

Aitkin County Board of Commissioners
Request for County Board Action/Agenda Item Cover Sheet



To: Chairperson, Aitkin County Board of Commissioners Date: 5-8-13

Via: Patrick Wussow, County Administrator

From: Sheriff Scott Turner

Title of Item:

Aitkin County Radio System Final Project Report

Requested Meeting Date: 5-14-13 Estimated Presentation Time: _____

Presenter: Sheriff Scott Turner

Type of Action Requested (check all that apply)

- For info only, no action requested
- For discussion with possible action
- Let/Award Bid or Quote (attach copy of basic bid/quote specs or summary of complex specs, each bid/quote received & bid/quote comparison)
- Approve/adopt proposal by motion
- Authorize filling vacant staff position
- Request to schedule public hearing or sale
- Request by member of the public to be heard
- Item should be addressed in closed session under MN Statute _____
- Approve under Consent Agenda
- Adopt Ordinance Revision
- Approve/adopt proposal by resolution (attach draft resolution)
- Other (please list) _____

Fiscal Impact (check all that apply)

- Is this item in the current approved budget? Yes _____ No _____ (attach explanation)
- What type of expenditure is this? Operating Capital Other (attach explanation)
- Revenue line account # that funds this item is: _____
- Expenditure line account # for this item is: _____

Staffing Impact (Any yes answer requires a review by Human Resources Manager before going to the board)

- Duties of a department employee(s) may be materially affected. Yes No
- Applicable job description(s) may require revision. Yes No
- Item may impact a bargaining unit agreement or county work policy. Yes No
- Item may change the department's authorized staffing level. Yes No



Supporting Attachment(s)

- Memorandum Summary of Item
- Copy of applicable county policy and/or ordinance (excerpts acceptable)
- Copy of applicable state/federal statute/regulation (excerpts acceptable)
- Copy of applicable contract and/or agreement
- Original bid spec or quote request (excluding complex construction projects)
- Bids/quotes received (excluding complex construction projects, provide comparison worksheet)
- Bid/quote comparison worksheet
- Draft County Board resolution
- Plat approval check-list and supporting documents
- Copy of previous minutes related to this issue
- Other supporting document(s) (please list) _____

Provide (1) copy of supporting documentation NO LATER THAN Wednesday at Noon to make the Board's agenda for the following Tuesday. (If your packet contains colored copies, please provide (4) paper copies of supporting documentation as we do not have a color printer or copier.) Items WILL NOT be placed on the Board agenda unless complete documentation is provided for the Board packets.



been there.

REY FREEMAN, COMMUNICATIONS MANAGER

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Date: April 30, 2013

Aitkin County Sheriff's Office
217 – 2nd St NW
Aitkin, MN 56431

Attn: Sheriff Scott Turner, Karla White

Subject: Aitkin County Radio System Final Project Report

Dear Scott and Karla:

The installation of your new public safety radio network was completed in February 2013, and the system has been operational since that time. This report is being submitted to you as a general acknowledgment of the completion of the project.

Your new system consists of both 800 MHz and VHF elements, is integrated into the State of Minnesota ARMER radio network, which is accomplished through the microwave radio system equipment, also incorporated into the project. All of the 800 MHz sites and equipment in the local "sub network" are connected to and controlled by the State's zone controller located in Duluth, MN.

All Aitkin County public safety agencies have now migrated from VHF to the new 800 MHz radio system, as well as the County Highway department. Other public works and transportation agencies within the county (such as school bus services) are welcome to join use the system in the future if so desired.

The equipment for this project was purchased through Motorola Inc., and installed by local Motorola service subcontractor Granite Electronics, as well as Motorola technical staff. A significant amount of equipment was also purchased directly through Granite Electronics, including the PSAP and Paging link microwave equipment, as well as VHF antennas, transmission line, duplexers, and other related items.

The only item or issue that can be considered "open" at this time is the lack of in-building portable radio coverage in the City of Aitkin area. Refer to the discussion at the end of this report for more information about this topic.

Project Review

This project consisted of numerous radio system equipment components, including the following key elements:

1. A new 4-position Motorola MCC7500 IP radio dispatch console system was purchased and installed at the Aitkin County dispatch center, to allow full functionality with the State of Minnesota ARMER radio network.

800 MHz RF control stations were added in the PSAP for backup operations in the event of local microwave or console system failure.
2. An 11 GHz microwave radio link from the PSAP to the GRE (Great River Energy) and Glen ARMER tower sites.
3. A VHF paging and interoperability system was implemented, consisting of the following:
 - A 7-site VHF Simulcast tone-and-voice paging system, for the emergency alerting of fire and EMS personnel throughout the county; the existing Jacobson tower was converted to narrowband operation and operates independently of the simulcast system, but on the same VHF channel.
 - New VHF narrowband-capable base stations for MINSEF and other standard interoperability channels
4. Voice Logging: Due to the new technology incorporated into the ARMER trunked radio system, the recording of radio traffic is being accomplished through 800 MHz RF control stations, connected to the county's existing voice logging recorder.
5. Tower sites for the radio system infrastructure: All State of MN ARMER tower sites are equipped with a prefabricated radio equipment shelter, which include HVAC system, emergency propane-fueled emergency generators, and security chain link fencing around the perimeter of the compound area. The Aitkin County VHF paging system radio equipment has been installed at these sites, and will provide years of reliable and secure service.
6. A quantity of approximately 275 new mobile and portable 800 MHz radios were purchased from Motorola. These radios have been programmed to utilize the talk group fleet map that was established by the Aitkin County Radio User's Group, and have been distributed to local agency personnel, and/or installed in agency vehicles.
7. A formal training program was developed for the users of the radio system through Motorola (for the dispatch staff) and On Target Training services for all other radio users. The training program from On Target was a "Train the Trainer" format, where key personnel from each agency or branch of service was trained, and these people then provided training to the remaining personnel in each of the agencies planning to use the system.

It should be noted that it will be necessary to provide some form of recurring training to personnel in the future to meet the State of MN ARMER system requirements. This is typically required every 18 to 24 months.

8. Field personnel using the system have reported excellent coverage throughout most of the Aitkin County area, as well as outside of the county borders. Portable radio coverage inside of buildings within the county has also been reported to be good in most areas. The primary area of concern will be inside buildings in the City of Aitkin area, but this is being reviewed and addressed as noted elsewhere in this report.

FCC Licensing

The project required updates to some existing Aitkin County FCC licenses, as well as new licenses for the operation of the new microwave links, with the following call signs:

- KVJ693 (VHF Interop)
- WNSX209 (VHF County Fire/Paging)
- WQF590 (VHF County Fire/Paging)
- WQQH788 (Microwave)
- WQQH789 (Microwave)
- WQQH791 (Microwave)

Project Budget

The budget established for this project in early 2012 was approximately \$3.1 million, which included all of the required system equipment, the 800 MHz mobile and portable radios needed for the agencies within the county, as well as funding for the addition of an 800 MHz tower site in the City of Aitkin area.

However, after the receipt of numerous grants for the project, along with the elimination of a tower site near Aitkin, it appears that the final “out of pocket” costs to Aitkin County will be approximately \$2 million, which is obviously a significant savings to the county from the earlier budget estimates. Some additional funding may be needed if the county chooses to pursue some equipment for improving coverage in the City of Aitkin area.

Warranty

The final system acceptance document for the Motorola radio system equipment has been signed by Aitkin County, and the 1-year warranty period for all of the main system equipment provided and installed by Motorola has commenced. The on-site labor services during the warranty period will be provided by Granite Electronics, based in St. Cloud, with additional technical support provided by Motorola Inc.

Open Issue(s)

As noted in the introductory comments of this report, the only open item with the project are concerns with portable radio coverage in the City of Aitkin area. In the project plans developed for Aitkin County prior to the start of the project, the potential need for a additional 800 MHz tower site near the City of Aitkin, for improved in-building radio

coverage was identified. This conclusion was based on computer-based radio coverage analysis, along with the knowledge that the State of Minnesota tower sites closest to the city would be approximately 10 miles away. Many of these tower sites were not constructed or on the air at that time in the project schedule.

Nonetheless, the ARMER system has been frequently providing better radio coverage than predicted, and Aitkin County chose to adopt a "wait and see" approach before committing to spending a potentially significant amount of money to the development of a local 800 MHz tower site.

However, once all tower sites were on line, it was confirmed that in-building radio coverage in the City of Aitkin area is insufficient, and some improvements must be made. GeoComm is working with Granite Electronics and Aitkin County to determine potential solutions, and the costs of these options. The general options being considered are:

- The installation of a "full" 800 MHz ARMER tower site; this equipment will need to be installed on either an existing tower structure (such as GRE), the City of Aitkin water tower, or a new tower structure to be built by Aitkin County.
- The installation of an "Outdoor Bi-Directional Amplifier". This device is a form of signal booster, which is typically used to increase the radio coverage inside of dense building structures. However, some agencies have been experimenting with the use of these as local signal boosters in small city areas with good success. The cost of these units is significantly less than the cost of a full ARMER tower site.

GeoComm will continue to work with Aitkin County and Granite Electronics to determine the most effective solution to the coverage issues within the City of Aitkin area.

Conclusion

In conclusion, your new radio system equipment is complete and fully operational, and the equipment has been tested and verified to be fully operational. Coverage testing by Aitkin County agency personnel has concluded that the system provides excellent mobile and portable coverage throughout the county, with the only concern being the City of Aitkin area as noted above.

We appreciate the opportunity to work with you and your staff through the duration of this project, and look forward to assisting you with the operation of this system, as well as future projects being considered.

Sincerely,

A handwritten signature in black ink, appearing to read "Rey Freeman". The signature is written in a cursive, flowing style.

Rey Freeman