

SARNIA CITY COUNCIL

January 21, 2019

3:00pm

COUNCIL CHAMBERS, CITY HALL

SARNIA, ONTARIO

**SPECIAL JOINT MEETING OF
SARNIA CITY COUNCIL
AND
THE SARNIA POLICE SERVICES BOARD**

AGENDA

Page

PRESENTATION

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1. Radio Communications Upgrade Project
Fred Palidor, PALIDOR Radio Communications Consultants

Radio Communications Tower – Fire Station 5

Sarnia Police Service Backgrounder on Location of Tower at Fire Station 5, 6360 Telfer Rd

The Sarnia Police Service emergency radio communications system has been extensively redesigned to meet the expanding public safety needs of the Sarnia Police Service and to correct a number of critical radio communications system deficiencies. The new system design includes correction of important emergency radio communications problems in the north and north east parts of the City of Sarnia causing radio communications difficulties for police officers responding to emergencies in the area.

A radio communications tower at Fire Station 5, 6360 Telfer Road is critical to the solution of the police radio communications problems.

Under the **Radiocommunication Act**, the Canadian Federal Government through the Minister of Innovation, Science & Economic Development (ISED) has ultimate authority over the location and construction of radiocommunications towers in Canada:

- Public safety needs:
 - Reliable public safety radio communications is a very high priority for ISED.
 - The need for radio communications towers to provide reliable public safety communications will be given precedence by ISED over neighbours' concerns about appearance/aesthetics or impact on property values.
- The municipal consultation process has been followed as per Act requirements and a letter of concurrence has been issued.
 - Reasonable and relevant neighbour concerns have been reflected in the process. The proposed tower location was altered two times following neighbour feedback.
 - Under the Radio Communication Act, concerns that are deemed "not relevant" include:
 - Potential effects that a proposed antenna system will have on property values.
- Radio frequency exposure concerns are addressed by **Health Canada Safety Code 6**, Canada's Radio Frequency Exposure Guideline, that has been adopted by ISED as a mandatory compliance requirement.
 - The tower at Fire Station 5 will satisfy the guidelines of Safety Code 6.

The Police Radio System has undergone extensive redesign to correct critical communications problems in various parts of the city including the north and northeast areas. Seven proposed radio sites (towers or high rises) are included in the system redesign. Proposed tower locations are integral to the function of the whole system.

- A change in the location of any of the towers or equipment sites will impact the whole system necessitating redesign and resulting in considerable cost.
- In any redesign, Fire Station 5, as a semirural emergency services station, remains an essential site for future city and fire radio equipment for which the current tower has inadequate capacity. Adding new towers at other locations for the Police project could scale back but will not eliminate the need for an additional or replacement tower at Fire Station 5.
- Scaling back the proposed tower capacity at Fire Station 5 will result in the need to construct at least two additional towers. At least one of these will be located in another north end residential area. Each new tower also requires costly radio equipment.

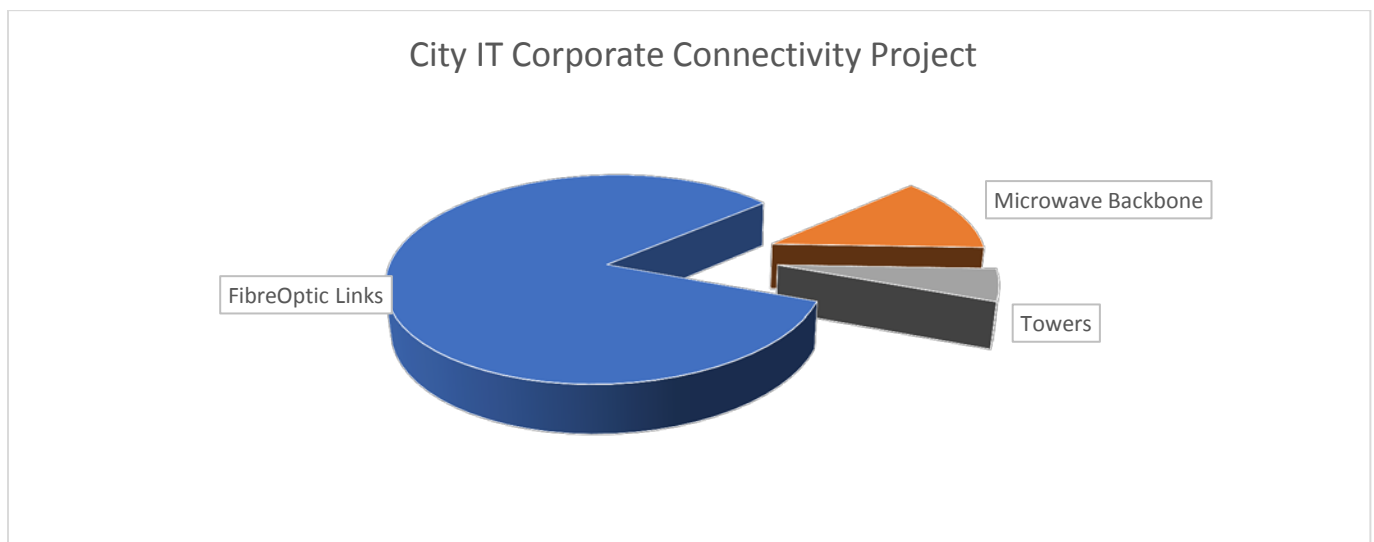
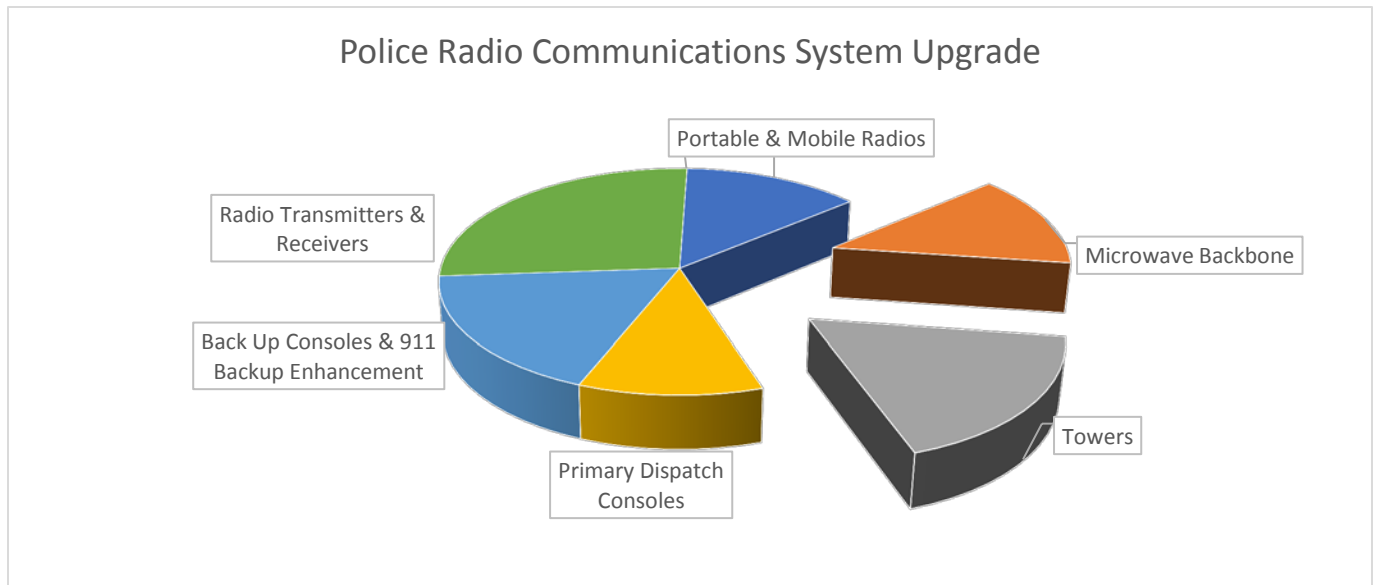
Radio Communications Project Partnering

Sarnia Police Service Backgrounder on Sharing of Radio Communications Resources with the City of Sarnia Corporate Connectivity Project

Introduction

Sarnia Police Service has received informal inquiries on whether sharing options have been explored with the concurrent City of Sarnia IT Department's Corporate Connectivity project. The following information is intended to address this, outlining the parameters where sharing is possible, and to affirm that Sarnia Police Service fully supports sharing technology within these parameters.

The following chart depicts a simple breakdown of the primary components of each project and breaks out the **two components** of each project in which consolidation and interdepartmental cooperation are possible.



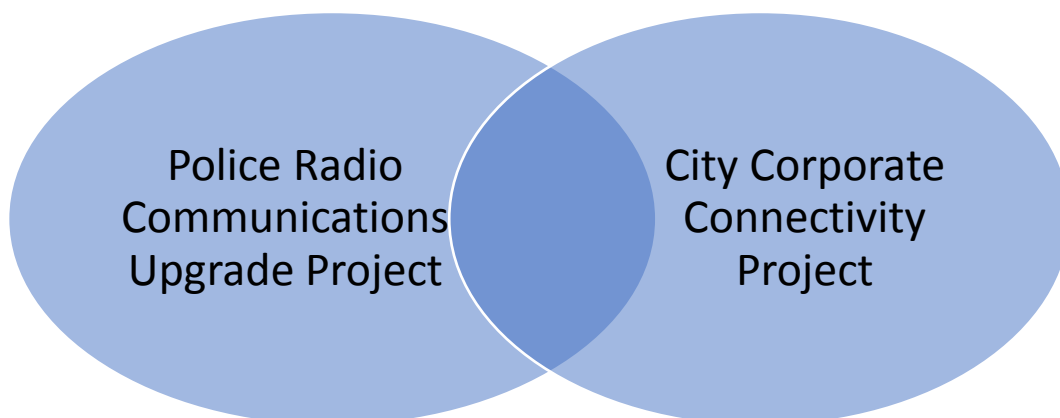
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	SARNIA POLICE SERVICE Radio Communications Upgrade Project	CITY OF SARNIA I.T. Corporate Connectivity Project
Purpose	To replace emergency & public safety communications infrastructure. The current system is now at end of life and does not meet SPS critical radio communications needs.	To create new data links between city facilities for purposes of transferring data.
Overlapping Components	<ul style="list-style-type: none"> ○ Tower Structures ○ Microwave Backbone System 	<ul style="list-style-type: none"> ○ Tower Structures ○ Microwave Backbone System for Wireless Point to Point for small remote sites
Non- Overlapping Components	<ul style="list-style-type: none"> ○ Radio Transmitters and Receivers ○ Primary Dispatch Consoles ○ Backup Dispatch Consoles ○ Mobile (Cruiser) Radios ○ Portable (Officer) Radios 	<ul style="list-style-type: none"> ○ Fibre Optic Linking of City Facilities ○ Public Wi-Fi
Status	<ul style="list-style-type: none"> ○ Tower Bid and Radio System bid awards have been approved in principle by the Police Services Board. ○ Expiry dates of both Radio System and Tower bids have been extended to January 31, 2019. Prices are held to expiry date. 	
Impact of Deferral	<ul style="list-style-type: none"> ○ Officer and public safety compromised; ○ Both Towers and Radio System will be retendered at probable higher costs if not awarded by January 31, 2019; 	

Sarnia Police Service supports consolidation and cooperation in the areas of the projects in which overlap exists:

- Tower structures;
- Microwave Backbone technology;
- Sharing of the 4.9 GHz Public Safety Spectrum of Radio Band already licensed to the City.

The darker area of shading in the following diagram is a simple depiction of the areas of overlap in relation to the entire scope of each individual project. The balance of the information in this “backgrounder” refers to technology and structures contained only in the dark area of overlap.



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Tower Structures

Sharing of tower resources has already been agreed upon with maximum possible cooperation between the two projects up to this point. Some of the new tower capacity created in the Police project will be used by the City's wireless network, specifically new tower capacity proposed at three Fire Stations and at Sarnia Police Headquarters.

Tower requirements are significantly greater for the Police project than for the City wireless network and Sarnia Police Service is leading the Tower project. While both projects will use the towers for the microwave backhaul system, the Police project requires additional capacity at each tower for large radio transmitter and receiver equipment.

The Police Services Board has approved in principle a vendor for the Tower project bid. The original bid expiry date of December 31, 2018 has been extended and prices held to January 31, 2019.

Microwave Backbone System

Sarnia Police Service believes it makes economic and technical sense to share the Microwave Backbone system with full cooperation between the two projects.

Microwave System – Sarnia Police Project

Microwave technology provides the backbone of the new radio system linking all the transmitter/receiver sites to each other and to the primary dispatch center. The wireless technology involves the use of the 4.9 GHz radio frequency band. The microwave system will replace a currently leased and very aged copper line system and has proven to be unreliable "going down" frequently and requiring complicated troubleshooting solutions. A replacement buried copper line system is not feasible due to the high cost for an obsolete technology.

Microwave System – City Wireless Network

The City's wireless network requires microwave technology to link several remote facilities for which fibre optic cable linking is not cost-effective due to distance between sites. The microwave technology allows data to be transferred quickly and efficiently to remote Fire Stations and other remote sites.

Microwave System – Advantages of Sharing

There are unquestionable technical and economic advantages to consolidating the microwave system technology and 4.9 GHz frequency band for both projects:

Technology Sharing – The Police system will be using high reliability, public safety grade microwave equipment that can also be shared with the City wireless network at almost no additional cost to the City or Police.

Frequency Band Sharing – The 4.9 GHz frequency band is allocated in Canada primarily for "safety of life" use, such as police and fire department emergency communications purposes. However, the Canadian regulator also provides opportunity for other municipal services to share the band if safety of life communications is not compromised. Sharing the entire frequency band between the Police and City wireless systems enables the frequency band to be used in a more reliable, controlled and efficient means than segregating the frequency band into two separate sub-bands, one for Police and one for City wireless needs.

Economical Advantage – The primary financial advantage of equipment consolidation is the elimination of the need to purchase two similar systems. The technology that will be used for the Police system will be suitable for sharing with the City wireless system at almost no additional cost to Police or the City.

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Microwave System – Technology and Ownership Options

Sarnia Police proposes that the most feasible and economical option for technology sharing is for the City's wireless system to utilize the microwave backbone technology contained in the current Police Radio system bid in a Police managed and controlled structure versus other possible ownership arrangements.

Recommendation to Use the Specific Microwave Technology in the Police Bid

The microwave backhaul equipment being utilized for the City's wireless system is not suitable or sufficiently robust for the high quality safety of life communications required by Police. On the other hand, the proposed Police microwave technology is suitable for the City wireless system.

Recommendation for Microwave System to be Police Managed and Controlled

Police must maintain control of design, maintenance, and operations of the microwave backhaul system as it is required for real time, urgent, safety of life communications as opposed to important but not urgent data transfer for the City wireless purposes. Simply put, Police has little to no tolerance for system latency of even a few seconds whereas small latency for data transfer is tolerable and likely unnoticeable by the data users.

Police recommends that as part of a complete integrated radio communications system, the microwave backbone equipment be **owned** by the City and **managed and controlled** by Sarnia Police. Alternate ownership or management arrangements for only the microwave backhaul portion of the system do not meet Police needs.

Concerns about a Managed Services Option for Microwave System

The concept of a "3rd party managed services" option for only the microwave backbone component of the project has been explored and proven inadequate for Police requirements. In a managed services arrangement, the assets are owned and controlled as a commercial enterprise by an external entity.

The proposed communications system is an integrated system consisting of not only microwave backbone, but transmitters, receivers, consoles, and radios for Police emergency communications. The recommended vendor in the current radio system bid has indicated that there is a significant concern around being able to reliably share the responsibility of maintenance of the network. It is not recommended for one vendor to have responsibility for maintenance for only the "non-overlapping equipment" (police emergency communications transmitters, receivers, consoles, and mobile and portable radios) while another entity has maintenance responsibility for only the microwave backbone of the system. The microwave backbone system is integral to and a critical part of the Police system. In a shared maintenance scenario, network and interface problems would be difficult to isolate. Having to determine whose responsibility a problem is at these interface points or elsewhere in the network would be unworkable for Sarnia Police. To comply with "safety of life" standards there must be only one entity bearing ultimate authority and responsibility to respond when there are network and interface issues.

Other Considerations

- At the onset of the procurement process for the Sarnia Police radio system, the parameters for the tender included the 3rd party managed services option for the entire system. No 3rd party managed services bids were received for the radio system.
- The 4.9 GHz band is allocated only for critical or emergency safety of life purposes and cannot be managed or controlled by a commercial service or independent enterprise.

Conclusion

In regards to the tower component of the Police Communication Upgrade Project and the City Corporate Connectivity Project, Sarnia Police Service and the City's IT Department have already and will continue to cooperate fully.

Aside from the towers, a significant portion of each project has no commonality with the other and sharing is possible only in the microwave backbone component.

Sarnia Police recommends that, if possible, the City of Sarnia Wireless system share in the use of the microwave technology contained in the current Police Communications System bid. This arrangement would be technologically advantageous, cost-beneficial and ideal for optimal sharing of the 4.9 GHz Public Safety radio band.

It is critical to use public-safety grade microwave technology such as that in the current Police Communications System bid for the Police microwave backbone system.

The Police radio equipment and the microwave backbone system are integrated so completely that it is not feasible for the management, control, and maintenance of the microwave system to reside anywhere but with Sarnia Police Service.