



MARQUETTE AREA PUBLIC SCHOOLS (MAPS)  
1201 W. Fair Ave.  
Marquette, MI 59855

**REQUEST FOR PROPOSAL (RFP)**  
**(This is not a purchase order.)**

Date: November 3, 2023

Attention: Qualified Wireless 2-way Radio Vendors

**PLEASE SUBMIT PROPOSALS FOR:**  
**RADIO EQUIPMENT UPGRADE PROJECT, AS REQUESTED IN THE ATTACHED SPECIFICATIONS**

**PROPOSALS ARE DUE: November 17, 2023**  
**1:00 PM EST**

**COMPLETE AND RETURN THE ATTACHED RFP FORM TO:**  
**MARQUETTE AREA PUBLIC SCHOOLS**  
**1201 W. Fair Ave.**  
**Marquette, MI 49855**

**ENVELOPES MUST BE MARKED:**  
**MARQUETTE AREA PUBLIC SCHOOLS RADIO EQUIPMENT UPGRADE PROJECT QUOTATION**

**GENERAL INSTRUCTIONS AND NOTES:**

1. This request is only a solicitation for quotation and implies no commitment or obligation to any vendor or manufacturer on the part of MAPS.
2. Specifications, terms, and conditions are attached to the proposal form. To be considered, proposals must meet or exceed ALL of the project's specifications.
3. Proposals received after the due date and time will not be accepted.
4. MAPS reserves the right to accept or reject any or all proposals and make award decisions based on the district's best interest.
5. Awards shall be made either by item or by lot.
6. Vendors are advised that some quantities are estimates. Vendors must note if pricing is contingent on a minimum quantity, as the district reserves the right to adjust quantities when issuing its purchase order(s).
7. Vendors must include a copy of appropriate insurance, installation, and safety certificates as necessary as related to tower work.
8. Unless otherwise specified, all products and services must be warranted for at least one (1) year.

PROJECT DESCRIPTION

**Background:**

MAPS operates a legacy analog VHF 2-way radio service comprising 22 Motorola CM200/PM1500 bus-mounted mobile radios and approximately 200 Kenwood & Motorola multi-channel, handheld radios. Bus communications rely on mobile radios programmed using one of the simplex frequencies authorized under FCC license WQDW908. The district's multi-channel handheld radios are used for intra-building communications and radio-to-radio communications with busses. Many of the handheld radios operate using itinerant frequencies not licensed to the district. The district also operates a VHF repeater located on the high school rooftop to facilitate communications in and around that building. The high school repeater is believed to operate on a frequency pair licensed to the district under FCC authorization WQDW874. MAPS intends to discuss, separately, with the successful vendor, what strategy best suits the ongoing use of this repeater and the unique radio communication requirements found at the high school campus.

With its current radio complement, MAPS suffers from poor radio communications because of two issues: lack of repeater-based radio service required for serving wide-area bus routes and inconsistencies in radio programming among handheld radios. As presently configured, MAPS buses rely on point-to-point simplex radio transmissions to communicate with individual schools and the bus garage, frequently losing communications due to extended distances.

Likewise, intra-building radio communications are often hampered by inconsistent radio channel assignments. These inconsistencies make it difficult for radios to easily move from building to building, causing confusion for those who use them.

**Project Goals:**

This RFP asks that vendors design, provide, install and offer service for a new, VHF radio service that:

1. Improves bus communications throughout all of the district's regular routes.
2. Enables clear, intelligible radio communications between existing and new mobile and handheld radios.
3. Makes use of the district's existing complement of approximately 200 analog, handheld radios.
4. Upgrades bus and district-wide administrative radio communications to digital, leveraging multi-channel capabilities found in digital repeater equipment.
5. Provides the option to add gateway communications between the district's new, digital VHF radio system(s) and administrative Android and Apple smartphones.
6. Provides a new channel assignment scheme that a) uses only licensed VHF frequencies and b) delivers to the District, a comprehensive map of individual channels assigned to each building for internal communications.
7. Assures that all handheld radios are programmed with identical frequency assignments to deliver channel assignment consistency throughout the District.

**General Conditions:**

Vendor pricing for this RFQ shall include all labor, materials, equipment, services, and insurance necessary for proper operation. Before beginning work, the successful contractor shall meet with a MAPS representative(s) to review the final design, operational requirements, and project timeline. Work

shall begin as soon as the contract is awarded and, once started, shall proceed to completion without delay, except or for reasons outside of the contractor's control (i.e. weather, supply chain, etc.)

**Scope of Work:**

Repeater System

MAPS seeks to install a digital, repeater-based radio service on the Northern Michigan University (NMU) tower atop Marquette’s Mt. Mesnard at coordinates -87.399732°W x 46.513374°N. MAPS's existing FCC license, WQDW874, may be used for this repeater but must be re-coordinated by the successful vendor as part of this project<sup>1</sup>. Vendors should note that this license is currently used to support a VHF repeater at the Marquette Senior High School (MSHS) property<sup>2</sup>. The repeater is necessary to enable communications between portable radios that must receive and transmit through several building floors, including the MSHS basement. Prior to issuing a purchase order, MAPS and the successful vendor shall meet to determine the best approach in maintaining the MSHS repeater and meeting the licensing requirements of a new, digital, repeater at the Mt. Mesnard location. A single antenna shall be placed at or near the top of the 100’ tower and use an existing LMR400 antenna feed line to service the repeater. Use of a shelter, 19” rack space, and A/C power shall be provided by NMU in one of two buildings operated by NMU for the repeater and duplexer. The successful vendor shall be responsible for determining the suitability of the existing antenna feed line and shall notify MAPS if there are concerns about its reuse. If the antenna feed line must be replaced, the successful vendor shall quote and supply a replacement coax or hardline as required to complete the installation.

QTY	ITEM	DESCRIPTION	PRICE
1	each	Motorola SLR8000VHF 100W or equivalent digital repeater. Must be rated for continuous-duty operation, rack-mounted with a minimum 2-year warranty.	
1	each	Commscope DB224-A or equivalent omni dipole antenna for 150-160MHz.	
1	each	Rack or floor-mounted duplexer, tuned to MAPS-licensed frequencies	
1	lot	Antenna mount or stand-off as required. (Must be vendor verified with NMU before installation)	
1	lot	Repeater installation and programming (Installation to be approved by NMU)	
1	lot	WQDW874 re-coordination service fee	
130’	lot	Optional Andrew AVA50 7/8” heliax antenna cable, ground kit, connectors, hoisting grips, and tower fastener material. (Length to be confirmed by the vendor prior to order)	
1	lot	Optional antenna feedline installation (Installation to be approved by NMU)	

<sup>1</sup> WQDW874 is licensed to MAPS as a frequency pair 152.300MHz/157.560MHz for 110W/25W, respectively, with center coordinates at the intersection of Center and Garfield in Marquette. Mobiles are authorized for operation within a 16-mile radius. Moving this license to Mt. Mesnard will require re-coordination with the FCC to update the repeater location, power, emission type, and transmit distance requirements.

<sup>2</sup> The MSHS repeater is a Vertex Standard VSR7000 feeding a ground plane base-station antenna, sled-mounted on the MSHS pod rooftop. The repeater uses the WQDW874 license.

1	each	Optional VoIP mobile phone interconnect for Android or iPhone. Motorola Wave PTX or equivalent. (Hardware gateway only)	
1	each	Optional VoIP mobile phone interconnect for Android or iPhone. Motorola Wave PTX or equivalent. Hosted service monthly fee	
1	lot	Optional VoIP mobile phone interconnect for Android or iPhone. Gateway installation and set-up.	

Mobile Radios

MAPS seeks pricing to replace its existing Motorola CM200/PM1500 mobile radios used for bus communications. This request covers all equipment needed for stand-alone mobile operation. However, the successful vendor shall meet with MAPS transportation staff to perform an inspection of the District's bus fleet to determine whether or not antenna and antenna mounts can be reused. Vendors are asked to quote optional installation should MAPS require that service.

QTY	ITEM	DESCRIPTION	PRICE
22	each	Motorola CM200d or equivalent mobile, digital radio, microphone, display and mount	
22	each	Radio programming as required for MAPS frequencies	
22	each	Optional NMO coax cable	
22	each	Optional mini UHF connector	
22	each	Optional Laird mobile NMO mount B132S load coil Omni directional antenna or equivalent	
22	each	Optional radio installation in MAPS bus fleet	

Portable Radios

MAPS intends to purchase digital portable radios for use with the digital repeater system. These radios must be analog/digital compatible and programmed with analog simplex frequencies and the district's 2-channel digital repeater frequency pair.

QTY	ITEM	DESCRIPTION	PRICE
30	each	Motorola Mototrbo VHF CP100d w/ display, limited keypad & standard desktop charger or equivalent.	
30	each	Radio programming as required for MAPS digital and analog frequencies	
1	each	Optional multi-unit charger, 6-bay	

Existing Handheld Radio Programming

MAPS has an installed base of approximately 200 analog, Motorola, and Kenwood handheld VHF radios assigned to various district school buildings. The frequencies mapped in these units are licensed and

unlicensed and require updating. The successful vendor shall review building locations and develop a frequency and PL tone assignment plan to assure interference-free operation using MAPS license WQDW908. Once MAPS reviews and approves the plan, the vendor shall re-program all radios and return them to the district for distribution among the buildings. MAPS intends to use only licensed VHF spectrum on their portable, analog radios.

QTY	ITEM	DESCRIPTION	PRICE
1	lot	Perform frequency review and create a master use plan for programming current and future portable radios	
200	each	Radio programming as required for MAPS digital and analog frequencies	

Construction Timeline

MAPS wishes to complete work on its new repeater-based digital radio service as quickly as possible and recognizes that licensing requirements, equipment order delivery, weather, and school schedules must be considered in developing a project timeline. Vendors must provide, as part of their bid, the following information to assist MAPS in determining the optimal schedule for updating existing radios, replacement of bus radios, and placing the new digital repeater online:

1. Vendor time requirements to inventory existing analog portable radios, their channel assignments and the development of a new channel use plan.
2. Vendor time requirements to reprogram existing MAPS analog portable radios to the new channel assignment plan.
3. Radio equipment availability after receipt of order.
4. Vendor time requirements for FCC frequency coordination and relicensing
5. Vendor time requirements for Mt. Mesnard repeater installation, programming and tower work
6. Vendor time requirements for bus radio installation. MAPS expects that radio swaps to its bus fleet may need to take place over the summer break (June 11, 2023 – September 1, 2023)

MAPS anticipates that work on this project will need to be phased to accommodate the district’s need for use of its existing radios while school is in session during the 2023 / 2024 school year. While it’s likely that some portions of the project can be installed during school breaks in December 2023 and March 2024, the District may require that some elements wait until the summer 2024 recess. Vendors should note in their bid any concerns about meeting this equipment supply and installation schedule.

Technical questions regarding this RFQ may be referred to:

ERIC SMITH  
[esmith@nmu.edu](mailto:esmith@nmu.edu)  
 (906) 227-1314