes emergency assistance for individuals experiencing homelessness, either individual-level assistance (*e.g.,* rapid rehousing services) or assistance for groups of individuals (*e.g.,* master leases of hotels, motels, or similar facilities to expand available shelter).

Further, Treasury is clarifying that transitional shelters (*e.g.,* temporary residences for people experiencing homelessness) are eligible capital expenditures. Recipients seeking to use funds for capital expenditures should refer to the section Capital Expenditures in General Provisions: Other for additional eligibility standards that apply to uses of funds for capital expenditures.

Note that this enumerated eligible use describes ''emergency housing assistance,'' or assistance for responses to the immediate or near-term negative economic impacts of the pandemic. The final rule also clarifies and expands the ability of recipients to use SLFRF funds to address the general lack of affordable housing and housing challenges underscored by the pandemic. For discussion of affordable housing eligible uses, including services that primarily increase access to affordable, high-quality housing and support stable housing and homeownership over the long term, see the eligible use for ''promoting long-term housing security: Affordable housing and homelessness.''

3. Emergency assistance for pressing needs: Burials, home repairs, weatherization, or other needs. The interim final rule included an enumerated eligible use for emergency assistance for burials, home repairs, weatherization, and other needs; these types of programs may provide emergency assistance for pressing and unavoidable household needs. Treasury did not receive comments on this eligible use and is maintaining it in the final rule.

Background on Home Repairs and Weatherization: The economic downturn has meant fewer households had the resources needed to make necessary home repairs and improvements. In May 2021, 28 percent of landlords reported deferring maintenance and 27 percent of tenants reported maintenance requests going unanswered.[114] While small and cosmetic repairs can often wait, deferring major repairs, such as plumbing needs, can result in unsafe and unhealthy living environments and, eventually, the need for more expensive repairs and fixes.

In addition to repairs, many homes are in need of weatherization. Weatherization assistance helps low- and moderate-income Americans save energy, reduce their utility bills, and keeps them and their homes safe. One in three households is energy insecure,[115] meaning they do not have the ability to meet their energy needs.[116] Weatherization efforts are particularly important for low- and moderate-income households. Households of color, renters, and households with low or moderate incomes are all more likely to report energy insecurity.[117] These

[113] *See FAQ 2.21.* Coronavirus State and Local Fiscal Recovery Funds, Frequently Asked Questions, as of July 19, 2021; *https://home.treasury.gov/system/files/136/SLFRPFAQ.pdf.*

[114] Jung Hyun Choi, Laurie Goodman, and Daniel Pang, The Pandemic Is Making It Difficult for Mom-and-Pop Landlords to Maintain Their Properties, Urban Institute (July 23, 2021), *https://www.urban.org/urban-wire/pandemic-making-it-difficult-mom-and-pop-landlords-maintain-their-properties.*

[115] U.S. Energy Information Administration, Residential Energy Consumption Survey (2017), Retrieved from *https://www.eia.gov/consumption/residential/data/2015/hc/php/hc11.1.php.*

D. Hernández, Understanding 'energy insecurity' and why it matters to health, Social Science & Medicine, 167, 1–10 (2016), *https://doi.org/10.1016/j.socscimed.2016.08.029.*

[116] Hernández, D. (2016). Understanding 'energy insecurity' and why it matters to health. Social Science & Medicine, 167, 1–10. *https://doi.org/10.1016/j.socscimed.2016.08.029.*

[117] U.S. Energy Information Administration, Residential Energy Consumption Survey (RECS) *https://www.eia.gov/consumption/residential/data/2015/hc/php/hc11.1.php.* (last visited November 9, 2021)

disparities are partially a result of economic hardship but are also caused by inequitable access to housing with proper insulation, up to date heating, cooling, and ventilation systems, and functioning and up to date lighting and appliances.[118] While programs that address the effects of energy hardships, like the Low-Income Home Energy Assistance Program (LIHEAP), are critical, weatherization attempts to address root causes by addressing issues that lead to energy insecurities.

4. Internet access or digital literacy assistance. The interim final rule included an enumerated eligible use for assistance to households for internet access or digital literacy assistance. This enumerated eligible use, which responds to the negative economic impacts of the pandemic on a household by providing assistance that helps them secure internet access or increase their ability to use computers and the internet, is separate from the eligible use category for investments in broadband infrastructure, under Sections 602(c)(1)(D) and 603(c)(1)(D), which is used to build new broadband networks through infrastructure construction or modernization. For discussion of broadband infrastructure investment in the final rule, see section Broadband Infrastructure in Infrastructure.

Background: The COVID–19 public health emergency has underscored the importance of universally available, high-speed, reliable, and affordable broadband coverage as millions of Americans rely on the internet to participate in, among other critical activities, school, healthcare, and work. Recognizing the need for such connectivity, SLFRF funds can be used to make necessary investments in broadband infrastructure that increase access over the long term, as well as the necessary supports to purchase internet access or gain digital literacy skills needed to complete activities of daily living during the pandemic.

The National Telecommunications and Information Administration (NTIA) highlighted the growing necessity of broadband in daily lives through its analysis of NTIA internet Use Survey data, noting that Americans turn to broadband internet service for every facet of daily life including work, study, and healthcare.[119] With increased use of technology for daily activities and the movement by many businesses and schools to operating remotely during the pandemic, broadband has become even more critical for people across the country to carry out their daily lives.

However, even in areas where broadband infrastructure exists, broadband access may be out of reach for millions of Americans because it is unaffordable, as the United States has some of the highest broadband prices in the Organisation for Economic Co-operation and Development (OECD).[120] According to a 2021 Pew Research Center study, 20 percent of non-broadband users say that the monthly cost of home broadband is the primary reason they do not have broadband at home, and 40 percent say that cost is one reason for their lack of home broadband.[121] Further, according to another survey, 22 percent of parents with homebound schoolchildren during the COVID–19 pandemic say that it is very or somewhat likely that their children will have to rely on public wi-fi to finish their schoolwork because there is no reliable internet connection at home; this percentage nearly doubles for lower-income parents, 40 percent of whom noted that their children will have to rely on public wi-fi.[122] The same survey showed that 36 percent of lower-income parents with homebound children say their child will not be able to complete their schoolwork because they do not have access to a computer at home.[123]

Public Comment: Many commenters highlighted the importance of broadband access during the pandemic, including for remote work and education, and argued that affordability presents a major barrier to broadband adoption by households; in other words, many households live in areas that have broadband infrastructure and service available but are unable to purchase service for their household due to the high cost. These commenters argued that broadband must be affordable to be accessible.

Commenters proposed several potential responses to affordability concerns. Some commenters recommended that building ''gap networks,'' or broadband networks built at low cost to provide affordable service in areas where it is lacking, be eligible as assistance to households to respond to the negative economic impacts of the pandemic, even if they do not meet the technical standards for eligibility under the eligible use category of broadband infrastructure investment, especially the required speed standards for new service. These commenters argued that the networks have shown promise as a timely means to expand access to affordable broadband internet during the pandemic, even if they may not provide service speeds needed for more intensive internet uses. Another commenter requested eligible uses include funding cellular towers to decrease costs. One commenter recommended that affordability should be addressed through other programs but not SLFRF given that affordability and availability may require nuanced solutions that would be complex to combine.

Treasury Response: The interpretive framework and enumerated eligible uses allow recipients flexibility to address identified pandemic impacts, including through solutions that take into account the particularized issues in their community. Given extensive commenter feedback on the importance of affordability to achieving broadband access, and the centrality of broadband to participating in work, education, healthcare, and other activities during the pandemic, affordability programs are an appropriate eligible use to respond to the negative economic impacts of the pandemic and Treasury is maintaining the enumerated eligible use for assistance to households for internet access and digital literacy programs in the final rule.

Building or constructing new broadband networks is an infrastructure investment and is governed by a separate clause in the statute. Treasury has addressed comments on ''gap networks'' that require infrastructure build-out in the section Broadband Infrastructure in Infrastructure.

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[118] A. Drehobl, & L. Ross, Lifting the high energy burden in America's largest cities: How energy efficiency can improve low income and underserved communities, American Council for an Energy Efficient Economy (2016), *https://www.aceee.org/sites/default/files/publications/researchreports/u1602.pdf.*

[119] *See, e.g.,* Nation Telecommunications and Information Administration, More than Half of American Households Used the Internet for Health-Related Activities in 2019, NTIA Data Show (December 7, 2020), *https://www.ntia.gov/blog/2020/more-half-american-households-used-internet-health-related-activities-2019-ntia-data-show;* Nation Telecommunications and Information Administration, Nearly a Third of American Employees Worked Remotely in 2019, NTIA Data Show (September 3, 2020) *https://www.ntia.gov/blog/2020/nearly-third-american-employees-worked-remotely-2019-ntia-data-show;* and generally, Nation Telecommunications and Information Administration, Digital Nation Data Explorer (June 10, 2020), *https://www.ntia.gov/data/digital-nation-data-explorer.*

[120] BroadbandSearch Blog Post, How Do U.S. Internet Costs Compare To The Rest Of The World?, *available at https://www.broadbandsearch.net/blog/internet-costs-compared-worldwide.*

[121] Pew Research Center, Mobile Technology and Home Broadband 2021 (June 3, 2021), *https://www.pewresearch.org/internet/2021/06/03/mobile-technology-and-home-broadband-2021/.*

[122] Pew Research Center, 53% of Americans Say the internet Has Been Essential During the COVID–19 Outbreak (April 30, 2020), *https://www.pewresearch.org/internet/2020/04/30/53-of-americans-say-the-internet-has-been-essential-during-the-covid-19-outbreak/.*

[123] *Id.*

Public Comment: Some commenters also use the term ''gap networks'' to refer to equipment installed as part of wi-fi systems, such as routers, repeaters, and access points; this equipment provides consumer access to an existing broadband network and does not require new network build-out or construction. These commenters recommended that Treasury permit, as assistance to households for internet access, investments in public wi-fi networks, free wi-fi in public housing communities, and other equipment that offers internet access to end users by utilizing existing broadband networks.

Other commenters recommended that eligible uses in this category include providing devices and equipment necessary to access the internet, like computers and routers, directly to low-income households.

Treasury Response: Treasury has determined that these services, which expand internet access without constructing new networks, are an appropriate enumerated eligible use as assistance to households to respond to a negative economic impact, and they are permitted under the final rule. Treasury is clarifying that eligible uses under this category can also include a wide range of programs and services to expand internet access and digital literacy, such as subsidies for the cost of internet service, other programs that support adoption of internet service where available, digital literacy programs, or programs that provide devices and equipment to access the internet (*e.g.,* programs that provide equipment like tablets, computers, or routers) to households. Recipients seeking to use funds for equipment should refer to the section Capital Expenditures in General Provisions: Other for additional eligibility standards that apply to uses of funds for capital expenditures (*e.g.,* equipment, property, and facilities).

5. Cash assistance. The interim final rule included as an enumerated eligible use cash assistance and provided that cash transfers must be ''reasonably proportional'' to the negative economic impact they address and may not be ''grossly in excess of the amount needed to address'' the impact. In assessing whether a transfer is reasonably proportional, recipients may ''consider and take guidance from the per person amounts previously provided by the Federal Government in response to the COVID–19 crisis,'' and transfers ''grossly in excess of such amounts'' are not eligible.

Public Comment: Several commenters expressed support for this eligible use, noting that this is a common policy tool for some governments to support the well-being of households and individuals in their communities. Some commenters requested that Treasury set a specific dollar amount for permissible cash transfers, and Treasury has also received recipient questions on whether specific types of transfers, such as those to a substantial share of the population in the jurisdiction, would be a permissible use of funds.

Treasury Response: Treasury is maintaining this enumerated eligible use in the final rule, in line with commenters' recommendations. Because the final rule is intended to provide flexibility to recipients to respond to the particularized pandemic impacts in their communities, which may vary in type and intensity, setting a specific dollar threshold for eligible cash transfers would fail to recognize the particularized needs of communities and limit recipients' flexibility to tailor their response to those needs.

To provide greater clarity, Treasury is elaborating on the analysis that recipients may undertake to assess the eligibility of specific cash assistance programs or transfers. Cash transfers, like all eligible uses in this category, must respond to the negative economic impacts of the pandemic on a household or class of households. For the reasons discussed above, recipients may presume that low- and moderate-income households (as defined in the final rule), as well as households that experienced unemployment, food insecurity, or housing insecurity, experienced a negative economic impact due to the pandemic.

Recipients may also identify other households or classes of households that experienced a negative economic impact of the pandemic and provide cash assistance that is reasonably proportional to, and not grossly in excess of, the amount needed to address the negative economic impact. For example, in the ARPA, Congress authorized Economic Impact Payments to households at certain income levels, identifying and responding to a negative economic impact of the pandemic on these households.

Finally, Treasury has reiterated in the final rule that responses to negative economic impacts should be reasonably proportional to the impact that they are intended to address. Uses that bear no relation or are grossly disproportionate to the type or extent of harm experienced would not be eligible uses. Reasonably proportional refers to the scale of the response compared to the scale of the harm. It also refers to the targeting of the response to beneficiaries compared to the amount of harm they experienced; for example, it may not be reasonably proportional for a cash assistance program to provide assistance in a very small amount to a group that experienced severe harm and in a much larger amount to a group that experienced relatively little harm.

6. Survivor's benefits. The interim final rule included an enumerated eligible use for survivor's benefits to surviving family members of individuals who have died from COVID–19, including cash assistance to widows, widowers, or dependents.

Public Comment: Treasury did not receive any comments on the inclusion of survivor's benefits as an enumerated use for impacted households in the interim final rule.

Treasury Response: This use of funds remains eligible under the final rule. Consistent with the general reorganization noted above, the final rule organizes survivor's benefits under assistance to households to clarify that households are the intended beneficiaries of survivor's benefits.

7. Assistance accessing or applying for public benefits or services. Recognizing that eligible households often face barriers to accessing public benefits or services that improve health and economic outcomes, the interim final rule included as an enumerated eligible use in disproportionately impacted communities, public benefits navigators to assist community members with navigating and applying for available federal, state, and local public benefits or services. Treasury also clarified in subsequent guidance after the interim final rule that this eligible use category would include outreach efforts to increase uptake of the Child Tax Credit.

Background: The under-enrollment of eligible households in social assistance programs is a well-recognized and persistent challenge. There are many reasons why a household may not be receiving a particular benefit even though they are eligible. For many federal programs, enrollment processes vary from state-to-state. Sometimes, households are simply unaware that they are eligible for a particular benefit.[124] For example, despite having one of the highest rates of participation of any benefits program, nearly 20 percent of eligible individuals do not participate in the Supplementary Nutritional Assistance Program

[124] Amy Finkelstein & Matthew J Notowidigdo, Take-Up and Targeting: Experimental Evidence from SNAP, The Quarterly Journal of Economics, vol 134(3), pages 1505–1556 (2019), *https://www.nber.org/papers/w24652.*

(SNAP).[125] In other cases, policies like public charge and asset testing can discourage otherwise eligible households.[126] While the gap between households that need assistance and the number of households participating in public benefit programs has always existed, narrowing that gap and ensuring households receive the support they need is critical in mitigating the negative economic impacts of the pandemic.

Public Comment: Treasury has also received feedback from recipients and stakeholders noting the need to increase awareness and uptake of assistance programs, including gaps that remain in enrollment of eligible households in programs to address the negative economic impacts of the pandemic.[127]

Treasury Response: Treasury has determined that this impact of the pandemic is widely experienced across many jurisdictions and programs or services to increase awareness and uptake of assistance programs would respond to the pandemic's negative economic impact in all communities. As such, in the final rule, this use is eligible for any impacted household or class of households, not only in disproportionately impacted communities.

8. Promoting healthy childhood environments. The interim final rule included programs and services that promote healthy childhood environments as an enumerated eligible use for disproportionately impacted households. The interim final rule listed three programs or services included under this use: Childcare; programs to provide home visits by health professionals, parent educators, and social service professionals to individuals with young children to provide education and assistance for economic support, health needs, or child development; and services for child welfare-involved families and foster youth to provide support and education on child development, positive parenting, coping skills, or recovery for mental health and substance use. The interim final rule also included an enumerated eligible use for early learning services in disproportionately impacted communities, to address disparities in education.

Public Comment: Childcare and Early Learning: Treasury received multiple comments that were supportive of the provision of childcare. Treasury has also received multiple comments and questions indicating that recipients have identified a need for childcare for a broader range of households and communities, for example those that may need childcare in order to return to work, in addition to households and communities disproportionately impacted by the pandemic. Several commenters expressed uncertainty about how childcare facilities should interact with the boundaries of a QCT. Finally, one commenter recommended that pre-K or early learning services encompass care for infants and toddlers, arguing that these types of care are often more expensive or challenging to access for families.

Background: Childcare and Early Learning: As daycares and schools closed in-person activities during the pandemic, many working families were left without childcare during the day.[128] Although daycare centers and schools have since reopened in many communities, there remains a persistent childcare shortage as childcare employment levels have not fully rebounded since the sharp decline in childcare employment at the beginning of the pandemic.[129] As a result, working parents in communities across the country, and more specifically women, may face challenges entering or reentering the labor force.[130]

Low-income households are also more likely to lose access to quality childcare.[131] The widespread closure of childcare centers combined with a lack of access to paid family leave means parents in low-income households are more likely to experience a reduction of income or leave their jobs due to a lack of childcare options.[132]

Additionally, childcare providers serving primarily low-income families were less likely to remain open during the pandemic because of tighter profit margins and general community financial insecurity, compared to childcare providers serving primarily high-income families.[133] [134]

In addition to disruptions to childcare, early learning services were also significantly impacted by the pandemic, and the disruption of these services had widespread ramifications for learning loss, parental support, and equity. Early learning centers have seen declined enrollment across the board, though there was a larger dip in enrollment for low-income households.[135] This lower enrollment coincides with a diminishing workforce, as similarly to childcare, early childhood educators have been leaving the profession due to long hours, low pay,[136] and health and safety concerns.[137] As a result, children's school readiness has suffered, leading to potential long-term impacts on life outcomes.[138] The impact also extended

[125] United States Department of Agriculture, Trends in Supplemental Nutrition Assistance Program Participation Rates: Fiscal Year 2016 to Fiscal Year 2018 (May 2021), *https://fns-prod.azureedge.net/sites/default/files/resource-files/Trends2016-2018.pdf.*

[126] Jeremy Barofsky et al., Spreading Fear: The Announcement Of The Public Charge Rule Reduced Enrollment In Child Safety-Net Programs, Health Affairs (October 2020), *https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2020.00763.*

[127] *See, e.g.,* U.S. Department of the Treasury, By ZIP Code: Number of Children under Age 18 with a Social Security Number Who Are Not Found on a Tax Year 2019 or 2020 Tax Return but who Appear on a Tax Year 2019 Form 1095 and Associated Number of Policy Holders (June 2021), *https://home.treasury.gov/system/files/131/Estimated-Counts-of-Children-Unclaimed-for-CTC-by-ZIP-Code-2019.pdf.*

[128] Women have carried a larger share of childcare responsibilities than men during the COVID–19 crisis. See, *e.g.,* Gema Zamarro & Marı´a J. Prados, Gender differences in couples' division of childcare, work and mental health during COVID–19, Rev. Econ. Household 19:11–40 (2021), available at *https://link.springer.com/article/10.1007/s11150-020-09534-7;* Titan Alon et al., The Impact of COVID–19 on Gender Equality, National Bureau of Economic Research Working Paper 26947 (April 2020), available at *https://www.nber.org/papers/w26947.*

[129] *See, e.g.,* Center For The Study Of Child Care Employment (CSCCE), Child Care Sector Jobs: BLS Analysis (November 8, 2021), *https://cscce.berkeley.edu/child-care-sector-jobs-bls-analysis/;* Emma K. Lee, and Zachary Parolin. The Care Burden during COVID–19: A National Database of Child Care Closures in the United States, Socius (January 2021), doi:10.1177/23780231211032028.

[130] Jason Furman, Melissa Schettini Kearney, and Wilson Powell, The Role of Childcare Challenges in the US Jobs Market Recovery During the COVID–19 Pandemic, NBER Working Paper No. 28934 (June 2021), *https://www.nber.org/papers/w28934.*

[131] U.S. Census Bureau, Phase 3.2 Household Pulse Survey: Table 2. Childcare Arrangements in the Last 4 Weeks for Children Under 5 Years Old, by Selected Characteristics, (Washington: 2021), available at *https://www.census.gov/programs-surveys/household-pulse-survey/data.html.*

[132] *Id.*

[133] N. Kalluri, C. Kelly, & A. Garg, Child Care During the COVID–19 Pandemic: A Bad Situation Made Worse. Pediatrics (2021), *https://doi.org/10.1542/peds.2020-041525.*

[134] National Association for the Education of Young Children, Am I Next? Sacrificing to Stay Open, Child Care Providers Face a Bleak Future Without Relief (December 2020), *https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDF.*

[135] G. G. Weisenfeld, Impacts of Covid-19 on Preschool Enrollment and Spending, New Brunswick, NJ: National Institute for Early Education Research (2021), *https://nieer.org/wp-content/uploads/2021/03/NIEER_Policy_Brief_Impacts-of-Covid-19on_Preschool_Enrollment_and_Spending_3_16_21.pdf.*

[136] Heather Long, 'The pay is absolute crap': Child-care workers are quitting rapidly, a red flag for the economy, Washington Post (September 19, 2021), *https://www.washingtonpost.com/business/2021/09/19/childcare-workers-quit/.*

[137] Monash University, The emotional toll of COVID–19 among early childhood educators (August 5, 2020) *https://lens.monash.edu/@education/2020/08/05/1381001/the-emotional-toll-of-covid-19-among-early-childhood-educators.*

[138] Daphna Bassok and Anna Shapiro, Understanding COVID–19-era enrollment drops

Continued

to parents. Parents, especially mothers, may face challenges reentering or remaining in the workforce if early learning services are unavailable.

Treasury Response: Childcare and Early Learning Services: Treasury agrees with commenters' analysis that challenges accessing or affording childcare have been widespread during the pandemic, affecting many jurisdictions and populations across the country. Disruptions to early care and learning services similarly have had broad impact and likely result in negative impacts for young children and their parents. As such, these enumerated eligible uses are generally responsive to the negative economic impacts of the pandemic in all communities, not just in disproportionately impacted communities. Under the final rule, childcare and early learning services are available to impacted households or classes of households, not just those disproportionately impacted. These eligible uses can include new or expanded services, increasing access to services, efforts to bolster, support, or preserve existing providers and services, and similar activities.

Further, Treasury is clarifying that improvements to or new construction of childcare, daycare, and early learning facilities are eligible capital expenditures. Recipients seeking to use funds for capital expenditures should refer to the section Capital Expenditures in General Provisions: Other for additional eligibility standards that apply to uses of funds for capital expenditures.

Public Comment: Home Visiting: Treasury has also received questions about whether the provision of home visiting services would be responsive to the health and mental health needs of impacted new mothers, citing the positive mental health impacts shown on the mother as well as improved outcomes for children.

Background: Home Visiting: Pregnant and recently pregnant individuals are at an increased risk for serious illness from COVID–19.[139] Furthermore, pregnant individuals with COVID–19 are more likely to experience preterm birth (delivering the baby earlier than 37 weeks).[140] In addition to heightened health risks from COVID–19, pregnant individuals may have experienced significant changes to their prenatal care during the pandemic[141] or may also have experienced increased mental health challenges, including high levels of depression, anxiety, loneliness, and post-traumatic stress during the pandemic.[142]

Home visiting services provided to families, particularly new mothers and newborns, feature regular home visits from trained nurses, social workers, and/or counselors who provide health care, mental health resources, positive parenting support, support in making personal health decisions, and awareness of other potentially helpful services. These functions have become even more essential at mitigating negative factors associated with the pandemic. Home visits give professionals a chance to flag potential domestic violence, which has risen worldwide over the course of the pandemic.[143] Racial health disparities can also be driven down by home visits. For example, Black women are more likely to avoid hospitals during the pandemic, and home visitors can help either assuage concerns around hospitals or give effective advice for alternative methods of childbirth.[144] Given the disproportionate effect of the pandemic on people of color, home visits are an essential equity tool that tackle major negative effects of the pandemic. These are just a few selections from the evidence that suggests many home visiting models can have a positive effect on maternal physical and mental health.[145]

Treasury Response: Home Visiting: Given the widespread impact of COVID–19 on pregnant and recently pregnant individuals, Treasury is re-categorizing home visiting services as an eligible use for impacted communities, not just disproportionately impacted communities. Under the final rule, these eligible uses are available to impacted households or classes of households.

Public Comment: Child Welfare: While the interim final rule noted that certain types of assistance, particularly around child development and parenting, were eligible for child welfare-involved families, Treasury has received some recipient questions asking whether financial, educational, housing, or other supports and services are eligible uses for foster youth, including those aging out of the system, and child welfare-involved families. Other commenters asked about whether funding for kinship care would be eligible.

Background: Child Welfare: The COVID–19 pandemic placed meaningful strain on the child welfare and foster care system. Court hearings were delayed,[146] essential mental health care was shifted to a virtual environment, and attendance and performance in school among foster children dropped sharply.[147] Additionally, there was a nationwide rise of new children entering the foster care system and many states placed temporary moratoria on children aging out of the foster care system.[148] As these temporary moratoria expire, additional support will be needed to assist children exiting the system.

Additionally, financial and material hardship are causal factors in the increase of new children entering the foster care system, whether through loss of a caregiver, domestic violence,[149] or other associated costs of the pandemic. Therefore, support to decrease these hardships will support families and increase positive outcomes for youth

among early-grade public school students, Brookings Institution (February 22, 2021), *https://www.brookings.edu/blog/brown-center-chalkboard/2021/02/22/understanding-covid-19-era-enrollment-drops-among-early-grade-public-school-students/.*

[139] Centers for Disease Control and Prevention, Pregnant and Recently Pregnant People, *https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnant-people.html* (last visited November 9, 2021).

[140] *Id.*

[141] Sarah Javaid, Sarah Barringer, Sarah D Compton, Elizabeth Kaselitz, Maria Muzik, Cheryl A. Moyer, The impact of COVID–19 on prenatal care in the United States: Qualitative analysis from a survey of 2519 pregnant women, Midwifery, Volume 98, 2021, 102991, ISSN 0266–6138, *https://doi.org/10.1016/j.midw.2021.102991.*

[142] A Basu, HH Kim, R Basaldua, KW Choi, L Charron, et al., A cross-national study of factors associated with women's perinatal mental health and wellbeing during the COVID–19 pandemic, PLOS ONE 16(4): e0249780, (2021), *https://doi.org/10.1371/journal.pone.0249780.*

[143] Amanda Taub, A New Covid-19 Crisis: Domestic Abuse Rises Worldwide, New York Times (April 6, 2020), *https://www.nytimes.com/2020/04/06/world/coronavirus-domestic-violence.html.*

[144] Xenia Shih Bion, Efforts to Reduce Black Maternal Mortality Complicated by COVID–19, California Health Care Foundation (April 20, 2020), *https://www.chcf.org/blog/efforts-reduce-black-maternal-mortality-complicated-covid-19/.*

[145] U.S. Department of Health and Human Services, Home Visiting Evidence of Effectiveness, *https://homvee.acf.hhs.gov/outcomes/maternal%20health/In%20Brief.*

[146] National Conference of State Legislatures, Criminal Justice System Responses to COVID–19 (November 16, 2020), *https://www.ncsl.org/research/civil-and-criminal-justice/criminal-justice-and-covid-19.aspx.*

[147] John Burton Advocates for Youth, The Cumulative Impact of the Pandemic on Youth Who Have Been in Foster Care or Homeless (May 2020) *https://jbay.org/wp-content/uploads/2021/04/JBAY-COVID-19-Impact.pdf.*

[148] John Kelly, Next Week, Thousands of Foster Youth Will Age Out on the Same Day (September 21, 2021), *https://imprintnews.org/subscriber-content/thousands-of-foster-youth-will-age-out-on-the-same-day/59006.*

[149] Conrad-Hiebner, Aislinn, and Elizabeth Byram, The Temporal Impact of Economic Insecurity on Child Maltreatment: A Systematic Review. Trauma, Violence, & Abuse, vol. 21, no. 1, Jan. 2020, pp. 157–178, doi:10.1177/1524838018756122.

and families that may otherwise become involved in the child welfare system.

Treasury Response: In the final rule, Treasury is clarifying that services to foster youth, including those aging out of the system, and child welfare-involved families may encompass a wide array of financial, educational, child development, or health supports, or other supports necessary, including supports for kinship care.

9. Addressing the impacts of lost instructional time.

Public Comment: The interim final rule included an enumerated eligible use to address educational disparities in disproportionately impacted communities, recognizing that underserved students have been more severely impacted by the pandemic and including responsive services for early learning, enhance funding to high-poverty districts, and providing evidence-based services to address the academic, social, emotional, and mental health needs of students. Some commenters expressed concerns that learning loss or the negative impacts of lost instructional time due to school closures or remote education during the pandemic had affected a significant share of students in grades kindergarten through twelve (K–12), including students who may not fall within a disproportionally impacted group.

Background: The COVID–19 pandemic resulted in the widespread closure of schools across the nation. While many schools and districts reopened to in-person instruction or implemented remote learning, the shift was not immediate or without consequence. Children who received virtual only or combined remote and in-person instruction were more likely to report experiencing negative mental- and physical health outcomes than children who received in-person instruction.[150]

Treasury Response: Under the final rule, addressing the impact of lost instructional time and/or learning loss is an enumerated eligible use for impacted households. When providing services to address lost instructional time, recipients may presume that any K–12 student who lost access to in-person instruction for a significant period of time has been impacted by the pandemic and is thus eligible for responsive services.

Interventions or services that address the impact of lost instructional time may include offering high-quality tutoring and other extended learning opportunities, providing differentiated instruction, implementing activities to meet the comprehensive needs of students, expanding and improving language access for parents and families, providing information and assistance to parents and families on how they can effectively support students, including in a distance learning environment, improving student engagement in distance education, and administering and using high-quality assessments to assess students' academic progress, among others. In designing services under this eligible use, recipients may wish to reference guidance from the Department of Education on strategies for addressing lost instructional time.[151]

The final rule also maintains a separate enumerated eligible use for addressing educational disparities in disproportionately impacted communities. This eligible use includes services to address disparities in educational outcomes that predate the pandemic and amplified its impact on underserved students; these include, for example, enhanced funding to high-poverty districts and providing evidence-based services to address the academic, social, emotional, and mental health needs of students.

Finally, as described in the section Public Health, recipients can provide a broad range of behavioral health services, including services for children and youth in schools, to respond to the impacts of the pandemic on mental health and other behavioral health issues. When providing behavioral health services, recipients may presume that the general public was impacted by the pandemic and provide behavioral health services to members of the general public, including children and youth in schools, without any further analysis of impacts of the pandemic on those individuals and whether the service is responsive.

10. Promoting long-term housing security: affordable housing and homelessness. Under the interim final rule, recipients may use SLFRF funds to provide a set of housing services to communities that have been disproportionately impacted by the pandemic. Specifically, the interim final rule provided that programs or services that address housing insecurity, lack of affordable housing, or homelessness, were responsive to the negative economic impacts of the pandemic when provided to disproportionately impacted households and communities. The enumerated uses included supportive housing or other programs or services to improve access to stable, affordable housing among individuals who are homeless and development of affordable housing to increase supply of affordable and high-quality living units. Many recipients have already announced plans to use SLFRF funds for affordable housing interventions in all of these categories. Treasury received many comments asking for additional clarity or flexibility in these uses.

As detailed below, based on multiple public comments and questions and Treasury's subsequent analysis, Treasury has determined that supportive housing or other programs or services to improve access to stable, affordable housing among individuals who are homeless, and the development of affordable housing to increase supply of affordable and high-quality living units are responsive to the needs of impacted populations, not only disproportionately impacted populations. This final rule reflects this clarification and builds on the objectives stated in the interim final rule to improve access to stable, affordable housing, including through interventions that increase the supply of affordable and high-quality living units, improve housing security, and support durable and sustainable homeownership.

Finally, note that ''emergency housing assistance,'' or assistance for responses to the immediate negative economic impacts of the pandemic through services like financial assistance for rental arrears or mortgage payments, is also an eligible use category for assistance to households under the final rule; see the eligible use for ''emergency housing assistance'' above. The provision of housing vouchers and assistance relocating to neighborhoods with higher levels of economic opportunity remains an eligible use under assistance to disproportionately impacted households; for discussion, see the eligible use for ''housing vouchers and assistance relocating'' below.

Background: Affordable Housing: It is clear that the ongoing pandemic and resulting economic crisis are having a profound, long-term negative effect on the pre-existing affordable housing crisis facing low-income households.[152]

[150] Verlenden JV, Pampati S, Rasberry CN, et al. Association of Children's Mode of School Instruction with Child and Parent Experiences and Well-Being During the COVID–19 Pandemic—COVID Experiences Survey, United States, October 8–November 13, 2020. MMWR Morb Mortal Wkly Rep 2021;70:369–376. DOI: *http://dx.doi.org/10.15585/mmwr.mm7011a1external* icon.

[151] U.S. Department of Education, Strategies for Using American Rescue Plan Funding to Address the Impact of Lost Instructional Time, August 2021. Retrieved from *https://www2.ed.gov/documents/coronavirus/lost-instructional-time.pdf.*

[152] Consumer Financial Protection Bureau, Housing insecurity and the COVID–19 pandemic

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The combination of a large number of higher-income households who have weathered the pandemic without significant income losses, low interest rates, and housing supply constraints exacerbated by the pandemic, have driven a sharp increase in the sale price of homes.[153] Meanwhile, many low-income renters and homeowners are struggling with lost employment and income and are behind on their housing payments.[154]

Public Comment: Affordable Housing Outside of Low-Income Geographies: A major theme in comments was that affordable housing interventions, especially development of affordable housing, should be allowed outside of QCTs, as concentrating the supply of affordable housing in low-income geographies can have the effect of increasing both concentrated poverty and racial and economic segregation, while locking lower-income households in need of housing support out of high-opportunity neighborhoods with access to employment and amenities.

Treasury Response: Affordable Housing Outside Low-Income Geographies: As previously stated, affordable housing is not confined to low-income geographies under the interim final rule. As discussed elsewhere, the interim final rule presumed that QCTs, as well as communities served by Tribal governments, were disproportionately impacted for administrative convenience, but recipients may identify other populations, households, or geographic areas with disparate impacts of COVID–19 and provide affordable housing services to them. For example, under the interim final rule, a city could determine that its low-income residents faced disproportionate impacts of COVID–19 and develop affordable housing targeted to these households. Such a scenario could include, for example, affordable projects in higher-income neighborhoods that would allow residents to live closer to jobs and well-resourced schools.

Additionally, as noted above, Treasury is finalizing the rule with some changes to the treatment of affordable housing development designed to clarify that permanent supportive housing or other programs or services to improve access to stable, affordable housing among individuals who are homeless, and the development of affordable housing to increase supply of affordable and high-quality living units, are responsive to individuals and households that were impacted by the pandemic in addition to those that were disproportionately impacted. This shift is in line with commenters' recommendations and consistent with the facts described above, which demonstrate that lack of supply of affordable housing units contributed to the pandemic's impact on housing insecurity and unsustainable housing cost burdens and that these impacts were experienced broadly across the country.

Public Comment: Eligible Activities: Many commenters asked for clarity on what types of activities (*e.g.,* land acquisition, construction, pre-construction costs, operating costs, etc.) are eligible uses of SLFRF, and what affordability criteria must be applied to affordable housing development. Commenters encouraged Treasury to allow the full array of affordable housing activities, including particular requests for broad flexibility for Tribal communities, and to specify that ''development'' should include construction, preservation, rehabilitation, and operation. Other commenters requested clarification about permissible program administration approaches for affordable housing, such as contracting methods and distribution of funds.

Some commenters asked that Treasury require SLFRF funds to be focused on the lowest-income households, who suffer the most severe rent burdens and risks of housing instability, and whose housing situation has left them particularly vulnerable to COVID–19. For example, one commenter argued that SLFRF funds should only be used to support affordable housing for households making 50 percent of AMI or less and that recipients should be required to set aside significant portions of any developments for renters making 30 percent of AMI or less and persons with physical and sensory disabilities. Other commenters requested a more flexible approach to affordable housing definitions.

Treasury Response: Eligible Activities: The final rule clarifies eligibility of affordable housing development for recipients; these uses were eligible under the interim final rule, but Treasury is providing further guidance to enhance clarity and respond to recipient and commenter questions.

As with all interventions to address the negative economic impacts of the pandemic, affordable housing projects must be responsive and proportional to the harm identified. This test may be met by affordable housing development projects—which may involve large expenditures and capital investments—if the developments increase the supply of long-term affordable housing for low-income households. While there may be less costly (or non-capital) alternatives to affordable housing development, a comprehensive response to the widespread housing challenges underscored by the pandemic will require the production of additional affordable homes, and targeted affordable housing development is a cost-effective and proportional response to this need.

For purposes of this test, Treasury will presume that any projects that would be eligible for funding under either the National Housing Trust Fund (HTF) or the Home Investment Partnerships Program (HOME) are eligible uses of SLFRF funds. Note that these programs use different income limits than the definition of low- and moderate-income adopted by Treasury. Given the severity of the affordable housing shortage, and the ways in which the pandemic has exacerbated the need for affordable, high-quality dwelling units, Treasury has determined that the households served by these federal housing programs have been impacted by the pandemic and its negative economic impacts and that development of affordable housing consistent with these programs is a related and reasonably proportional response to those impacts. Additionally, affordable housing projects provided by a Tribal government are eligible uses of SLFRF if they would be eligible for funding under the Indian Housing Block Grant program, the Indian Community Development Block Grant program, or the Bureau of Indian Affairs Housing Improvement Program. Alignment with these programs, which define ''affordable housing'' in a manner consistent with a proportionate response to the affordable housing challenges faced by low- and moderate-income households as a result of the negative economic impacts of the pandemic, is intended to give recipients comfort and clarity as they design a

(March 2020), *https://files.consumerfinance.gov/f/documents/cfpb_Housing_insecurity_and_the_COVID-19_pandemic.pdf.*

[153] Joint Center For Housing Studies Of Harvard University, The State of the Nation's Housing (June 2021), *https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_State_Nations_Housing_2021.pdf.*

[154] Davin Reed and Eileen Divringi, Household Rental Debt During COVID–19: Update for 2021, Federal Reserve Bank of Philadelphia (2020), available at: *https://www.philadelphiafed.org/community-development/housing-and-neighborhoods/household-rental-debt-during-covid-19-update-for-2021.* Further, some research suggests that liquidity may be a more important predictor of default than other factors, including income or equity. *See* Trading Equity for Liquidity (June 2019), available at *https://www.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/institute/pdf/institute-trading-equity-for-liquidity.pdf.*

wide variety of affordable housing interventions, including production, rehabilitation, and preservation of affordable rental housing and, in some cases, affordable homeownership units. These programs allow the financing of a wide range of affordable housing activities and set clear eligibility criteria that many recipients are already familiar with.

Finally, to further support sustainable and durable homeownership, recipients may consider offering down payment assistance, such as through contributions to a homeowner's equity at origination or that establish a post-closing, mortgage reserve account on behalf of the borrower that may be utilized to make a missed or partial mortgage payment at any point during the life of the loan (*e.g.,* if the borrower faces financial stress). Homeownership assistance that would be eligible under the Community Development Block Grant (at 24 CFR 507.201(n)) is also an eligible use of SLFRF funds.

Public Comment: Permanent Supportive Housing: Treasury has received comments encouraging the use of SLFRF funds for permanent supportive housing. This is an eligible use under the interim final rule: Both the development of affordable housing (including operating subsidies) and wraparound services such as behavioral health services, employment services, and other supportive services, are eligible responses to the public health crisis or its negative economic impacts.

Treasury Response: The final rule maintains the eligibility of permanent supportive housing as an enumerated use. Treasury is also clarifying that other affordable housing developments targeted to specialized populations are also eligible, for example recovery housing for individuals in recovery from substance use.

Public Comment: Operating Expenses: Commenters specifically asked that Treasury allow the use of SLFRF funds for operating expenses of affordable housing units, as operating subsidies are typically required to reach extremely low-income households, whose affordable rents may be lower than the ongoing cost of operating their unit.

Treasury Response: Operating expenses for eligible affordable housing were an eligible use of funds under the interim final rule and the final rule maintains this treatment. This may include capitalized operating reserves.

Rehabilitation and repair of public housing will also be considered an eligible use of SLFRF funds.

Public Comment: Affordable Housing Loans and Revolving Loan Funds: Some commenters requested that loans with maturities beyond the period of performance or revolving loan funds that revolve beyond the period of performance be eligible uses of SLFRF funds if used for affordable housing. Some commenters pointed out that for-profit developers of low-income housing through the Low-Income Housing Tax Credit (LIHTC) may be deterred from accepting grants to bridge funding gaps in current LIHTC deals by the treatment of grants to for-profit entities in the calculation of eligible basis for the LIHTC.

Treasury Response: The final rule does not change the treatment of loans from the interim final rule. For more details see section Treatment of Loans in Program Administration Provisions. Similarly, the final rule does not change the treatment of grants to support affordable housing development, including developments supported by the LIHTC: such grants are an eligible use of funds.

Additional enumerated eligible uses for assistance to impacted households. As noted above, the interim final rule posed a question on what other types of services or costs Treasury should consider as eligible uses to respond to the negative economic impacts of COVID–19. In response, commenters proposed a wide variety of additional recommended enumerated eligible uses to assist households, ranging from general categories of services (*e.g.,* legal and social services) to services that respond to needs widely experienced across the country (*e.g.,* access to and affordability of health insurance) to services that are most applicable to the particularized needs of certain populations or geographic areas of the United States (*e.g.,* senior citizens, SNAP recipients, immigrants, formerly-incarcerated individuals, responding to environmental issues in certain geographic regions). Other commenters generally requested a high degree of flexibility to respond to the particular needs of their communities.

Treasury Response: Given the large number and diversity of SLFRF recipients, Treasury's approach to assistance to households in the final rule aims to clarify additional enumerated eligible uses that respond to negative economic impacts of the pandemic experienced widely in many jurisdictions across the country, making it clear and simple for recipients to pursue these enumerated eligible uses under the final rule. In the final rule, Treasury is clarifying several additional uses, which generally respond to pandemic impacts experienced broadly across jurisdictions and populations, are eligible under the interim final rule as assistance to households and continue to be so under the final rule, as outlined below.

11. Paid sick, medical, or family leave.

Public Comment: Some commenters argued that the pandemic increased the need for paid sick or medical leave, as staying home when ill is recommended by the CDC to prevent spread of the virus but lack of access to paid sick leave often prevents workers from staying home. Other commenters recommended paid family leave as an eligible use, arguing that shortages in access to childcare or home health assistance, as well as school closures, may increase the need for family members to serve as caretakers.

Background: The COVID–19 pandemic highlighted the importance of paid leave as well as the number of workers who do not have access to paid sick and/or family leave. When workers have access to paid leave, they are less likely to report to work sick, and therefore less likely to spread illnesses in the workplace: One study demonstrates that the emergency sick leave provision of the Families First Coronavirus Response Act (FFCRA) reduced the spread of COVID–19.[155]

The lack of paid leave exacerbates financial hardships experienced as a result of the public health emergency. A 2018 survey by the Department of Labor found that two-thirds of employees that took unpaid or partial-paid leave experienced financial hardship.[156] Furthermore, because the Family and Medical Leave Act (FMLA) excludes small employers, part-time workers, and workers who have been with their employer for less than a year, 44 percent of workers do not have access to even unpaid leave.[157] Workers of color and workers with lower incomes are less likely to have access to paid leave.[158] [159]

[155] Stefan Pichler, Katherine Wen, and Nicolas R. Ziebarth, COVID–19 Emergency Sick Leave Has Helped Flatten The Curve In The United States: Study examines the impact of emergency sick leave on the spread of COVID–19, Health Affairs 39, no. 12 (2020): 2197–2204, *https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.00863.*

[156] Scott Brown et al., Employee and Worksite Perspectives of the Family and Medical Leave Act: Results from the 2018 Surveys, Abt Associates (July 2020), *https://www.dol.gov/sites/dolgov/files/OASP/evaluation/pdf/WHD_FMLA2018SurveyResults_FinalReport_Aug2020.pdf.*

[157] *Id.*

[158] Ann P. Bartel et al., Racial and ethnic disparities in access to and use of paid family and medical leave: evidence from four nationally representative datasets, U.S. Bureau of Labor Statistics (BLS) (January 2019), *https://www.bls.gov/opub/mlr/2019/article/racial-and-ethnic-disparities-in-access-to-and-use-of-paid-family-andmedical-leave.htm.*

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For workers that are also caregivers for children, seniors, or other family members, there may be a similar need for—and benefits of—paid family leave. For example, some workers may have struggled during the pandemic to balance caring for children, as schools and daycares closed, and working. For new parents, paid parental leave results in fewer infant hospitalizations, lowering parental stress, increasing parental involvement, and improving the overall health of parent and child.[160] COVID–19 has also increased the levels of ''caregiving intensity'' [161] and ''caregiving burden'' [162] for those providing care to seniors or older family members.[163] [164] When surveyed, more than half of caregivers reported that COVID–19 increased both the amount of caregiving responsibilities they had as well as the negative physical and mental impacts their caregiving responsibilities had on themselves.[165]

Treasury Response: Treasury agrees that these constitute impacts of the pandemic, and accordingly, under the final rule, creating, expanding, or financially supporting paid sick, medical, or family leave programs is an enumerated eligible use of funds to respond to the negative economic impacts of the pandemic.

12. Health insurance.

Public Comment: Several commenters recommended that uses of funds to expand access to health insurance be enumerated eligible uses; commenters believed that the heightened risk of illness or hospitalization due to COVID–19 had increased the negative economic impacts of lacking health insurance.

Background: In 2019, prior to the pandemic, it was estimated that 11 percent of nonelderly adults lacked health insurance.[166] By mid-2020, job loss had resulted in an estimated 3.3 million people losing their employer sponsored insurance, resulting in an additional 2 million uninsured adults.[167] Participation in Medicaid, the Children's Health Insurance Program (CHIP), and the Affordable Care Act (ACA) marketplace played an important role in minimizing the number of people who completely lost health insurance during the early phases of the pandemic; Medicaid and CHIP enrollment increased by 9 percent from February to September 2020 [168] and 8.3 million people enrolled in insurance through the ACA marketplace.[169]

Although the ACA, CHIP, and Medicaid have significantly reduced the number of uninsured Americans through the pandemic and the economic downturn, adequate coverage and affordability still remains an issue for many. In 2020, 21 percent of working-age adults were inadequately insured, meaning even if they had insurance, they incurred a significant amount of out-of-pocket costs.[170] Additionally, 37 percent of adults reported struggling with medical bills or medical debt and 71 percent of adults who did not purchase insurance cited affordability as the main factor.[171]

Treasury Response: Treasury agrees that loss of health insurance, increased financial risk from lacking health insurance, or excessive out-of-pocket healthcare costs constitute negative economic impacts of the pandemic. Under the final rule, programs or services to expand access to health insurance coverage are an enumerated eligible use as assistance to households, for example, subsidies for health insurance premiums or expansion of a recipient's health insurance plan to cover additional employees who currently lack coverage.

13. Services for the unbanked and underbanked.

Public Comment: One commenter expressed support for the inclusion of services to increase banking access as an allowable expense under SLFRF. The commenter recommended that states be encouraged to offer opportunities for consumers to open safe and affordable accounts capable of receiving direct payments. The commenter emphasized that allowing unbanked and underbanked households to receive funds securely through no-fee, direct deposit will help connect or reconnect consumers to the mainstream financial system.

Background: Banking inequities can make it difficult for unbanked or underbanked households to access housing, jobs, and other important economic opportunities. Being unbanked or underbanked can also make it challenging for households to apply for and receive financial assistance, including services like pandemic emergency housing assistance.

Safe, affordable, and accessible financial services play a critical role in assisting households in the United States in managing income volatility and cash flow shortages.[172] Currently, over 5 percent of families, or 7 million households are ''unbanked,'' meaning they do not have a bank account.[173] Low-income households, non-white households, and households with individuals with disabilities were even more likely to be unbanked. In 2019, 16 percent of Native American households, 14 percent of Black households, and 12 percent of Hispanic households were unbanked, compared to 2.5 percent of white households. Additionally,

[159] U.S. Bureau of Labor Statistics, Employee Benefits in the United States (March 2019), *https://www.bls.gov/ncs/ebs/benefits/2019/ownership/civilian/table31a.pdf.*

[160] Maya Rossin-Slater et al., Local exposure to school shootings and youth antidepressant use, Proceedings of the National Academy of Sciences, vol 117(38), pages 23484–23489 (2020), *https://www.pnas.org/content/117/38/23484;* Ariel Marek Pihl and Gaetano Basso, Did California Paid Family Leave Impact Infant Health?, Journal of Policy Analysis and Management, *https://onlinelibrary.wiley.com/doi/abs/10.1002/pam.2210.*

[161] J.C. Jacobs, A. Laporte, C.H. Van Houtven, P.C. Coyte, Caregiving intensity and retirement status in Canada. Social Science & Medicine, 102, 74–82 (2014), *https://www.sciencedirect.com/science/article/abs/pii/S0277953613006631.*

[162] E. Lightfoot, R.P. Moone, Caregiving in times of uncertainty: Helping adult children of aging parents find support during the COVID–19 outbreak, Journal of Gerontological Social Work, 63(6–7), 542–552 (2020), *https://www.tandfonline.com/doi/abs/10.1080/01634372.2020.1769793.*

[163] Note: ''Caregiving intensity'' is defined as the amount and type of care provided by informal caregivers; ''Caregiving burden'' is defined as the impacts on physical and mental health, and health-related quality of life of informal caregivers.

[164] SA Cohen, ZJ Kunicki, MM Drohan, ML Greaney, Exploring Changes in Caregiver Burden and Caregiving Intensity due to COVID–19, Gerontology and Geriatric Medicine (January 2021), doi:10.1177/2333721421999279.

[165] *Id.*

[166] Jennifer Tolbert et al., Key Facts about the Uninsured Population, Kaiser Family Foundation (November 6, 2020), *https://www.kff.org/uninsured/issue-brief/key-facts-about-the-uninsured-population/.*

[167] Joshua Aarons et. al., As the COVID–19 Recession Extended into the Summer of 2020, More Than 3 Million Adults Lost Employer-Sponsored Health Insurance Coverage and 2 Million Became Uninsured, Urban Institute (September 18, 2020), *https://www.urban.org/research/publication/covid-19-recession-extended-summer-2020-more-3-million-adults-lost-employer-sponsored-health-insurance-coverage-and-2-million-became-uninsured.*

[168] Centers for Medicare and Medicaid Services, Medicaid and CHIP Enrollment Trends Snapshot through September 2020 (Washington: 2021), available at *https://www.medicaid.gov/sites/default/files/2021-01/september-medicaid-chip-enrollment-trend-snapshot.pdf.*

[169] Centers for Medicare and Medicaid Services, 2021 Federal Health Insurance Exchange Weekly Enrollment Snapshot: Final Snapshot (January 12, 2021) available at *https://www.cms.gov/newsroom/fact-sheets/2021-federal-health-insurance-exchange-weekly-enrollment-snapshot-final-snapshot.*

[170] Sara R. Collins, Munira Z. Gunja, and Gabriella N. Aboulafia, U.S. Health Insurance Coverage in 2020: A Looming Crisis in Affordability (New York: Commonwealth Fund, 2020), available at *https://www.commonwealthfund.org/publications/issue-briefs/2020/aug/looming-crisis-health-coverage-2020-biennial.*

[171] *Id.*

[172] Federal Deposit Insurance Corporation, FDIC National Survey of Unbanked and Underbanked Households (2015), *https://www.fdic.gov/household survey/2015/2015execsumm.pdf.*

[173] Federal Deposit Insurance Corporation, How America Banks: Household Use of Banking and Financial Services 2019 FDIC Survey, *https://www.fdic.gov/analysis/household-survey/2019report.pdf.*

underbanked households—those that have a bank account but rely on alternative financial services, such as money orders, payday loans, and check cashing services— account for 16 percent of all households in the United States.[174] As a result of the COVID–19 pandemic, new social distancing protocols have, in some instances, made it more difficult to perform financial transactions with paper instruments, like banknotes, coinage, paper checks, or money orders. Households constrained to these payment methods may face challenges receiving government assistance. Additionally, businesses have transitioned to cashless payments systems to promote contactless payments.[175] As a result, unbanked individuals may face additional challenges conducting financial transactions.

Treasury Response: Recognizing these challenges, Treasury is clarifying that recipients may use SLFRF funds to provide financial services that facilitate the delivery of federal, state, or local benefits (*e.g.,* Child Tax Credit, Earned Income Tax Credit, tax refunds, or emergency housing or food assistance funds). The following includes a non-exhaustive list of uses to provide financial services to unbanked and underbanked households:

- Provide low or no cost financial services, including in conjunction with administration of benefits, such as pre-paid debit cards, *e.g.,* via Economic Impact Payment or General Purpose Reloadable pre-paid cards or for the development of public banking infrastructure that can support benefit delivery.
- Provide transitional services to facilitate long-term access to banking and financial services.
- Provide financial literacy programs and conduct community outreach and deploy engagement resources to increase awareness about low-cost, no-overdraft fee accounts, pilot new strategies and approaches that help overcome barriers to banking access and support the gathering and sharing of information in ways that improve equity, such as community meetings, partnerships with community-based organizations, online surveys, focus groups, human-centered design activities, and other community engagement activities.

Assistance to Unemployed and Underemployed Workers

The interim final rule included assistance to unemployed workers as an enumerated eligible use, including ''services like job training to accelerate rehiring of unemployed workers.'' Treasury provided further guidance, based on recipient questions after the interim final rule, that eligible uses under this section also include ''other efforts to accelerate rehiring and thus reduce unemployment, such as childcare assistance, assistance with transportation to and from a jobsite or interview, and incentives for newly employed workers[,]'' as well as assistance to unemployed workers seeking to start small businesses. Finally, further guidance also provided that ''public jobs programs, subsidized employment, combined education and on-the-job training programs, or job training to accelerate rehiring or address negative economic or public health impacts experienced due to a worker's occupation or level of training'' are all enumerated eligible uses as assistance to unemployed or underemployed workers.

The interim final rule defined eligible beneficiaries of assistance as ''individuals who want and are available for work, including those who have looked for work sometime in the past 12 months or who are employed part time but who want and are available for full-time work.'' This definition is based on definitions used by the Bureau of Labor Statistics to define individuals currently unemployed, as well as persons marginally attached to the labor force and working part-time for economic reasons.[176] The latter two classifications are types of labor underutilization, or ''underemployed'' workers.[177] Finally, the interim final rule specified that assistance to unemployed workers included both workers who lost their job during the pandemic and resulting recession and workers unemployed when the pandemic began who saw further deterioration of their economic prospects due to the pandemic.

Public Comment: Commenters generally supported the inclusion of this enumerated eligible use. One commenter recommended including assistance for underemployed workers who took jobs due to the pandemic that did not fully utilize their skillset or did not provide the hours, wages, or job quality desired. Treasury has also received recipient questions on whether job fairs or grants to businesses to hire underserved workers are eligible uses under this category. Another commenter recommended flexibility in eligible workforce development programs, arguing that rural areas may face particular challenges.

Treasury Response: Treasury is maintaining this eligible use in the final rule, including the enumerated eligible services in the interim final rule and subsequent guidance. Treasury is also confirming that job fairs or grants to businesses to hire underserved workers are eligible uses under this section.

Treasury is also enumerating that job and workforce training centers are eligible capital expenditures, so long as they adhere to the standards and presumptions detailed in the section Capital Expenditures in General Provisions: Other.

The final rule maintains the definition of eligible beneficiaries, which is aligned with the Bureau of Labor Statistics' definitions of unemployed workers and other labor underutilization, using a common, widely known definition that incorporates a broad group of individuals both unemployed or whose skills are otherwise underutilized in the labor market.

In addition, recognizing that the pandemic has generated broad workforce disruption, in the final rule, Treasury is making clear that recipients may provide job training or other enumerated types of assistance to individuals that are currently employed but are seeking to move to a job that provides better opportunities for economic advancement, such as higher wages or more opportunities for career advancement.

Recipient Unemployment Insurance Trust Funds and Related Expenses

Under the interim final rule, a recipient may use funds to make deposits into its account of the Unemployment Trust Fund established under section 904 of the Social Security Act (42 U.S.C. 1104) up to the level needed to restore the pre-pandemic balance of such account as of January 27, 2020 or to pay back advances received under Title XII of the Social Security Act (42 U.S.C. 1321) for the payment of benefits between January 27, 2020 and May 17, 2021. These costs support the solvency of the unemployment insurance system and, ultimately, unemployment insurance benefits provided to unemployed

[174] Board of the Governors of the Federal Reserve System, Report on the Economic Well-Being of U.S. Households in 2018–May 2019, *https://www.federalreserve.gov/publications/2019-economic-well-being-of-us-households-in-2018-banking-and-credit.htm.*

[175] Zaheer Allam, The Forceful Reevaluation of Cash-Based Transactions by COVID–19 and Its Opportunities to Transition to Cashless Systems in Digital Urban Networks. Surveying the Covid-19 Pandemic and its Implications (2020): 107–117. doi:10.1016/B978–0–12–824313–8.00008–5.

[176] Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey: Concepts and Definitions, *https://www.bls.gov/cps/definitions.htm* (last visited November 9, 2021).

[177] *Id.*

workers during the pandemic.[178] The interim final rule also posed the question of what, if any, conditions should be considered to ensure that funds used under this eligible use category repair economic impacts of the pandemic and strengthen unemployment insurance systems.

Public Comment: Inclusion as an Eligible Use and Conditions: Commenters expressed mixed perspectives on this eligible use category. Some commenters supported its inclusion, arguing that unemployment insurance systems have faced significant costs to support unemployed workers during the pandemic and that this constitutes a negative economic impact that SLFRF funds should be able to address. Other commenters opposed this eligible use category, arguing that funds used under this category may not ultimately support unemployed workers. Some commenters noted that unemployment insurance taxes on businesses automatically increase when trust fund balances are low and suggested that permitting the deposit of funds into unemployment insurance trust funds prevents a tax increase on businesses, some of which may not have faced negative economic impacts from the pandemic, rather than providing assistance to unemployed workers. Other comments suggested that deposits are better thought of as savings for future needs than assistance to unemployed workers in the near term.

Responding to the interim final rule's question, several commenters suggested that, if Treasury maintains this eligible use, the final rule should require detailed reporting on funds used under this category or place conditions on this category to increase the likelihood that funds ultimately support unemployed workers. For example, some commenters suggested that recipients that deposit SLFRF funds into their trust fund should be barred from cutting unemployment insurance benefits for workers during the period of performance or from erecting new barriers to accessing benefits (*e.g.,* through the application process and ongoing requirements to receive benefits). One commenter, noting that unemployment insurance benefits often provide low rates of wage replacement and do not cover some types of unemployed workers, argued that recipients should not be permitted to deposit funds into the trust fund unless the recipient concurrently expands benefits. Finally, one commenter suggested a cap on the amount of funds that can be used for this purpose.

Treasury Response: Inclusion as an Eligible Use and Conditions: In the final rule, Treasury is maintaining the inclusion of this eligible use category. Because unemployment insurance trust funds directly fund benefits to unemployed workers, maintaining the solvency of the trust fund is critical to the continued provision of assistance to unemployed workers. Further, funds deposited into the trust fund must be used as assistance to unemployed workers, an eligible use of SLFRF funds. Finally, while, in the absence of the SLFRF, trust fund deposits would likely be funded through increases on employer payroll taxes, the eligibility of uses of SLFRF funds does not depend on how obligations would otherwise be satisfied if the SLFRF were not available for this use.

While deposits to unemployment insurance trust funds generally serve as assistance to unemployed workers, recipients that make deposits but also cut unemployment insurance benefits to workers substantially decrease the likelihood that the deposited funds will assist unemployed workers. In other words, SLFRF funds deposited into an unemployment insurance trust fund generally serve as assistance to unemployed workers, unless recipients take policy actions that substantially decrease the extent to which SLFRF funds would flow to unemployed workers. As such, through December 31, 2024, recipients that deposit SLFRF funds into an unemployment insurance trust fund or use SLFRF funds to repay principal on Title XII advances, may not take action to reduce benefits available to unemployed workers by changing the computation method governing regular unemployment compensation in a way that results in a reduction of average weekly benefit amounts or the number of weeks of benefits payable (*i.e.,* the maximum benefit entitlement).

Finally, until the final rule becomes effective on April 1, 2022, the interim final rule remains binding and effective.[179] These requirements were not in effect under the interim final rule and do not apply to funds used (*i.e.,* obligated or expended) under the interim final rule while it is in effect. In addition, recognizing that some recipients have taken significant steps toward making a trust fund deposit or repaying principal on Title XII advances under the interim final rule, such as the legislative appropriation of funds for this purpose, even if a formal obligation has not occurred, Treasury will exercise enforcement discretion to not pursue violations of this final rule provision (*i.e.,* the requirement not to reduce benefits) for recipients that have appropriated funds for this purpose prior to the date of adoption of the final rule consistent with the laws and procedures in their jurisdiction. Recipients should refer to Treasury's Statement Regarding Compliance with the Coronavirus State and Local Fiscal Recovery Funds Interim Final Rule and Final Rule, which provides additional detail on these issues.

Public Comment and Treasury Response: Technical Corrections and Amendments: Following the interim final rule, Treasury received recipient questions on whether paying interest on advances received under Title XII of the Social Security Act (42 U.S.C. 1321) is an eligible use of SLFRF funds; Treasury is clarifying that such use is permissible, consistent with Treasury's treatment of the eligibility of interest on Title XII advances under the Coronavirus Relief Fund.

Treasury is further clarifying that recipients may only use SLFRF funds for contributions to unemployment insurance trust funds and repayment of the principal amount due on advances received under Title XII of the Social Security Act up to an amount equal to (i) the difference between the balance in the recipient's unemployment insurance trust fund as of January 27, 2020 and the balance of such account as of May 17, 2021, plus (ii) the principal amount outstanding as of May 17, 2021 on any advances received under Title XII of the Social Security Act between January 27, 2020 and May 17, 2021. Further, recipients may use SLFRF funds for the payment of any interest due on such Title XII advances. In other words, excluding interest due on Title XII advances, the magnitude of the decrease of the balance in the unemployment insurance trust fund plus the principal outstanding on any Title XII borrowings made from the beginning of the public health emergency to the date of publication of the SLFRF interim final rule sets a cap on the amount of SLFRF funds a recipient may use for trust fund contributions and repayment of principal on Title XII advances. Further, a recipient that deposits SLFRF funds into its unemployment insurance trust fund to fully restore the pre-pandemic balance may not draw down that

[178] Note that, while the economic harm being addressed accrued before March 3, 2021, the cost incurred to address the harm occurs after March 3, 2021 and provides assistance to unemployed workers, an eligible use of SLFRF funds.

[179] *See, e.g.,* U.S. Department of the Treasury, More Information on the Conclusion of the Public Comment Period and the Interim Final Rule on the Coronavirus State and Local Fiscal Recovery Funds, *https://home.treasury.gov/system/files/136/IFR-Explainer.pdf.*

balance and deposit more SLFRF funds, back up to the pre-pandemic balance.

Enumerated Eligible Uses for Disproportionately Impacted Households

Background

The COVID–19 pandemic has had disproportionally negative impacts on many households and communities that were already experiencing inequality related to race, gender, age, or income before the pandemic. People of color, low-income workers, and women disproportionately lost their jobs during the COVID–19 pandemic and experienced disproportionate rates of negative health outcomes.[180] [181]

These disproportionate negative impacts experienced by systemically underserved communities are not novel to the COVID–19 pandemic and the economic downturn. Research shows that historically underserved communities that are experiencing economic and social disparities typically experience disproportionate impacts of economic downturns and natural disasters.[182] This pattern held true for the effects of COVID–19 and the economic downturn: Historically undeserved groups experienced amplified negative impacts, further widening inequality.[183]

Many communities facing systemic barriers had not yet recovered from the impact of the Great Recession before experiencing the impacts of COVID–19 and the economic downturn. For example, in 2009, at the end of the Great Recession, households without a high school diploma had an average annual income of $32,300 (measured in 2018 dollars). By 2018, nine years into the economic recovery, those same households saw their average income increase by $600. During that same time period, households with a bachelor's degree saw an increase in their average household income of $6,100 (measured in 2018 dollars).[184]

The impact pre-existing inequalities have on a household or community's ability to recover is intersectional. Research shows that pre-existing racial and gender disparities exacerbated the disproportionate economic and health impact COVID–19 and the economic downturn had on workers of color, and specifically, women of color.[185] Another study found that during the first six months of the pandemic counties that were both high-poverty and majority non-white experienced COVID–19 infection rates eight times higher than high-poverty, majority white counties.[186] Many residents in these communities are still coping with the negative health and economic impacts.

Summary of the Interim Final Rule and Final Rule Structure

As described previously, the interim final rule provided a broader list of enumerated eligible uses to respond to the pandemic in disproportionately impacted communities, in recognition that pre-existing health, economic, and social disparities contributed to disproportionate pandemic impacts in certain communities and that addressing the root causes of those disparities constitutes responding to the public health and negative economic impacts of the pandemic. The interim final rule described eligible uses in disproportionately impacted communities in four categories, spread across public health and negative economic impacts: (1) Addressing disparities in public health outcomes, (2) building stronger communities through investments in housing and neighborhoods, (3) addressing educational disparities, and (4) promoting healthy childhood environments. As described above, Treasury has moved eligible uses related to community violence intervention, assistance accessing or applying to public benefits and services, affordable housing development, healthy childhood environments, and addressing lost instructional time in K–12 schools into the category ''assistance to impacted households,'' recognizing that these pandemic impacts were widely shared across the country.

This section discusses enumerated eligible uses to address health disparities, to build stronger communities through investments in neighborhoods, to address educational disparities, to provide rental assistance vouchers or assistance relocating to areas of greater economic opportunity, and additional eligible uses to respond to negative economic impacts in disproportionately impacted communities. While many of these services impact both health and economic outcomes, Treasury has consolidated them into a single section for simplicity and clarity and to reflect the intertwined nature of these issues.

As a reminder, recipients can presume these uses are eligible when provided in a QCT, to families and individuals living in QCTs, by Tribal or territorial governments, or to low-income households or communities. As provided in section Standards: Designating Other Disproportionately Impacted Classes, recipients can also provide these services to other populations, households, or geographic areas disproportionately impacted by the pandemic. Recipients may also identify additional disproportionate impacts of the pandemic and design an appropriate response to address that harm. For details on eligibility standards and presumed eligible populations, see section General Provisions: Structure and Standards.

Enumerated Eligible Uses for Disproportionately Impacted Households

1. Addressing health disparities.

Public Comment: General: In general, commenters supported eligible uses to address health disparities and support health equity; several commenters highlighted the disparities faced by communities of color and low-income populations, as well as the importance of community engagement in developing effective programs to serve disproportionately impacted communities. Many commenters recommended additional enumerated eligible uses to address health disparities; these are discussed further below in this section.

Treasury Response: In line with commenters' recommendations, the final rule maintains several enumerated eligible uses to address health disparities, specifically:

a. Community health workers. Treasury received few comments on community health workers, though one

[180] U.S. Department of Health and Human Services, COVID–19 and Economic Opportunity: Inequities in the Employment Crisis, April 2021. Retrieved from *https://aspe.hhs.gov/sites/default/files/migrated_legacy_files//199901/covid-economic-equity-brief.pdf.*

[181] Adelle Simmons et al., Health disparities by race and ethnicity during the COVID–19 pandemic: Current evidence and policy approaches. U.S. Department of Health and Human Services *https://aspe.hhs.gov/sites/default/files/migrated_legacy_files//199516/covid-equity-issue-brief.pdf.*

[182] Perry, Brea L., Brian Aronson, and Bernice A. Pescosolido, Pandemic precarity: COVID–19 is exposing and exacerbating inequalities in the American heartland, National Academy of Sciences (Febuary 2021), *https://www.pnas.org/content/118/8/e2020685118.*

[183] *Id.*

[184] Jesse Bennet & Rakesh Kochhar, Two Recessions, Two Recoveries, Pew Research Center (December 13, 2019), *https://www.pewresearch.org/social-trends/2019/12/13/two-recessions-two-recoveries-2/.*

[185] Darrick Hamilton et al., Building an Equitable Recovery: The role of Race, Labor Markets, and Education, The New School's Institute on Race and Political Economy (February 2021).

[186] Adhikari S, Pantaleo NP, Feldman JM, Ogedegbe O, Thorpe L, Troxel AB. Assessment of Community-Level Disparities in Coronavirus Disease 2019 (COVID–19) Infections and Deaths in Large US Metropolitan Areas. JAMA Netw Open. 2020;3(7):e2016938. doi:10.1001/jamanetworkopen.2020.16938.

requested further clarification on their role.[187] Treasury is maintaining this eligible use in the final rule.

b. Remediation of lead paint or other lead hazards. The interim final rule included remediation of lead paint or other lead hazards as an enumerated eligible use to address health disparities.

Public Comment: Treasury received several comments asking for clarification on the eligibility of a particular use that would indirectly address lead pollution. For example, a commenter requested the ability to fund remedial actions, such as filtration and plumbing procedures to help address lead pollution. One commenter requested that private wells be eligible for funding to address contamination with substances such as lead. Other commenters requested that Treasury allow replacement of lead pipes as an eligible use of funds.

Treasury Response: Recipients may make a broad range of water infrastructure investments under section 602(c)(1)(d) and 603(c)(1)(d), which can include lead service line replacement and other activities to identify and remediate lead in water. These uses are discussed in greater detail in section Water and Sewer Infrastructure of this Supplemental Information.

Treasury has further determined that several of the services identified by commenters are appropriate responses to address health disparities in disproportionately impacted households. These services were eligible under the interim final rule and continue to be so under the final rule. These services include remediation to address lead-based public health risk factors, outside of lead in water, including evaluation and remediation of lead paint, dust, or soil hazards; testing for blood lead levels; public outreach and education; and emergency protection measures, like bottled water and water filters, in areas with an action level exceedance for lead in water in accordance with the Environmental Protection Agency's Lead and Copper Rule.[188]

Further, Treasury had determined that certain capital expenditures, including improvements to existing facilities to remediate lead contaminants (*e.g.,* removal of lead paint), are eligible responses, although this does not include construction of new facilities for the purpose of lead remediation. Recipients should make sure that all capital expenditures adhere to the standards and presumptions detailed in section Capital Expenditures in General Provisions: Other.

c. Medical facilities. Treasury received a few comments from recipients seeking to use SLFRF funds to build new medical facilities, such as hospitals or public health clinics, to serve disproportionately impacted communities. Given the central role of access to high-quality medical care in reducing health disparities and addressing the root causes that led to disproportionate impact COVID–19 health impacts in certain communities, the final rule recognizes that medical equipment and facilities designed to address disparities in public health outcomes are eligible capital expenditures. This includes primary care clinics, hospitals, or integrations of health services into other settings. Recipients should make sure that all capital expenditures adhere to the standards and presumptions detailed in section Capital Expenditures in General Provisions: Other.

2. Housing vouchers and assistance relocating. In addition to other housing services, the interim final rule permitted a variety of rental assistance approaches to support low-income households in securing stable, long-term housing, including housing vouchers, residential counseling, or housing navigation assistance to facilitate household moves to neighborhoods with high levels of economic opportunity and mobility for low-income residents. Examples could include SLFRF-funded analogues to Section 8 Housing Choice vouchers; other kinds of rent subsidies, including shallow subsidies; and programs to help residents move to areas with higher levels of economic mobility.[189] Treasury did not receive public comments on these enumerated eligible uses.

Treasury Response: Treasury maintains the eligibility of vouchers and relocation assistance in the final rule.

3. Building strong, healthy communities through investments in neighborhoods. While the interim final rule included a category of enumerated eligible uses for ''building stronger communities through investments in housing and neighborhoods,'' the examples of services provided generally focused on housing uses. In response to questions following release of the interim final rule, Treasury issued further guidance clarifying that ''investments in parks, public plazas, and other public outdoor recreation spaces may be responsive to the needs of disproportionately impacted communities by promoting healthier living environments.''

Public Comment: General: A significant theme across many public comments was the importance of neighborhood environment to health and economic outcomes and the potential connections between residence in an underserved neighborhood and disproportionate impacts from the pandemic. Many commenters highlighted the connection between neighborhoods and health outcomes, including citing public health research linking neighborhood traits to health outcomes. For example, the CDC states that ''neighborhoods people live in have a major impact on their health and well-being.'' [190] As such, CDC identifies ''neighborhoods and built environment'' as one of five key social determinants of health [191] and includes ''creat[ing] neighborhoods and environments that promote health and safety'' as one of the agency's goals for social determinants of health outcomes.

a. Neighborhood features that promote improved health and safety outcomes.

Public Comment: Commenters argued that neighborhoods impact physical health outcomes in several ways. First, some commenters reasoned that the physical environment and amenities in a community [192] influence a person's level of physical activity, with features like parks, recreation facilities, and safe sidewalks promoting increased physical activity that improves health outcomes. Conversely, commenters argued that a lack of these features in a neighborhood could dampen physical activity and contribute to health conditions like obesity that are risk factors for more severe COVID–19 health outcomes.

Second, some commenters also suggested that access to healthy food in a neighborhood impacts health outcomes. These commenters reasoned

[187] *See, e.g.,* Centers for Disease Control and Prevention, Community Health Worker (CHW) Toolkit, *https://www.cdc.gov/dhdsp/pubs/toolkits/chw-toolkit.htm* (last visited November 9, 2021).

[188] Environmental Protection Agency, 40 CFR 141.80(c)(1), *https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-141/subpart-I/section-141.80.*

[189] *See, e.g.,* Opportunity Insights, Creating Moves To Opportunity (August 2019), *https://opportunityinsights.org/policy/cmto/.*

[190] U.S. Department of Health and Human Services, Neighborhood and Built Environment, *https://health.gov/healthypeople/objectives-and-data/browse-objectives/neighborhood-and-built-environment#cit1* (last visited November 9, 2021).

[191] Social determinants of health are ''the conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes.'' Centers for Disease Control and Prevention, About Social Determinants of Health (SDOH), *https://www.cdc.gov/social determinants/about.html* (last visited November 9, 2021).

[192] In public health, this is referred to as ''built environment,'' or the man-made physical aspects of a community (*e.g.,* homes, buildings, streets, open spaces, and infrastructure).

that lacking adequate access to affordable, healthy food or living in a ''food desert'' may contribute to disparities in diet that influence health outcomes, including contributing to pre-existing conditions that increased risk for severe COVID–19 outcomes. These commenters cited public health research finding ''clear evidence for disparities in food access in the United States by income and race.'' [193]

Some commenters also suggested that neighborhood environment is connected to other public health outcomes, like mental health and public safety. For example, some research suggests that living in neighborhoods with green space and tree cover correlates with improved mental health outcomes.[194] Finally, some commenters argued that activities like installing streetlights, greening or cleanup of public spaces or land, and other efforts to revitalize public spaces would support improved public safety.[195] [196]

These commenters recommended that Treasury include as an enumerated eligible use in disproportionately impacted communities projects to develop neighborhood features that promote improved health and safety outcomes, such as parks, green spaces, recreational facilities, sidewalks, pedestrian safety features like crosswalks, projects that increase access to healthy foods, streetlights, neighborhood cleanup, and other projects to revitalize public spaces.

Background: Investments in neighborhood features, including parks, recreation facilities, sidewalks, and healthy food access, can work to improve physical and mental health outcomes. Allowing people access to nature, including parks, has been connected to decreased levels of mortality and illness and increased well-being.[197] Urban park use during the COVID–19 pandemic may have declined among lower-income individuals.[198] Encouraging physical activity can also play a role in health outcomes, as a sedentary lifestyle is a risk factor for chronic diseases and more severe COVID–19 outcomes.[199] Parks, recreation facilities, and sidewalks can promote healthier living environments by allowing for safe and socially distanced recreation during the COVID–19 pandemic.

Additionally, food insecurity rates, which are higher among lower-income households and households of color, doubled among all households and tripled among households with children during the onset of COVID–19 from February 2020 to May 2020.[200] Improving healthy food access supports public health, particularly among lower-income households and households of color that face disproportionate outcomes.

Treasury Response: Treasury recognizes the connection between neighborhood built environment and physical health outcomes as discussed in the research and analysis provided by commenters, including risk factors that may have contributed to disproportionate COVID–19 health impacts in low-income communities. The final rule also recognizes that the public health impacts of the pandemic are broader than just the COVID–19 disease itself and include substantial impacts on mental health and public safety challenges like rates of violent crime, which are correlated with a neighborhood's built environment and features. As such, neighborhood features that promote improved health and safety outcomes respond to the pre-existing disparities that contributed to COVID–19's disproportionate impacts on low-income communities.

The final rule includes enumerated eligible uses in disproportionately impacted communities for developing neighborhood features that promote improved health and safety outcomes, such as parks, green spaces, recreational facilities, sidewalks, pedestrian safety features like crosswalks,[201] projects that increase access to healthy foods, streetlights, neighborhood cleanup, and other projects to revitalize public spaces. Recipients seeking to use funds for capital expenditures should refer to the section Capital Expenditures in General Provisions: Other, which describes additional eligibility standards that apply to uses of funds for capital expenditures.

b. Vacant or abandoned properties. As discussed above, the interim final rule included enumerated eligible uses for building stronger communities through investments in housing and neighborhoods in disproportionately impacted communities. The interim final rule also posed a question of whether other potential uses in this category, specifically ''rehabilitation of blighted properties or demolition of abandoned or vacant properties,'' address the public health or economic impacts of the pandemic.

Public Comment: Several commenters argued that programs or services to address vacant or abandoned property would respond to the public health and negative economic impacts of the pandemic in disproportionately impacted communities. Some commenters cited research suggesting that living near such property is correlated with worse physical health and mental health outcomes, noted that such properties pose an environmental hazard, or argued that such properties present a barrier to economic recovery. These commenters suggested that renovation or demolition of vacant or abandoned property could benefit community health and raise property values. Other commenters recommended that Treasury include an enumerated eligible use for the operation of land banks that redevelop or renew vacant properties and land.

Treasury Response: As noted throughout the final rule, the pandemic underscored the importance of safe, affordable housing and healthy

[193] J Beaulac, E Kristjansson, S Cummins, A systematic review of food deserts, 1966–2007, Prev Chronic Dis 2009;6(3):A105, *http://www.cdc.gov/pcd/issues/2009/jul/08_0163.htm.*

[194] *See, e.g.,* Yijun Zhang et al. The Association between Green Space and Adolescents' Mental Well-Being: A Systematic Review. International journal of environmental research and public health vol. 17,18 6640 (Sep. 11 2020), doi:10.3390/ijerph17186640; EC South, BC Hohl, MC Kondo, JM MacDonald, CC Branas, Effect of Greening Vacant Land on Mental Health of Community-Dwelling Adults: A Cluster Randomized Trial, JAMA Netw Open. 2018;1(3):e180298 (2018), available at: doi:10.1001/jamanetworkopen.2018.0298.

[195] *See, e.g.,* Yanqing Xu, Cong Fu, Eugene Kennedy, Shanhe Jiang, Samuel Owusu-Agyemang, The impact of street lights on spatial-temporal patterns of crime in Detroit, Michigan, Cities, Volume 79, Pages 45–52, ISSN 0264–2751 (2018), *https://doi.org/10.1016/j.cities.2018.02.021.*

[196] A. Chalfin, B. Hansen, J. Lerner et al., Reducing Crime Through Environmental Design: Evidence from a Randomized Experiment of Street Lighting in New York City, Journal of Quantitative Criminology (2021), *https://doi.org/10.1007/s10940-020-09490-6.*

[197] *See, e.g.,* American Public Health Association, Improving Health and Wellness through Access to Nature (November 5, 2013), *https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/08/09/18/improving-health-and-wellness-through-access-to-nature.*

[198] LR Larson et al., Urban Park Use During the COVID–19 Pandemic: Are Socially Vulnerable Communities Disproportionately Impacted?, Front. Sustain. Cities 3:710243 (2021), *https://doi.org/10.3389/frsc.2021.710243.*

[199] JP Després, Severe COVID–19 outcomes—the role of physical activity. Nat Rev Endocrinol 17, 451–452 (2021). *https://doi.org/10.1038/s41574-021-00521-1.*

[200] Caroline George and Adie Tomer, Beyond 'food deserts': America needs a new approach to mapping food, Brookings Institution (August 17, 2021), *https://www.brookings.edu/research/beyond-food-deserts-america-needs-a-new-approach-to-mapping-food-insecurity/.*

[201] However, Treasury cautions recipients that general infrastructure development, including street or road construction, remains a generally ineligible use of funds under the final rule. Sidewalks and pedestrian safety should be the predominant component of uses of funds in this category. While projects may include ancillary construction needed to execute the predominant component, a project that predominantly involves street construction or repair to benefit vehicular traffic would be ineligible.

neighborhood environments to public health and economic outcomes. Treasury agrees with commenters that high rates of vacant or abandoned properties in a neighborhood may exacerbate public health disparities, for example through environmental contaminants that contribute to poor health outcomes or by contributing to higher rates of crime. As such, certain services for vacant or abandoned properties are eligible to address the public health and negative economic impacts of the pandemic on disproportionately impacted households or communities. Eligible activities include:

- Rehabilitation, renovation, maintenance, or costs to secure vacant or abandoned properties to reduce their negative impact
- Costs associated with acquiring and securing legal title of vacant or abandoned properties and other costs to position the property for current or future productive use
- Removal and remediation of environmental contaminants or hazards from vacant or abandoned properties, when conducted in compliance with applicable environmental laws or regulations
- Demolition or deconstruction of vacant or abandoned buildings (including residential, commercial, or industrial buildings) paired with greening or other lot improvement as part of a strategy for neighborhood revitalization
- Greening or cleanup of vacant lots, as well as other efforts to make vacant lots safer for the surrounding community
- Conversion of vacant or abandoned properties to affordable housing
- Inspection fees and other administrative costs incurred to ensure compliance with applicable environmental laws and regulations for demolition, greening, or other remediation activities

Vacant or abandoned properties are generally those that have been unoccupied for an extended period of time or have no active owner.[202] Such properties may be in significant disrepair (*e.g.,* major structural defects; lack of weather tight conditions; or lack of useable plumbing, kitchen facilities, electricity, or heating infrastructure (not to include utilities currently out of service or disconnected but able to be reconnected and used)), or may be declared unfit for inhabitants by a government authority.

As noted above, demolition and greening (or other structure or lot remediation) of vacant or abandoned properties, including residential, commercial, or industrial buildings, is an eligible use of funds. Treasury encourages recipients to undertake these activities as part of a strategy for neighborhood revitalization and to consider how the cleared property will be used to benefit the disproportionately impacted community. Activities under this eligible use should benefit current residents and businesses, who experienced the pandemic's impact on the community.

Treasury encourages recipients to be aware of potential impacts of demolition of vacant or abandoned residential properties. Demolition activities that exacerbate the pandemic's impact on housing insecurity or lack of affordable housing are not eligible uses of funds. This risk is generally more acute in jurisdictions with low or reasonable vacancy rates and less acute in jurisdictions with high or hyper-vacancy.[203]

Treasury presumes that demolition of vacant or abandoned residential properties that results in a net reduction in occupiable housing units for low- and moderate-income individuals in an area where the availability of such housing is lower than the need for such housing would exacerbate the impacts of the pandemic on disproportionately impacted communities and that use of SLFRF funds for such activities would therefore be ineligible. This includes activities that convert occupiable housing units for low- and moderate-income individuals into housing units unaffordable to current residents in the community. Recipients may assess whether units are ''occupiable'' and what the housing need is for a given area taking into account vacancy rates (as described above), local housing market conditions (including conditions for different types of housing like multi-family or single-family), and applicable law and housing codes as to what units are occupiable. Recipients should also take all reasonable steps to minimize the displacement of persons due to activities under this eligible use category, especially the displacement of low-income households or longtime residents.

Recipients engaging in these activities and other construction activities with SLFRF funds should be mindful of the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. 4601, and the Department of Transportation's implementing regulations, 49 CFR part 24, that apply to projects funded with federal financial assistance, such as SLFRF funds. Recipients should also be aware of federal, state, and local laws and regulations, outside of SLFRF program requirements, that apply to this activity. Recipients must comply with the applicable requirements of the Uniform Guidance regarding procurement, contracting, and conflicts of interest and must follow the applicable laws and regulations in their jurisdictions. Recipients must also comply with all federal, state, and local public health and environmental laws or regulations that apply to activities under this eligible use category,[204] for example, requirements around the

[202] A state or locality may use its existing classifications of what is considered vacant or abandoned property under state law and local ordinances, as well as any corresponding processes for demolition, for these eligible uses. A recipient without a definition of vacant or abandoned property may refer to definitions used in the Department of Housing and Urban Development's Neighborhood Stabilization Program (available at the citations below); however, recipients should be aware that other federal, state, or local requirements may apply such as compliance with the Uniform Relocation Act (*see* U.S. Department of Housing and Urban Development, Real Estate Acquisition and Relocation Overview in HUD Programs, *https://www.hudexchange.info/programs/relocation/overview/#overview-of-the-ura* (last visited November 9, 2021) and other state and local requirements like condemnation and code enforcement. U.S. Department of Housing and Urban Development, What is the definition of vacant properties as referenced in NSP Eligible Use E—Redevelop Demolished or Vacant Properties? (October 2012), *https://www.hudexchange.info/faqs/programs/neighborhood-stabilization-program-nsp/redevelopment/what-is-the-definition-of-vacant-properties-as-referenced-in-nsp-eligible/.* U.S. Department of Housing and Urban Development, What are the definitions of abandoned and foreclosed? (October 2012), *https://www.hudexchange.info/faqs/programs/neighborhood-stabilization-program-nsp/program-requirements/eligible-activitiesuses/what-are-the-definitions-of-abandoned-and-foreclosed/.*

[203] For analysis of vacancy rates considered low or high, see, *e.g.,* page 12 of Alan Mallach, The Empty House Next Door, Lincoln Institute (May 2018), *https://www.lincolninst.edu/publications/policy-focus-reports/empty-house-next-door#:~:text=%E2%80%9CAlan%20Mallach%20is%20the%20sage,through%20data%20and%20model%20* practices. Recipients may determine the appropriate geographic unit for which to analyze vacancy rates (*e.g.,* county, census tract) based on their circumstances. As needed, recipients may refer to the Current Population Survey/Housing Vacancy Survey data series on Housing Vacancies and Homeownership as one data source to assess vacancy rates. See *https://www.census.gov/housing/hvs/index.html.* Other data sources include the American Community Survey five-year estimates, for smaller geographic areas, or tabulations by the Department of Housing and Urban Development based on United States Postal Service Vacancy Data. See, respectively, *https://data.census.gov/cedsci/table?q=DP04&tid=ACSDP5Y2019.DP04&hidePreview=true* or *https://www.huduser.gov/portal/datasets/usps.html.*

[204] *See* U.S. Environmental Protection Agency, Large-Scale Residential Demolition, *https://www.epa.gov/large-scale-residential-demolition* (last visited November 9, 2021) for a primer on requirements that may apply.

handling and disposal of asbestos-containing materials, lead paint, and other harmful materials may apply, as well as environmental standards for any backfill materials used at demolition sites. Treasury encourages recipients to consult and apply best practices from the Environmental Protection Agency as well.

Recipients must evaluate each subrecipient's risk of noncompliance with federal statutes, regulations, and the terms and conditions of the subaward related to safely and properly conducting activities under this eligible use. This may include checking for any past violations recorded by state or local environmental, workplace safety, licensing, and procurement agencies, as well as regular reviews for suspensions, debarments, or stop work orders. Recipients must establish rigorous oversight and internal controls processes to monitor compliance with any applicable requirements, including compliance by subrecipients.

4. Addressing educational disparities. The interim final rule included an enumerated eligible use for addressing educational disparities in disproportionately impacted communities and outlined some enumerated eligible services under this use. These enumerated uses included early learning services, assistance to high-poverty school districts to advance equitable funding across districts and geographies, and educational and evidence-based services to address the academic, social, emotional, and mental health needs of students. Addressing the many dimensions of resource equity—including equitable and adequate school funding; access to a well-rounded education; well-prepared, effective, and diverse educators and staff; and integrated support services—can also begin to mitigate the impact of COVID–19 on schools and students and can close long-standing gaps in educational opportunity. As discussed above, in the final rule, early learning services and addressing the impacts of lost instructional time for K–12 students are enumerated eligible uses for impacted communities, not just disproportionately impacted communities.

Public Comment: Treasury received some comments in this category. Generally, commenters expressed agreement with the elements of the interim final rule regarding use of funds for addressing educational disparities. Some commenters had questions about whether a few specific uses of funds qualified under this category. For example, commenters inquired about whether the funds could be used for behavioral health in a school setting or cultural language classes.

Treasury Response: Treasury is maintaining these enumerated eligible uses in the final rule, which are now organized under the heading of ''services to address educational disparities.'' Treasury reiterates that these uses include addressing educational disparities exacerbated by COVID–19, including but not limited to: increasing resources for high-poverty school districts, educational services like tutoring or afterschool programs, summer education and enrichment programs, and supports for students' social, emotional, and mental health needs. This also includes responses aimed at addressing the many dimensions of resource equity—including equitable and adequate school funding; access to a well-rounded education; well-prepared, effective, and diverse educators and staff; and integrated support services—in order to close long-standing gaps in educational opportunity.

Further, Treasury is clarifying that improvements or new construction of schools and other educational facilities or equipment are eligible capital expenditures for disproportionately impacted communities. Recipients seeking to use funds for capital expenditures should refer to the section Capital Expenditures in General Provisions: Other for additional eligibility standards that apply to uses of funds for capital expenditures.

Treasury notes that services to promote healthy childhood environments, including childcare, early learning services, and home visiting programs that serve infants and toddlers, is a separate category of enumerated eligible uses for households impacted by the pandemic (see eligible uses for ''promoting healthy childhood environments''). Similarly, education services to address the impact of lost instructional time during the pandemic are a separate eligible use category for households impacted by the pandemic; when providing these services, recipients may presume that any K–12 student who lost access to in-person instruction for a significant period of time has been impacted by the pandemic and is thus eligible for responsive services (see eligible uses for ''addressing the impact of lost instructional time'').

Proposed Additional Enumerated Eligible Uses Not Incorporated

The interim final rule posed a question on what other types of services or costs Treasury should consider as eligible uses to respond to the disproportionate public health or negative economic impacts of COVID–19 on low-income populations and communities.

In response, commenters proposed a wide variety of additional recommended enumerated eligible uses to assist disproportionately impacted households, ranging from general categories of services (*e.g.,* long-term investments to remediate long-term disparities) to highly specific examples of services (*e.g.,* a specific type of healthcare equipment). As discussed above, Treasury is including several additional categories of enumerated eligible uses in the final rule in response to public comments.

Given the large number and diversity of SLFRF recipients, Treasury's approach to assistance to households in disproportionately impacted communities in the final rule aims to provide enumerated eligible uses that respond to disproportionate impacts of the pandemic experienced widely in many jurisdictions across the country and are intended to simplify and clarify these enumerated eligible uses. At the same time, Treasury recognizes that the impacts of the pandemic vary over time, by jurisdiction, and by population; as such, the final rule provides flexibility for recipients to identify additional disproportionate impacts to additional households or classes of households and pursue programs and services that respond to those disproportionate impacts.

In the final rule, Treasury has not chosen to include as enumerated uses all uses proposed by commenters; given the significant range, and in some cases highly specific nature, of the proposed uses Treasury was not able to assess that the proposed uses would respond to disproportionate impacts experienced in many jurisdictions across the country, supporting an enumerated eligible use available to all recipients presumptively. However, the final rule continues to provide a framework to allow recipients to identify and respond to additional disproportionate impacts (for details, see section General Provisions: Structure and Standards). Some types of proposed additional enumerated eligible uses for assistance to households in disproportionately impacted communities were recommended by several commenters:

- Capital expenditures. Many commenters recommended that capital expenditures on many different types of public and private facilities be enumerated eligible uses. For clarity, Treasury has addressed all comments on the eligibility of capital expenditures on property, facilities, or equipment in one

section (see section Capital Expenditures in General Provisions: Other).

• Equity funds. Several commenters recommended that Treasury permit SLFRF funds to be deposited into an equity fund to support long-term racial and economic equity investments. The eligibility of such use would depend on the specific structure and uses of funds. Under the statute, SLFRF funds can only support costs incurred until December 31, 2024; see section Timeline for Use of SLFRF Funds in Program Administration Provisions. Further, recipients may calculate the cost incurred with respect to investments in revolving loan funds based on the methodology described in section Treatment of Loans in Program Administration Provisions. Projects funded by a revolving loan fund using SLFRF funds would also need to be eligible uses of SLFRF funds.

• Environmental quality and climate resilience. Several commenters recommended eligible uses to enhance environmental quality, remediate pollution, promote recycling or composting, or increase energy efficiency or electrical grid resilience. Whether these projects respond to the disproportionate impacts of the pandemic on certain communities would depend on the specific issue they address and its nexus to the public health and economic impacts of the pandemic.

b. Assistance to Small Businesses

Background

The pandemic has severely impacted many businesses, with small businesses hit especially hard. Small businesses make up nearly half of U.S. private-sector employment [205] and play a key role in supporting the overall economic recovery as they are responsible for two-thirds of net new jobs.[206] Since the beginning of the pandemic, however, 400,000 small businesses have closed, with many more at risk.[207] Sectors with a large share of small business employment have been among those with the most drastic drops in employment.[208] The negative outlook for small businesses has continued: As of November 2021, approximately 66 percent of small businesses reported that the pandemic has had a moderate or large negative effect on their business, and over a third expect that it will take over 6 months for their business to return to their normal level of operations.[209]

This negative outlook is likely the result of many small businesses having faced periods of closure and having seen declining revenues as customers stayed home.[210] In general, small businesses can face greater hurdles in accessing credit,[211] and many small businesses were already financially fragile at the outset of the pandemic.[212]

While businesses everywhere faced significant challenges during the pandemic, minority-owned and very small businesses have faced additional obstacles. Between February and April 2020, the number of actively self-employed Black business owners decreased by 41 percent.[213] During that same time period, Asian and Latino business owners decreased by 26 and 32 percent, respectively, compared to a 17 percent decrease in white business owners.[214] Female business owners also saw significant impacts, with businesses owned by women falling by 25 percent.[215]

Many of the disparities in how minority business owners experienced the pandemic are rooted in systemic issues present even before the pandemic. For example, before the economic downturn, only 12 percent of Black-owned businesses and 19 percent of Hispanic-owned businesses had annual earnings of over $1 million compared to 31 percent of white-owned businesses.[216] Minority-owned businesses were also overrepresented in industries hit hardest by the economic downturn (*e.g.,* services, transportation and warehousing, healthcare and social assistance, administrative and support and waste management, and accommodation and food services).[217] Approximately 22 percent of all minority-owned business fell into the hardest hit industries compared to 13 percent of nonminority-owned businesses.[218]

Although disparities in annual revenue are not a direct indication of a business's ability to weather an economic downturn, they do highlight other disparities that make it more challenging for these businesses to survive the effects of the pandemic. Black-owned startups, for example, face larger challenges in raising capital, including securing business loans.[219]

Summary of the Interim Final Rule and Final Rule Structure

Summary of Interim Final Rule: As discussed above, small businesses faced significant challenges in covering payroll, mortgages or rent, and other operating costs as a result of the public health emergency and measures taken to contain the spread of the virus. Under Sections 602(c)(1)(A) and 603(c)(1)(A), recipients may ''respond to the public health emergency or its negative economic impacts,'' by, among other things, providing ''assistance to . . . small businesses.'' Accordingly, the interim final rule allowed recipients to provide assistance to small businesses to address the negative economic impacts faced by those businesses. A

[205] Board of Governors of the Federal Reserve System, Monetary Policy Report (June 12, 2020), *https://www.federalreserve.gov/monetarypolicy/2020-06-mpr-summary.htm.*

[206] U.S. Small Business Administration, Office of Advocacy, Small Businesses Generate 44 Percent of U.S. Economic Activity (Jan. 30, 2019), *https://advocacy.sba.gov/2019/01/30/small-businesses-generate-44-percent-of-u-s-economic-activity/.*

[207] Joseph R. Biden, Remarks by President Biden on Helping Small Businesses (Feb. 22, 2021), *https://www.whitehouse.gov/briefing-room/speechesremarks/2021/02/22/remarks-by-president-bidenon-helping-small-businesses/.*

[208] Daniel Wilmoth, U.S. Small Business Administration Office of Advocacy, The Effects of the COVID–19 Pandemic on Small Businesses, Issue Brief No. 16 (Mar. 2021), *available at https://cdn.advocacy.sba.gov/wp-content/uploads/2021/03/02112318/COVID-19-Impact-On-Small-Business.pdf.*

[209] U.S. Census Bureau, Small Business Pulse Survey, *https://portal.census.gov/pulse/data/* (last visited December 7, 2021).

[210] Olivia S. Kim et al., Revenue Collapses and the Consumption of Small Business Owners in the Early Stages of the COVID–19 Pandemic (Nov. 2020), *https://www.nber.org/papers/w28151.*

[211] *See, e.g.,* Board of Governors of the Federal Reserve System, Report to Congress on the Availability of Credit to Small Businesses (Sept. 2017), *available at https://www.federalreserve.gov/publications/2017-september-availability-of-credit-to-small-businesses.htm.*

[212] Alexander W. Bartik et al., The Impact of COVID–19 on small business outcomes and expectations, PNAS 117(30): 17656–66 (July 28, 2020), *available at https://www.pnas.org/content/117/30/17656.*

[213] Robert Fairlie, The impact of COVID–19 on small business owners: Evidence from the first 3 months after widespread social-distancing restrictions, Journal of economics & management strategy (August 27, 2020), *https://doi.org/10.1111/jems.12400.*

[214] U.S. Small Business Administration, The Effects of the COVID–19 Pandemic on Small Businesses (March 2021), *https://cdn.advocacy.sba.gov/wp-content/uploads/2021/03/02112318/COVID-19-Impact-On-Small-Business.pdf.*

[215] Robert Fairlie, *supra* note 213.

[216] Federal Reserve Bank of Atlanta. 2019. Small Business Credit Survey 2019 Report on Minority-Owned Firms. December. *fedsmallbusiness.org/survey/2019/report-on-minority-owned-firms.*

[217] Ding, Lei, and Alvaro Sanchez. 2020. What Small Businesses Will Be Impacted by COVID–19? Federal Reserve Bank of Philadelphia. *philadelphiafed.org/covid-19/covid-19-equity-in-recovery/what-small-businesses-will-be-impacted.*

[218] Lucas Misera, An Uphill Battle: COVID–19's Outsized Toll on Minority-Owned Firms, Federal Reserve Bank of Cleveland (October 8, 2020), *https://www.clevelandfed.org/newsroom-and-events/publications/community-development-briefs/db-20201008-misera-report.aspx.*

[219] Robert Fairlie, A. Robb, D. Robinson, Black and White: Access to Capital among Minority-Owned Startups, NBER Working Paper 28154 (November 2020), *https://www.nber.org/papers/w28154.*

''small business'' is defined as a business concern or other organization that:

(1) Has no more than 500 employees or, if applicable, the size standard in number of employees established by the Administrator of the Small Business Administration for the industry in which the business concern or organization operates; and

(2) Is a small business concern as defined in section 3 of the Small Business Act (15 U.S.C. 632).

Specifically, the interim final rule provided that recipients may provide assistance to small businesses to adopt safer operating procedures, weather periods of closure, or mitigate financial hardship resulting from the COVID–19 public health emergency, including:

- Loans or grants to mitigate financial hardship such as declines in revenues or impacts of periods of business closure;
- Loans, grants, or in-kind assistance to implement COVID–19 prevention or mitigation tactics; and
- Technical assistance, counseling, or other services to assist with business planning needs.

The interim final rule further provided that recipients may consider additional criteria to target assistance to businesses in need, including small businesses. Such criteria may include businesses facing financial insecurity, substantial declines in gross receipts (*e.g.,* comparable to measures used to assess eligibility for the Paycheck Protection Program), or other economic harm due to the pandemic, as well as businesses with less capacity to weather financial hardship, such as the smallest businesses, those with less access to credit, or those serving underserved communities. The interim final rule also indicated that recipients should consider local economic conditions and business data when establishing such criteria. Finally, the interim final rule posed a question on whether there are other services or costs that Treasury should consider as eligible uses to respond to the disproportionate impacts of COVID–19 on low-income populations and communities.

Final Rule Structure: Consistent with the interim final rule approach, the final rule provides a non-exhaustive list of enumerated eligible uses for assistance to small businesses that are impacted or disproportionately impacted by the pandemic. Further, within Assistance to Small Business, a recipient may also identify a negative economic impact experienced by small businesses and design and implement a response to that negative economic impact, beyond the uses specifically enumerated in the final rule, according to the standard described in the section Standards: Identifying a Negative Economic Impact. A recipient may also identify small businesses that have been disproportionately impacted by the public health emergency and design and implement a program that responds to the source of that disproportionate impact.

Consistent with other eligible use categories to respond to the public health and economic impacts of the pandemic, recipients may identify and serve small businesses that experienced a negative economic impact or disproportionate impact due to the pandemic, as described in the section Standards for Identifying Other Eligible Populations. For example, to identify impacted small businesses, a recipient may consider whether the small businesses faced challenges in covering payroll, mortgage or rent, or other operating costs as a result of the public health emergency and measures taken to contain the spread of the virus. In order to ease administrative burden, the final rule presumes that small businesses operating in QCTs, small businesses operated by Tribal governments or on Tribal Lands, and small businesses operating in the U.S. territories were disproportionately impacted by the pandemic.

Reorganizations and Cross-References: As detailed above, Treasury has re-categorized some uses of funds in the final rule to provide greater clarity. For discussion of assistance to small businesses and impacted industries to implement COVID–19 mitigation and prevention strategies, see section COVID–19 Mitigation and Prevention in Public Health.

Small Businesses Eligible for Assistance

Public Comment: Treasury received many comments about the general benefits or drawbacks of use of SLFRF funds to provide assistance to small businesses. Some commenters suggested that SLFRF funds should be available to assist all small businesses, rather than only businesses that experienced direct negative economic impacts due to the public health emergency. Other commenters argued that aid to small businesses should be narrowed in the final rule, asserting that SLFRF funds should instead focus on assistance to households or building public sector capacity.

Treasury also received comments requesting clarification of the types of small businesses eligible for assistance. For example, some commenters requested clarification about whether microbusinesses were included in the definition of small business. Comments also suggested that self-employed individuals and Tribal enterprises be classified as small businesses, respectively. Commenters argued that these types of small businesses are more common among low-income and minority businessowners and serve as important institutions in underserved communities.

Finally, some commenters suggested that Treasury permit broader enumerated eligible uses to assist small businesses in disproportionately impacted communities and generally strengthen economic growth in these communities. These commenters recommended that Treasury presume small businesses operating in QCTs are disproportionately impacted and eligible for broader enumerated uses.

Treasury Response: As discussed in the section Designating a Negative Economic Impact, in the final rule, recipients must identify an economic harm caused or exacerbated by the pandemic on a small business or class of small businesses to provide services that respond.

As discussed above, programs or services in this category must respond to a harm experienced by a small business or class of small businesses as a result of the public health emergency. To identify impacted small businesses and necessary response measures, recipients may consider impacts such as lost revenue or increased costs, challenges covering payroll, rent or mortgage, or other operating costs, the capacity of a small business to weather financial hardships, and general financial insecurity resulting from the public health emergency.

Recognizing the difficulties faced by small businesses in certain communities, the final rule presumes that small businesses operating in QCTs, small businesses operated by Tribal governments or on Tribal Lands, and small businesses operating in the U.S. territories were disproportionately impacted by the pandemic. This presumption parallels the final rule's approach to assistance to households, reflecting the more severe pandemic impacts in underserved communities and creating a parallel structure across different categories of eligible uses to make the structure simpler for recipients to understand and navigate.

Treasury notes that recipients may also designate a class of small businesses that experienced a negative economic impact or disproportionate negative economic impact (*e.g.,* microbusinesses, small businesses in certain economic sectors), design an intervention to fit the impact, and

document that the individual entity is a member of the class. Additional information about this framework is included in the section General Provisions: Structure and Standards.

Further, Treasury is maintaining the interim final rule definition of ''small business,'' which used the Small Business Administration's (SBA) definition of fewer than 500 employees, or per the standard for that industry, as defined by SBA. This definition includes businesses with very few employees, self-employed individuals, and Tribally owned businesses.[220] Finally, Treasury notes that recipients may award SLFRF funds to many different types of organizations, including small businesses, to function as a subrecipient in carrying out eligible uses of funds on behalf of a recipient government. In this case, a small business need not have experienced a negative economic impact in order to serve as a subrecipient. See section Distinguishing Subrecipients versus Beneficiaries for more detailed discussion of interactions with subrecipients, in contrast to beneficiaries of assistance.

Enumerated Eligible Uses for Assistance to Small Businesses

Public Comment: Treasury received comments requesting clarification of the types of assistance available to small businesses. For example, one commenter suggested that outdoor dining be an eligible use for SLFRF funds as assistance to small businesses. Other commenters asked for clarification about how SLFRF funds could be used to support new businesses and start-ups.

Several commenters requested clarification of whether and how recipients may provide services to business districts or downtown areas, particularly those that exist in whole or in part within a QCT, and requested reduced documentation of the specific negative economic impact for the businesses operating within those areas. These commenters argued in favor of allowing redevelopment or other support, including capital investments, in business districts that were negatively impacted by COVID–19. Several commenters also argued that funds should be available to support and grow microbusinesses, or businesses with five or fewer employees, which are more likely to be owned by women and people of color.

Treasury Response: In the final rule, Treasury is maintaining and clarifying the enumerated eligible uses of funds for assistance to small businesses that are impacted or disproportionately impacted by the pandemic.

Impacted small businesses. Specifically, Treasury is maintaining enumerated eligible uses from the interim final rule for assistance to impacted small businesses. These include but are not limited to:

- Loans or grants to mitigate financial hardship such as declines in revenues or impacts of periods of business closure, for example by supporting payroll and benefits costs, costs to retain employees, mortgage, rent, or utilities costs, and other operating costs;
- Loans, grants, or in-kind assistance to implement COVID–19 prevention or mitigation tactics (see section Public Health for details on these eligible uses); and
- Technical assistance, counseling, or other services to assist with business planning needs.

Treasury acknowledges a range of potential circumstances in which assisting small businesses could be responsive to the negative economic impacts of COVID–19, including for small businesses startups and microbusinesses and individuals seeking to start small or microbusinesses. For example:

- As noted above, a recipient could assist small business startups or microbusinesses with additional costs associated with COVID–19 mitigation tactics; see section Public Health for details on these eligible uses.
- A recipient could identify and respond to a negative economic impact of COVID–19 on new small business startups or microbusinesses; for example, if small business startups or microbusinesses in a locality faced greater difficulty accessing credit than prior to the pandemic or faced increased costs to starting the business due to the pandemic or if particular small businesses or microbusinesses had lost expected startup capital due to the pandemic.
- The interim final rule also discussed, and the final rule maintains, eligible uses that provide support for individuals who have experienced a negative economic impact from the COVID–19 public health emergency, including uses that provide job training for unemployed individuals. These initiatives also may support small business start-ups, microbusinesses, and individuals seeking to start small or microbusinesses.

Disproportionately impacted small businesses. Additionally, Treasury agrees with commenters that disproportionately impacted small businesses may benefit from additional assistance to address the sources of that disparate impact.

As such, the final rule provides a broader set of enumerated eligible uses for disproportionately impacted small businesses and/or small businesses in disproportionately impacted business districts. Recipients may use SLFRF funds to assist these businesses with certain capital investments, such as rehabilitation of commercial properties, storefront improvements, and façade improvements. Recipients may also provide disproportionately impacted microbusinesses additional support to operate the business, including financial, childcare, and transportation supports.

Recipients could also provide technical assistance, business incubators, and grants for start-ups or expansion costs for disproportionately impacted small businesses. Note that some of these types of assistance are similar to those eligible to respond to small businesses that experienced a negative economic impact (''impacted'' small businesses). However, because the final rule presumes that some small businesses were disproportionately impacted, these enumerated eligible uses can be provided to those businesses without any specific assessment of whether they individually experienced negative economic impacts or disproportionate impacts due to the pandemic.

Cross-References: Recipients providing assistance to small businesses for capital expenditures (*i.e.,* expenditures on property, facilities, or equipment) should also review the section Capital Expenditures in General Provisions: Other, which describes eligibility standards that apply to capital expenditures. Recipients should also note that services to address vacant or abandoned commercial or industrial properties are addressed in section Vacant or Abandoned Properties in Assistance to Households.

Loans to Small Businesses

Public Comment: Treasury received many comments requesting clarification on using SLFRF funds to establish funds that provide loans to small businesses. For example, commenters sought clarification of how eligible use

[220] In regard to counting employees, businesses owned and controlled by a Tribal government are not considered affiliates of the Tribal government and are not considered affiliates of other businesses owned by the Tribal government because of their common ownership by the Tribal government or common management, as described in 13 CFR 121.103(b)(2). This definition is consistent with the Small Business Administration (SBA) HUBZone definition of a ''small business concern'' relating to Tribal governments as well as how Tribal enterprises are defined for the State Small Business Credit Initiative (SSBCI).

requirements and applicable dates for SLFRF funds would apply to third party organizations (like economic development organizations) who receive SLFRF funds in order to establish a loan fund. In addition, commenters requested clarification on what requirements apply to loan programs with available funds remaining after December 31, 2024.

Treasury Response: SLFRF funds may be used to make loans, including to small businesses, provided that the loan is an eligible use, and the cost of the loan is tracked and reported in accordance with Treasury's Compliance and Reporting Guidance. Funds that are unobligated after December 31, 2024 must be returned to Treasury. See section Treatment of Loans for more information about using SLFRF funds for loan programs.

c. Assistance to Nonprofits

Background: Nonprofits have faced significant challenges because of the pandemic, including increased demand for services and changing operational needs.[221] Prior to the pandemic, the median U.S. nonprofit reported that it had six months of cash on hand.[222] This varied by sector, however, with some sectors like disaster relief organizations reporting a median of 17 months cash on hand, and others, like mental health and crisis intervention organizations reporting only three months.[223] Evidence suggests that the pandemic has damaged the financial health of nonprofits, with small nonprofits, which tend to rely more heavily on donations than large nonprofits, reporting relatively larger declines in donations — 42 percent versus 29 percent, respectively.[224] Among nonprofits that collect fees for services, the median revenue amount collected from such fees fell by 30 percent from 2019 to 2020, with arts organization experiencing a 50 percent decline.[225] Nonprofits also experienced significant job losses. While employment in the nonprofit sector has recovered from its low point in 2020, as of November 2021, the sector remained 485,000 jobs below its pre-pandemic level.[226] In addition, some nonprofits may have experienced declines in volunteer staffing during the pandemic.[227]

At the same time, nonprofits provide a host of services for their communities, including helping Americans weather the multitude of challenges presented by the pandemic. The ARPA and the interim final rule recognized this dichotomy—nonprofits as entities that have themselves been negatively impacted by the pandemic and as entities that provide services that respond to the public health and negative economic impacts of the pandemic on households and others —by creating two roles for nonprofits.

First, under Sections 602(c)(1)(A) and 603(c)(1)(A), recipients may ''respond to the public health emergency or its negative economic impacts,'' by, among other activities, providing ''assistance to . . . nonprofits.'' The interim final rule defined assistance to nonprofits to include ''loans, grants, in-kind assistance, technical assistance or other services, that responds to the negative economic impacts of the COVID–19 public health emergency,'' and ''nonprofit'' to mean a tax-exempt organization under Section 501(c)(3) of the U.S. Internal Revenue Code.[228]

Second, as discussed above, ARPA and the interim final rule provided that nonprofit organizations may also receive funds as subrecipients of a recipient government (*i.e.,* a government that received SLFRF funds); subrecipients carry out an eligible use of SLFRF funds on behalf of a recipient government (*e.g.,* a recipient government that would like to provide food assistance to impacted households may grant funds to a nonprofit organization to carry out that eligible use). Recipients generally have wide latitude to award funds to many types of organizations, including nonprofit or for-profit organizations, as subrecipients to carry out eligible uses of funds on their behalf. For further information on distinguishing between beneficiaries and subrecipients, as well as the impacts of the distinction on reporting and other requirements, see section Transfers of Funds and section Distinguishing Subrecipients versus Beneficiaries under the Public Health and Negative Economic Impacts eligible use category.[229]

Reorganization and Cross-References: Under the interim final rule, assistance to disproportionately impacted communities was a separate, stand-alone category. The final rule reorganizes the disproportionate impact analysis within the sections Assistance to Households, Assistance to Small Business, and Assistance to Nonprofits to better articulate how recipients can serve disproportionately impacted beneficiaries in each of those categories.

As detailed above in the Public Health subsection, in response to public comments describing uncertainty on which eligible use category should be used to assess different potential uses of funds, Treasury has re-categorized some uses of funds in the final rule to provide greater clarity. For discussion of assistance to nonprofits to implement COVID–19 mitigation and prevention strategies, see section COVID–19 Mitigation and Prevention in Public Health.

Recipients providing assistance via nonprofits involving capital expenditures (*i.e.,* expenditures on property, facilities, or equipment) should also review the section Capital Expenditures in General Provisions: Other, which describes eligibility standards for these expenditures. Recipients providing assistances in the form of loans should review the section Treatment of Loans.

Public Comment: Eligible Assistance to Impacted and Disproportionately Impacted Nonprofits: A few commenters asked Treasury to be more explicit in the final rule that recipients may use funds to provide relief directly to nonprofit organizations and to explain how nonprofits might qualify themselves for assistance and what expenses SLFRF funds may be used to cover.[230] Commenters requested that Treasury note that the pandemic is

[221] *See, e.g.,* Federal Reserve Bank of San Francisco, Impacts of COVID–19 on Nonprofits in the Western United States (May 2020), *https://www.frbsf.org/community-development/files/impact-of-covid.*

[222] Philanthropy and COVID–19: Measuring one year of giving, Candid and the Center for Disaster Philanthropy. (2021), *https://www.issuelab.org/resources/38039/38039.pdf.*

[223] *Id.*

[224] Elizabeth T. Boris et al., Nonprofit Trends and Impacts 2021, Urban Institute (October 7, 2021), *https://www.urban.org/research/publication/nonprofit-trends-and-impacts-2021/view/full_report.*

[225] *Id.*

[226] Chelsea Newhouse, COVID–19 JOBS UPDATE, NOVEMBER 2021: Nonprofits add just 5,000 jobs in November, Center for Civil Society Studies at Johns Hopkins University (December 10, 2021), *http://ccss.jhu.edu/november-2021-jobs/.*

[227] Elizabeth T. Boris et al. *supra* note 224 at p. 38.

[228] § 35.3 Definitions.

[229] The ARPA also states under ''Transfer Authority'' that a Recipient may transfer funds to a private nonprofit organization such as those defined in paragraph (17) of section 401 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11360(17). *See* 602 & 603(c)(3) of the Social Security Act. *See* section Transfers of Funds for additional information on other types of entities, including other forms of nonprofits, that may receive transfers.

[230] While not stated specifically in the interim final rule, the Department does not require or have a preference as to the payment structure for recipients that transfer funds to subrecipients (*e.g.,* advance payments, reimbursement basis, etc.). Ultimately, recipients must comply with the eligible use requirements and any other applicable laws or requirements and are responsible for the actions of their subrecipients or beneficiaries.

leading to a changing financial landscape for nonprofits.

Treasury Response: Eligible Assistance to Impacted and Disproportionately Impacted Nonprofits: The interim final rule provided for, and the final rule maintains, the ability for recipients to provide direct assistance to nonprofits that experienced public health or negative economic impacts of the pandemic. Specifically, recipients may provide direct assistance to nonprofits if the nonprofit has experienced a public health or negative economic impact as a result of the pandemic. For example, if a nonprofit organization experienced impacts like decreased revenues or increased costs (*e.g.,* through reduced contributions or uncompensated increases in service need), and a recipient provides funds to address that impact, then it is providing direct assistance to the nonprofit as a beneficiary under Subsection (c)(1) of Sections 602 and 603. Direct assistance may take the form of loans, grants, in-kind assistance, technical assistance, or other services that respond to the negative economic impacts of the COVID–19 public health emergency.

A recipient may identify a negative economic impact experienced by a nonprofit, or class of nonprofits, and design and implement a response to that negative economic impact, see section Standards: Designating a Negative Economic Impact. The final rule provides a non-exhaustive list of enumerated eligible uses for assistance to nonprofits that are impacted or disproportionately impacted by the pandemic.

A recipient may also identify a class of nonprofits that have been disproportionately impacted by the public health emergency and design and implement a program that responds to the source of that disproportionate impact. For example, a recipient may determine that nonprofits offering after-school programs within its jurisdiction were disproportionately impacted by the pandemic due to the previous in-person, indoors nature of the work and the nonprofits' reliance on fees received for services (*e.g.,* attendance fees). The recipient might then design an intervention to assist those nonprofits in adapting their programming (*e.g.,* to outdoor or online venues), their revenue structure (*e.g.,* adapting the fee for service structure or developing expertise in digital donation campaigns), or both. Additional information about this framework is included in General Provisions: Structure and Standards. In order to ease administrative burden, the final rule presumes that nonprofits operating in QCTs, operated by Tribal governments or on Tribal Lands, or operating in the U.S. territories were disproportionately impacted by the pandemic.

To summarize, a recipient may determine that certain nonprofits were impacted by the pandemic or were disproportionately impacted by the pandemic and provide responsive services.

Public Comment: Beneficiaries and Subrecipients: As noted elsewhere in this final rule, Treasury received multiple comments expressing uncertainty on how to categorize a particular activity in the eligible use categories. For instance, some commenters requested that recipients be able to use SLFRF funds for certain expenses incurred by nonprofits (*e.g.,* unemployment charges) as a response to a public health or negative economic impact to that nonprofit; others asked if nonprofits providing certain services (*e.g.,* social services) made them eligible for direct assistance. Commenters also requested that Treasury acknowledge that engagement directly with nonprofit organizations in low-income communities and communities of color may allow the recipient to better assess economic harms in these areas.

Treasury Response: Beneficiaries and Subrecipients: Treasury recognizes that many nonprofits play important roles in their communities, and some may have experienced public health or negative economic impacts during the pandemic. As such, under the interim final rule and the final rule, nonprofits may be impacted by the pandemic and receive assistance as a beneficiary, as described above, and/or be a subrecipient providing services on behalf of a recipient.[231]

Specifically, the interim final rule also allowed for, and the final rule maintains, the ability for the recipient to transfer, *e.g.,* via grant or contract, funds to nonprofit entities to carry out an eligible use on behalf of the recipient. Treasury notes that recipients may award SLFRF funds to many different types of organizations to carry out eligible uses of funds and serve beneficiaries on behalf of a recipient government (*e.g.,* assisting in a vaccination campaign, operating a job training program, developing affordable housing). When a recipient provides funds to an organization to carry out eligible uses of funds and serve beneficiaries, the organization becomes a subrecipient. In this case, a nonprofit need not have experienced a negative economic impact in order to serve as a subrecipient.

In the context of SLFRF, nonprofits of all types may be subrecipients. Treasury is not restricting the types of nonprofits that can operate as subrecipients, rather allowing recipients to decide what form best meets the needs of their community. Therefore, a ''nonprofit'' that is acting as subrecipient could include, but is not limited to, a nonprofit as that term is defined in paragraph (17) of section 401 of the McKinney-Vento Homeless Assistance.[232] See section Distinguishing Subrecipients versus Beneficiaries for further information. Additional guidance on determining subrecipient status may be found in the Uniform Guidance.[233]

Recipients may transfer funds to subrecipients in several ways, including advance payments and on a reimbursement basis. Ultimately, recipients must comply with the eligible use requirements and any other applicable laws or requirements and are responsible for the actions of their subrecipients or beneficiaries.

As part of accepting the Award Terms and Conditions for SLFRF, each recipient agreed to maintain a conflict-of-interest policy consistent with 2 CFR 200.318(c) that is applicable to all activities funded with the SLFRF award. Pursuant to this requirement, decisions concerning SLFRF funds must be free of undisclosed personal or organizational conflicts of interest, both in fact and in appearance. Recipients may avoid conflicts of interest in providing assistance to nonprofits or making subrecipient awards by, *inter alia,* making aid available to nonprofits on generally applicable terms or utilizing a competitive grant process, respectively. A recipient may not use control over SLFRF funds for their own private gain. Furthermore, no employee, officer, or agent may participate in the selection, award, or administration of a contract supported by a federal award if he or she has a real or apparent conflict of interest.

Public Comment: Definition of Nonprofit: Treasury also received several requests to expand the definition of nonprofits so that other tax-exempt entities (*e.g.,* 501(c)(7)s, 501(c)(9)s, 501(c)(19)s, nonprofits with ''historical

[231] Note, this response is meant to clarify the difference between nonprofits as beneficiaries and nonprofits as subrecipients. It is not meant to limit the types of relationships that a recipient may enter into with a nonprofit as permitted under the Uniform Guidance.

[232] *See* sections 602(c)(3) and 603(c)(3) of the Social Security Act. *See also* Section 401 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11360(17), which defines a ''private nonprofit organization.''

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OMB Approved No. 1505-0271
Expiration Date: November 30, 2021

U.S. DEPARTMENT OF THE TREASURY
CORONAVIRUS STATE AND LOCAL FISCAL RECOVERY FUNDS

Recipient name and address:	DUNS Number: 079272555
Lewis County - Chehalis, WA 351 NW North St Chehalis, Washington, 98532	Taxpayer Identification Number: 916001351 Assistance Listing Number: 21.019

Sections 602(b) and 603(b) of the Social Security Act (the Act) as added by section 9901 of the American Rescue Plan Act, Pub. L. No. 117-2 (March 11, 2021) authorize the Department of the Treasury (Treasury) to make payments to certain recipients from the Coronavirus State Fiscal Recovery Fund and the Coronavirus Local Fiscal Recovery Fund.

Recipient hereby agrees, as a condition to receiving such payment from Treasury, to the terms attached hereto.

Recipient: DocuSigned by: Arny Davis C4C5A5D70E004AB...

Authorized Representative: Arny Davis

Title: County Treasurer

Date signed: 5/12/2021

U.S. Department of the Treasury:

_____

Authorized Representative:

Title:

Date:

PAPERWORK REDUCTION ACT NOTICE

The information collected will be used for the U.S. Government to process requests for support. The estimated burden associated with this collection of information is 15 minutes per response. Comments concerning the accuracy of this burden estimate and suggestions for reducing this burden should be directed to the Office of Privacy, Transparency and Records, Department of the Treasury, 1500 Pennsylvania Ave., N.W., Washington, D.C. 20220. DO NOT send the form to this address. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid control number assigned by OMB.

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U.S. DEPARTMENT OF THE TREASURY
CORONAVIRUS LOCAL FISCAL RECOVERY FUND
AWARD TERMS AND CONDITIONS

1. Use of Funds.
   a. Recipient understands and agrees that the funds disbursed under this award may only be used in compliance with section 603(c) of the Social Security Act (the Act), Treasury's regulations implementing that section, and guidance issued by Treasury regarding the foregoing.

   b. Recipient will determine prior to engaging in any project using this assistance that it has the institutional, managerial, and financial capability to ensure proper planning, management, and completion of such project.

2. Period of Performance. The period of performance for this award begins on the date hereof and ends on December 31, 2026. As set forth in Treasury's implementing regulations, Recipient may use award funds to cover eligible costs incurred during the period that begins on March 3, 2021, and ends on December 31, 2024.

3. Reporting. Recipient agrees to comply with any reporting obligations established by Treasury as they relate to this award.

4. Maintenance of and Access to Records
   a. Recipient shall maintain records and financial documents sufficient to evidence compliance with section 603(c) of the Act, Treasury's regulations implementing that section, and guidance issued by Treasury regarding the foregoing.

   b. The Treasury Office of Inspector General and the Government Accountability Office, or their authorized representatives, shall have the right of access to records (electronic and otherwise) of Recipient in order to conduct audits or other investigations.

   c. Records shall be maintained by Recipient for a period of five (5) years after all funds have been expended or returned to Treasury, whichever is later.

5. Pre-award Costs. Pre-award costs, as defined in 2 C.F.R. § 200.458, may not be paid with funding from this award.

6. Administrative Costs. Recipient may use funds provided under this award to cover both direct and indirect costs.

7. Cost Sharing. Cost sharing or matching funds are not required to be provided by Recipient.

8. Conflicts of Interest. Recipient understands and agrees it must maintain a conflict of interest policy consistent with 2 C.F.R. § 200.318(c) and that such conflict of interest policy is applicable to each activity funded under this award. Recipient and subrecipients must disclose in writing to Treasury or the pass-through entity, as appropriate, any potential conflict of interest affecting the awarded funds in accordance with 2 C.F.R. § 200.112.

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9. Compliance with Applicable Law and Regulations.

a. Recipient agrees to comply with the requirements of section 603 of the Act, regulations adopted by Treasury pursuant to section 603(f) of the Act, and guidance issued by Treasury regarding the foregoing. Recipient also agrees to comply with all other applicable federal statutes, regulations, and executive orders, and Recipient shall provide for such compliance by other parties in any agreements it enters into with other parties relating to this award.

b. Federal regulations applicable to this award include, without limitation, the following:

i. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200, other than such provisions as Treasury may determine are inapplicable to this Award and subject to such exceptions as may be otherwise provided by Treasury. Subpart F – Audit Requirements of the Uniform Guidance, implementing the Single Audit Act, shall apply to this award.

ii. Universal Identifier and System for Award Management (SAM), 2 C.F.R. Part 25, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 25 is hereby incorporated by reference.

iii. Reporting Subaward and Executive Compensation Information, 2 C.F.R. Part 170, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 170 is hereby incorporated by reference.

iv. OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement), 2 C.F.R. Part 180, including the requirement to include a term or condition in all lower tier covered transactions (contracts and subcontracts described in 2 C.F.R. Part 180, subpart B) that the award is subject to 2 C.F.R. Part 180 and Treasury's implementing regulation at 31 C.F.R. Part 19.

v. Recipient Integrity and Performance Matters, pursuant to which the award term set forth in 2 C.F.R. Part 200, Appendix XII to Part 200 is hereby incorporated by reference.

vi. Governmentwide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20.

vii. New Restrictions on Lobbying, 31 C.F.R. Part 21.

viii. Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§ 4601-4655) and implementing regulations.

ix. Generally applicable federal environmental laws and regulations.

c. Statutes and regulations prohibiting discrimination applicable to this award include, without limitation, the following:

i. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 22, which prohibit discrimination on the basis of race, color, or national origin under programs or activities receiving federal financial assistance;

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ii. The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.), which prohibits discrimination in housing on the basis of race, color, religion, national origin, sex, familial status, or disability;

iii. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability under any program or activity receiving federal financial assistance;

iv. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), and Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibit discrimination on the basis of age in programs or activities receiving federal financial assistance; and

v. Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto.

10. Remedial Actions. In the event of Recipient's noncompliance with section 603 of the Act, other applicable laws, Treasury's implementing regulations, guidance, or any reporting or other program requirements, Treasury may impose additional conditions on the receipt of a subsequent tranche of future award funds, if any, or take other available remedies as set forth in 2 C.F.R. § 200.339. In the case of a violation of section 603(c) of the Act regarding the use of funds, previous payments shall be subject to recoupment as provided in section 603(e) of the Act.

11. Hatch Act. Recipient agrees to comply, as applicable, with requirements of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328), which limit certain political activities of State or local government employees whose principal employment is in connection with an activity financed in whole or in part by this federal assistance.

12. False Statements. Recipient understands that making false statements or claims in connection with this award is a violation of federal law and may result in criminal, civil, or administrative sanctions, including fines, imprisonment, civil damages and penalties, debarment from participating in federal awards or contracts, and/or any other remedy available by law.

13. Publications. Any publications produced with funds from this award must display the following language: "This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN] awarded to [name of Recipient] by the U.S. Department of the Treasury."

14. Debts Owed the Federal Government.
    a. Any funds paid to Recipient (1) in excess of the amount to which Recipient is finally determined to be authorized to retain under the terms of this award; (2) that are determined by the Treasury Office of Inspector General to have been misused; or (3) that are determined by Treasury to be subject to a repayment obligation pursuant to section 603(e) of the Act and have not been repaid by Recipient shall constitute a debt to the federal government.

    b. Any debts determined to be owed the federal government must be paid promptly by

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Recipient. A debt is delinquent if it has not been paid by the date specified in Treasury's initial written demand for payment, unless other satisfactory arrangements have been made or if the Recipient knowingly or improperly retains funds that are a debt as defined in paragraph 14(a). Treasury will take any actions available to it to collect such a debt.

15. Disclaimer.
    a. The United States expressly disclaims any and all responsibility or liability to Recipient or third persons for the actions of Recipient or third persons resulting in death, bodily injury, property damages, or any other losses resulting in any way from the performance of this award or any other losses resulting in any way from the performance of this award or any contract, or subcontract under this award.

    b. The acceptance of this award by Recipient does not in any way establish an agency relationship between the United States and Recipient.

16. Protections for Whistleblowers.
    a. In accordance with 41 U.S.C. § 4712, Recipient may not discharge, demote, or otherwise discriminate against an employee in reprisal for disclosing to any of the list of persons or entities provided below, information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant.

    b. The list of persons and entities referenced in the paragraph above includes the following:
        i. A member of Congress or a representative of a committee of Congress;
        ii. An Inspector General;
        iii. The Government Accountability Office;
        iv. A Treasury employee responsible for contract or grant oversight or management;
        v. An authorized official of the Department of Justice or other law enforcement agency;
        vi. A court or grand jury; or
        vii. A management official or other employee of Recipient, contractor, or subcontractor who has the responsibility to investigate, discover, or address misconduct.

    c. Recipient shall inform its employees in writing of the rights and remedies provided under this section, in the predominant native language of the workforce.

17. Increasing Seat Belt Use in the United States. Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Recipient should encourage its contractors to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented or personally owned vehicles.

18. Reducing Text Messaging While Driving. Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Recipient should encourage its employees, subrecipients, and contractors to adopt and enforce policies that ban text messaging while driving, and Recipient should establish workplace safety policies to decrease accidents caused by distracted drivers.

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OMB Approved No. 1505-0271
Expiration Date: November 30, 2021

ASSURANCES OF COMPLIANCE WITH CIVIL RIGHTS REQUIREMENTS

ASSURANCES OF COMPLIANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

As a condition of receipt of federal financial assistance from the Department of the Treasury, the recipient named below (hereinafter referred to as the "Recipient") provides the assurances stated herein. The federal financial assistance may include federal grants, loans and contracts to provide assistance to the Recipient's beneficiaries, the use or rent of Federal land or property at below market value, Federal training, a loan of Federal personnel, subsidies, and other arrangements with the intention of providing assistance. Federal financial assistance does not encompass contracts of guarantee or insurance, regulated programs, licenses, procurement contracts by the Federal government at market value, or programs that provide direct benefits.

The assurances apply to all federal financial assistance from or funds made available through the Department of the Treasury, including any assistance that the Recipient may request in the future.

The Civil Rights Restoration Act of 1987 provides that the provisions of the assurances apply to all of the operations of the Recipient's program(s) and activity(ies), so long as any portion of the Recipient's program(s) or activity(ies) is federally assisted in the manner prescribed above.

1. Recipient ensures its current and future compliance with Title VI of the Civil Rights Act of 1964, as amended, which prohibits exclusion from participation, denial of the benefits of, or subjection to discrimination under programs and activities receiving federal financial assistance, of any person in the United States on the ground of race, color, or national origin (42 U.S.C. § 2000d *et seq.*), as implemented by the Department of the Treasury Title VI regulations at 31 CFR Part 22 and other pertinent executive orders such as Executive Order 13166, directives, circulars, policies, memoranda, and/or guidance documents.
2. Recipient acknowledges that Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency," seeks to improve access to federally assisted programs and activities for individuals who, because of national origin, have Limited English proficiency (LEP). Recipient understands that denying a person access to its programs, services, and activities because of LEP is a form of national origin discrimination prohibited under Title VI of the Civil Rights Act of 1964 and the Department of the Treasury's implementing regulations. Accordingly, Recipient shall initiate reasonable steps, or comply with the Department of the Treasury's directives, to ensure that LEP persons have meaningful access to its programs, services, and activities. Recipient understands and agrees that meaningful access may entail providing language assistance services, including oral interpretation and written translation where necessary, to ensure effective communication in the Recipient's programs, services, and activities.
3. Recipient agrees to consider the need for language services for LEP persons when Recipient develops applicable budgets and conducts programs, services, and activities. As a resource, the Department of the Treasury has published its LEP guidance at 70 FR 6067. For more information on taking reasonable steps to provide meaningful access for LEP persons, please visit http://www.lep.gov.

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4. Recipient acknowledges and agrees that compliance with the assurances constitutes a condition of continued receipt of federal financial assistance and is binding upon Recipient and Recipient's successors, transferees, and assignees for the period in which such assistance is provided.

5. Recipient acknowledges and agrees that it must require any sub-grantees, contractors, subcontractors, successors, transferees, and assignees to comply with assurances 1-4 above, and agrees to incorporate the following language in every contract or agreement subject to Title VI and its regulations between the Recipient and the Recipient's sub-grantees, contractors, subcontractors, successors, transferees, and assignees:

   The sub-grantee, contractor, subcontractor, successor, transferee, and assignee shall comply with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of, or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with "Limited English Proficiency" in any program or activity receiving federal financial assistance, 42 U.S.C. § 2000d et seq., as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement.

6. Recipient understands and agrees that if any real property or structure is provided or improved with the aid of federal financial assistance by the Department of the Treasury, this assurance obligates the Recipient, or in the case of a subsequent transfer, the transferee, for the period during which the real property or structure is used for a purpose for which the federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is provided, this assurance obligates the Recipient for the period during which it retains ownership or possession of the property.

7. Recipient shall cooperate in any enforcement or compliance review activities by the Department of the Treasury of the aforementioned obligations. Enforcement may include investigation, arbitration, mediation, litigation, and monitoring of any settlement agreements that may result from these actions. The Recipient shall comply with information requests, on-site compliance reviews and reporting requirements.

8. Recipient shall maintain a complaint log and inform the Department of the Treasury of any complaints of discrimination on the grounds of race, color, or national origin, and limited English proficiency covered by Title VI of the Civil Rights Act of 1964 and implementing regulations and provide, upon request, a list of all such reviews or proceedings based on the complaint, pending or completed, including outcome. Recipient also must inform the Department of the Treasury if Recipient has received no complaints under Title VI.

9. Recipient must provide documentation of an administrative agency's or court's findings of non-compliance of Title VI and efforts to address the non-compliance, including any voluntary compliance or other

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agreements between the Recipient and the administrative agency that made the finding. If the Recipient settles a case or matter alleging such discrimination, the Recipient must provide documentation of the settlement. If Recipient has not been the subject of any court or administrative agency finding of discrimination, please so state.

10. If the Recipient makes sub-awards to other agencies or other entities, the Recipient is responsible for ensuring that sub-recipients also comply with Title VI and other applicable authorities covered in this document State agencies that make sub-awards must have in place standard grant assurances and review procedures to demonstrate that that they are effectively monitoring the civil rights compliance of sub-recipients.

The United States of America has the right to seek judicial enforcement of the terms of this assurances document and nothing in this document alters or limits the federal enforcement measures that the United States may take in order to address violations of this document or applicable federal law.

Under penalty of perjury, the undersigned official(s) certifies that official(s) has read and understood the Recipient's obligations as herein described, that any information submitted in conjunction with this assurances document is accurate and complete, and that the Recipient is in compliance with the aforementioned nondiscrimination requirements.

Lewis County - Chehalis, WA	5/12/2021
Recipient	Date

DocuSigned by:
Amy Davis
C4C5A5D70E004AB...

Signature of Authorized Official

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