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Memo

To:	Honorable Mayor and Members of the City Commission
Via:	Anthony Lyons, City Manager
Via:	Dan Hoffman, Assistant City Manager
From:	Jeff Lane, Fire Chief
Date:	November 6th, 2018
Re:	Radio System Update

This memo and attached discussion guide provides information on the radio system upgrade and results of the recently completed County Study approved by the City-County in joint session last year.

The City of Gainesville's radio system under GRUcom has been completely replaced with the latest and most up-to-date technology. All hardware, software and transmission equipment—such as antenna and cables, has been replaced. The new System is fully compliant with public safety standards for radio communication and interoperability.

We are currently completing the acceptance testing and evaluation of the system's performance. This evaluation will be complete by end of this year, into January. The performance testing on the City's new system will provide additional information on any remaining coverage concerns, and guide enhancement discussions.

The County Study recommended building from the City's new radio system for any enhancement county-wide. The County Commission approved the recommendations and to begin negotiations with the City.

The current interlocal agreement will sunset in 2020.

Radio System Background

In 1999, the City of Gainesville began the design and build-out of a new trunked-radio project to replace older and separate municipal-owned radio systems. Similarly, Alachua County commenced a separate study regarding potential replacement of their radio systems and other options to address the current and future communication needs.

The County decided to join the GRUcom system rather than building an independent radio network; but deferred building out the recommended number of towers for optimal coverage because of the expense to cover the then largely rural and unpopulated areas.

The formation of the GRU Communications system by the City and a 20-year interlocal agreement with Alachua County was to provide public safety radio needs for its member agencies. The City and County agreement provided for a Radio Management Board (RMB) to advise the City and County Commission on the radio system operation. GRUcom retained ownership and maintenance responsibility. The system capacity and coverage has operated as originally built with the exception of the addition of a State grant-funded tower near Waldo.

The entire cost of the 1999 system was financed through GRU bonds and was anticipated to be reimbursed through user fees on a per-radio basis in the initial 15 year term. The repayment schedule included never-realized profit and was amortized based on the expected system-life.

By 2010, GRUcom and the RMB agreed that a system upgrade was needed. GRUcom began the purchase of new software and equipment to meet digital standards (P25). It renegotiated monthly user fees to return this investment to GRUcom over the term that was also extended through 2020.

GRUcom intended the upgrade as a multi-year project, but financial pressures resulted in only a partial completion that provided limited P25 capacity. Concurrently, the GRU equipment and software life-cycles fell short of the forecast and critical system components began to enter non-support status from the vendor well short of the year 2020 estimate.

New Radio System

The RMB continued to explore options and to implore GRUcom to address the vulnerability of the system and concerns due to the impending risks, lag in updates and end-of-life issues, including the loss of vendor support for older components.

The City Manager determined it was most urgent to address the radio system's vulnerability issues first and before a system failure occurred. It was important this need take priority in the short-term before addressing system coverage expansion concerns raised by the County. GRUcom recommended upgrading the existing tower sites to a full digital P25 with enough capacity for all users while maintaining the existing analog system to allow for digital radio purchases by users over the short term.

There was disagreement on the RMB on the best path forward, in the end a two-study approach was taken, and the City of Gainesville hired Federal Engineering consultants to evaluate the condition and immediate needs of the GRUcom radio system. Their recommendations were provided in May 2017, and concurred with the prior GRUcom assessment.

City Management urged the implementation of the recommendations and GRUcom has funded the replacement of the outdated system components and upgraded the system software to the P25 digital platform with capacity for all system users. This effort completes the migration of the system to achieve full compliance with the latest industry standards at a capital expense of approximately $5 million.

By the end of 2018, GRUcom will have completed the acceptance testing of the new radio system with the latest available software, hardware, and improvements on available features. The City's radio system is now fully compliant with the interoperable P25 standard, has ample capacity and, with programmed updates, is fully supportable by the vendor well into the future.

The remaining features for the GRUcom system to consider in the mid-to-long term are more redundancy with a secondary prime site and potential operational features for system users.

County Radio Study

Simultaneous to the City of Gainesville addressing the immediate end-of-life and near-term vulnerability issues of the radio system, an evaluation was needed on the performance of the GRUcom system county-wide and options to increase system redundancy and improve coverage. The Federal Engineering consultants were again chosen to perform a needs assessment and to make system recommendations. In the interest of continued partnership, the City agreed to fund one-half of the estimated cost of $120,000 for the study. Upon receipt and review of the consultant's work, the City processed its payment in the amount of $60, 311.50 on October 18th, 2018.

On October 23, 2018 the consultant made a presentation of the recommendations from the study to the Alachua County Board of County Commissioners; a summary is included as Attachment #1. The County Commission took action to accept the recommended option to use the GRUcom system and to augment it with additional towers and possible other enhancements.

Specifically, the County moved to begin negotiations with GRUcom to implement the recommended actions to present same at an upcoming joint Gainesville-Alachua County meeting and to propose a one-year sales tax referendum for the 2020 elections to help fund system expansion and enhancements.

Current Users

Gainesville Police, University of Florida Police, Gainesville Fire Rescue, GRU, RTS, Public Works and; Sheriff's Office, County Fire-Rescue, Alachua Police, High Springs Police and Fire Rescue.

Next Steps

The City now owns a new $5 Million dollar radio system that can fulfill its public safety communication needs well into the future. The County study has identified potentially +/- $4 Million in upgrades for coverage and redundancy enhancements to meet current and future needs. The discussion now rests on protection of the City's interest and investment in the new radio system, how to best fund the operating and maintenance of the new system going forward, who will join the system after the current agreement expires in 2020 and how to fund the County study enhancements.

ATTACHMENT #1

Federal Engineering Gainesville/Alachua County Public Safety Radio System- Excerpt

Recommendations:

The TRS has provided adequate service to public safety and non-public safety agencies within Alachua County over the last 18 years.

However, continued population growth and increased building densities in the County points to the need for expanded coverage as well as enhanced interoperability with neighboring counties. Infrequent but significant TRS site outages also indicate a need for improvements in system redundancies to enhance reliability.

Based on these factors and others covered in this report, FE recommends that the County and City continue to move forward with the further development and enhancement of the GRUcom P25 TRS.

To achieve this goal, GRUcom and the TRS system users and stakeholders should also work together collaboratively to redefine the governance structure and support mechanisms for the TRS, in accordance with DHS guidelines and best practices. Development of effective governance and sustainable funding mechanisms is critical to the long-term future of public safety and public service communications in both the City and County.

If this is not possible, and should the County opt to deploy a separate system or enter into a partnership with another entity to expand another system within the County, the governance and support structures should still follow the guidelines defined by DHS.

FE provides the following key recommendations for the County to meet most current communications system objectives:

1. Continue deployment of the 13 channel, six-site P25 Phase 1 standards-based TRS to enhance interoperability, coverage, and capabilities.

2. Expand TRS coverage by 2-4 sites, to enhance on street and in building coverage countywide.

   a. Work with local municipalities and tower site developers to reduce new tower site development costs, where possible.

   b. Research existing, available tower sites that may meet coverage requirements in order to reduce costs versus developing a new "greenfield" site.

3. Develop and implement ordinances and building codes requiring owners of new or modified buildings to provide coverage enhancements, e.g. BDA/DAS equipment, where needed to ensure in-building coverage for public safety agencies.

4. Evaluate the cost versus benefits of deploying geo-diverse radio system core and/or prime sites to enhance system reliability.

5. Evaluate ISSI connections to P25 systems in adjacent counties to allow for intersystem roaming, further enhancing coverage and interoperability.

6. Evaluate optional system P25 features such as low speed data, over the air programming (OTAP), and over the air rekeying (OTAR) to enhance system performance and usability.

7. Evaluate costs versus benefits of extending fiber service versus deploying microwave backhaul to new or existing TRS sites, and to enhance reliability of existing sites not on the GRUcom fiber ring.

8. Leverage existing City, County and other stakeholder facilities, including IP- based Wi-Fi networks, to create a network of Wi-Fi access points to augment TRS coverage in key buildings and facilities.
