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DATE: June 10, 2010

REPORT TITLE **DIRECT NEGOTIATION FOR VCOM RADIO SYSTEM UPGRADE**

FROM: Dan Labrecque, Commissioner of Public Works

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**RECOMMENDATION**

That the Director of Purchasing be authorized to enter into Direct Negotiations with Motorola Canada to upgrade the VCOM Radio System to a standards based P25 digital system at an estimated cost of \$24,000,000 (excluding applicable taxes), in accordance with Purchasing By-law 63-2008;

And further, that subject to funding being available in approved capital or current budgets, the Director of Purchasing be authorized to enter into Direct Negotiations with Motorola Canada, its partners or successors, for items and services deemed to be proprietary or similar in nature to address operational requirements for the life cycle of the VCOM Radio system.

**REPORT HIGHLIGHTS**

- The Vehicle Communication (VCOM) system infrastructure will require replacement by 2014 at an estimated cost of \$24,000,000.
- User gear replacement is estimated at \$6,800,000 for both Peel Regional Police and Public Works.
- System members include Peel Regional Police, Region of Peel Public Works department, as well as the City of Brampton, Town of Caledon and the City of Mississauga Fire departments.
- The VCOM system is at full capacity, requires coverage improvements, and will not be supported by Motorola past 2014.
- Most Greater Toronto Area (GTA) public safety agencies are moving to Motorola P25 digital radio systems.
- On May 28, 2010, Peel Regional Police Services Board endorsed the upgrade of the VCOM radio system through Resolution #IC106/10.

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## DIRECT NEGOTIATION FOR VCOM RADIO SYSTEM UPGRADE

### DISCUSSION

#### 1. Background

The existing VCOM Radio System was implemented in 1997 and is overseen by the VCOM Group comprised of Peel Regional Police, Public Works, and three Peel area fire departments.

During a system upgrade in 2004, it was identified that the VCOM system infrastructure will require replacement by 2014 at an estimated cost of \$24,000,000. In addition, \$6,800,000 in user gear for Peel Regional Police and Public Works will require replacement to support the upgrade.

VCOM management met with Motorola in August 2006, to review the system life cycle and ascertain the potential milestones progressing towards 2014. In April 2007, Motorola provided a high level, rough order of magnitude (ROM), proposal for a Project 25 compliant ASTRO 25 trunked radio system.

#### 2. Findings

On May 28, 2010, the Peel Regional Police Services Board, has by Resolution IC 106/10, endorsed the upgrade of the VCOM radio system. The report titled "VCOM Radio System Upgrade" is attached as Appendix I and details the specification requirements and risks associated with the recommended upgrade to Project 25.

Project 25 is a Standards Based Radio Platform adopted and endorsed by the North American public safety community. The adoption of standards based technology increases system flexibility, aids longevity and facilitates interoperability.

Many GTA public safety agencies are moving to Motorola P25 digital radio system. These agencies include Durham, Halton, Hamilton, Niagara, Ontario Provincial Police (OPP), Toronto, York and Windsor.

#### 3. Proposed Direction

The proposed direction and action plan endorsed by the VCOM group is to directly negotiate with Motorola for infrastructure upgrade and replacement to P25 compliant system. Engage in a phased-in approach to replace and expand the VCOM infrastructure by 2014.

### FINANCIAL IMPLICATIONS

The ten year VCOM management capital plan identifies a gross expenditure for infrastructure of \$24,000,000. In addition, Peel Regional Police and Public Works capital plans include \$6,800,000 for user gear replacement.

Peel Regional Police will manage the proposed contract with Motorola and allocate the costs as per the VCOM cost sharing formula. At this time, the forecasted cost breakdown is as follows:

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**DIRECT NEGOTIATION FOR VCOM RADIO SYSTEM UPGRADE**

	Capital Costs	
	Infrastructure	User Gear Replacement
<b>MEMBERS</b>		
<b>Peel Regional Police</b>	<b>\$8,100,000</b>	<b>\$5,900,000</b>
<b>Region of Peel Public Works</b>	<b>\$2,930,000</b>	<b>\$900,000</b>
Mississauga Fire	\$1,250,000	
Brampton Fire	\$1,250,000	
Caledon Fire	\$873,000	
<b>USER GROUP</b>		
City of Mississauga	\$4,390,000	
CBSA	\$2,350,000	
GTAA	\$1,800,000	
Hydro One	\$486,000	

VCOM members and users are individually responsible for the replacement cost of their user gear.

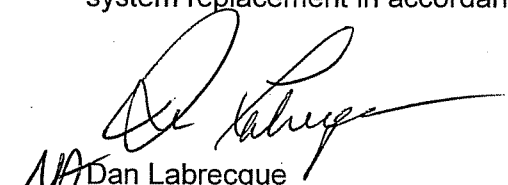
The recommendation to directly negotiate with Motorola for the system upgrade to a P25 system would result in an estimated total cost savings of \$2,300,000 - \$3,800,000. These cost savings come from elimination of the requirement to build systems in parallel (as required if not using Motorola) as well as additional power and maintenance fees.

**CONCLUSION**

The installation of a Motorola P25 radio system will greatly enhance opportunities for interoperability between emergency services across the Greater Toronto Area and beyond, provide resource sharing opportunities and provide the basis for economies of scale and cooperative purchasing. This approach also minimizes operational risk while achieving cost savings to the organization.

This proposed direction will ensure reliable radio communications over an anticipated fifteen year lifespan, and properly position VCOM users to leverage the latest in digital communications technology.

Consequently, the VCOM Group seeks approval from Regional Council to authorize the Regional Director of Purchasing to enter into Direct Negotiations with Motorola for VCOM system replacement in accordance with Purchasing By-Law 63-2008.

  
 Dan Labrecque  
 Commissioner of Public Works

PW-DI-4-

June 10, 2010

**DIRECT NEGOTIATION FOR VCOM RADIO SYSTEM UPGRADE**

**Approved for Submission:**



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D. Szwarc, Chief Administrative Officer

*For further information regarding this report, please contact Brad McDonald at extension 3278 or via email at [brad.mcdonald@peelregion.ca](mailto:brad.mcdonald@peelregion.ca)*

*Authored By: Carol Chaput*

c. Legislative Services  
J. Macintyre, Director, Purchasing  
Manager, Financial Support Unit (FSU)

FORWARDED TO  
CE SERVICES BOARD

PW-DI-5

#106

DIRECT NEGOTIATION FOR  
VCOM RADIO SYSTEM UPGRADE

May 18/10



*[Signature]*  
CHIEF OF POLICE

Regional Municipality Of Peel  
POLICE SERVICES BOARD  
**RECEIVED**  
MAY 18 2010  
Police Services Board  
Registration No.: 05-140  
File Class: F11 For Decision

REPORT

File Class: 1-01-02-03

Cross-Reference File Class: \_\_\_\_\_

DATE: April 28, 2010

SUBJECT: VCOM RADIO SYSTEM UPGRADE

FROM: Paul Tetzlaff, Deputy Chief, Corporate Services

**RECOMMENDATION**

IT IS RECOMMENDED THAT, the Peel Police Services Board authorize the Director of Purchasing to enter into Direct Negotiations with Motorola Canada to upgrade the VCOM Radio System to a standards based P25 digital system at an estimated cost of \$14,000,000 (exclusive of applicable taxes) in accordance with Purchasing By-Law # 365.

**REPORT HIGHLIGHTS**

- The VCOM system infrastructure will require replacement by 2014 at an estimated cost of approximately \$24,000,000
- Peel Regional Police's portion is estimated to be \$14,000,000, which includes \$5,900,000 for user equipment, and \$8,100,000 for infrastructure.
- The VCOM system is at full capacity, requires coverage improvements, and will not be supported by Motorola past 2014
- Current user gear is no longer supported by Motorola
- Most GTA public safety agencies are moving to Motorola P25 digital radio systems
- Proposed direction to upgrade VCOM to a Motorola P25 digital radio system with improvements using a gradual upgrade and migration strategy.

**DISCUSSION**

**1. Background**

First identified in 2004, the VCOM system infrastructure will require replacement by 2014 at an estimated cost of approximately \$24,000,000. The Peel Regional Police portion represents \$14,000,000 (including cost for new user equipment).

**RECEIVED**  
MAY 13 2010

OFFICE OF THE CHIEF

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**DIRECT NEGOTIATION FOR  
VCOM RADIO SYSTEM UPGRADE**

VCOM management met with Motorola in August 2006, to review the system lifecycle and ascertain the potential milestones progressing towards 2014. In April, 2007, Motorola provided a high level, rough order of magnitude (ROM), proposal for a Project 25 compliant ASTRO 25 trunked radio system. This proposal detailed the options currently available from Motorola using existing 800MHz frequencies and sites in the existing simulcast configuration, as well as a 700MHz permutation, for coverage comparison purposes.

**2. Current Status**

***User Agencies***

Over the past 14 years, the VCOM radio system has well served the needs of our member municipalities and agencies. The VCOM system currently supports a total of 4,442 users. Eight of nine agencies have indicated their desire to participate in the new VCOM system and associated cost sharing. The RCMP have decided not to continue with VCOM as they are acquiring their own system for Ontario. This will have no impact on the project cost as VCOM usage by RCMP stands at less than 1% of the total system usage.

***Capacity***

Additional radio channels are required to maintain adequate capacity to accommodate major events. All agencies continue to increase their radio complement yearly, but consistent with growth projections. The current system is operating within tolerances; however the system is currently at maximum capacity for public safety grade of service. Reduced system availability could occur during major events if the system is not expanded.

***Coverage***

Rapid growth within the Region of Peel is stressing the limits of radio coverage. A study performed by Peel Regional Police telecommunications system engineering staff in the third quarter of 2009 concluded that an additional transmitter site will be required in the North Brampton area to address poor signal strength and growth projections. Two "receive only" sites (Streetsville and Clarkson) will be upgraded to full transmit/receive capability to improve coverage in those areas. Additional areas identified with coverage concerns include Mississauga City Centre and the Credit River basin; however re-evaluation is planned for these areas after implementation of a new system.

***Support***

Motorola's published SmartZone 4.1 support sunset date is 2014. Motorola will no longer be in a position to support the 20 year old technology currently in place in Peel. Site, channel and console expansion is no longer offered for SmartZone systems limiting the VCOM system to its current capacity.

***User Gear***

The majority of portable and mobile radios in use on the current system are now obsolete and becoming increasingly problematic to maintain as parts are no longer available for many models. As a result, excessive mean time to repair is being experienced by all agencies. All user equipment needs to be replaced to ensure continued reliable & safe communications.

**DIRECT NEGOTIATION FOR  
VCOM RADIO SYSTEM UPGRADE****3. Environmental Scan of Surrounding Public Safety Agencies:**

Hamilton	Motorola P25 (installed Q1 2010) - Direct Negotiation. (formerly Motorola SmartNet) Cost: \$20,000,000 (Included User equipment)
Windsor	Motorola P25 (installed 2009) - Only compliant bid during RFP process. (formerly Motorola SmartNet) Cost: \$10,000,000
Halton	Motorola P25 (just awarded) – RFP process. (currently M/A-COM EDACS system) Cost: \$18,000,000
Toronto	Motorola P25 - Direct Negotiation with respect to major upgrade for G8 / G20, June 2010. Discussions ongoing with respect to remainder of system. (currently Motorola SmartZone 3.0) G8/G20 Upgrade Cost: \$13,000,000 – No information available regarding remainder of system
Niagara Region	Motorola P25 conventional (non-trunking) radio system. (currently researching expansion and interoperability)
York Region	Motorola SmartNet (In replacement research phase)
Durham Region	Telus iDEN (In replacement research phase, target date 2013– Telus no longer provides iDEN)
OPP/GMCN	Motorola SmartZone 4.1 (In replacement research phase)

**Vendor Community**

Extensive research revealed three vendors are capable of providing public safety grade communications systems. A rough order of magnitude (ROM) cost to replace the VCOM system from each vendor revealed all are priced competitively, however major differences in the implementation of each solution is apparent. Based on the ROM costings provided, the infrastructure replacement cost has been budgeted at approximately \$24,000,000.

EADS, a European company and new to the North American market, is a system integrator and does not manufacture their radio system equipment. Implementation of an EADS system would require complete system duplication including consoles, upgraded power / UPS / HVAC, increased space footprint, and an abrupt cutover. No simulcast system equivalent to VCOM has been implemented in North America by EADS.

HARRIS (formerly Tyco, M/A-COM, Ericsson and General Electric) is a complete equipment manufacturer with simulcast systems in Canada. Implementation of a HARRIS system would

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also require system duplication, upgraded power / UPS / HVAC, increased space footprint, and also involve an abrupt cutover.

MOTOROLA is the leader in public safety communications, and has the majority of systems in North America including the majority of GTA agencies. As our existing vendor, implementation would not require complete duplication. Potential savings are identified within the Financial Implications section of the report. An orderly upgrade process is possible without duplicating the complete system and the inherent risks associated with a disruptive parallel build approach which would be required of the other vendors.

**RISKS**

It is not possible to undertake a gradual upgrade process utilizing EADS or HARRIS due to proprietary interfaces and software. The implementation of a parallel built system will involve multiple cutovers due to the need for extensive testing. This will adversely impact the grade of service, and system performance due to frequency spectrum limitations. Multiple cutovers will stress the current 15 year old system, which could result in technical issues, and risks to system reliability.

Project risks include operational effectiveness during a lengthy system build-out that necessitates the use of dual user radio's, consoles and frequency management. This scenario presents a public safety risk due to multi-tasking and response issues for system operators and users, as well as the probability of channel down-time.

In addition, a parallel build strategy presents risks by complicating and slowing the overall project planning and management by requiring negotiation of additional leased site space, co-ordination of facility upgrades, and increased levels of co-ordination related to user equipment.

Risks can be minimized through reliance on the proven track record of the existing Vendor, internally through previous upgrades to VCOM, and externally from customer feedback and references.

**4. Proposed Direction**

Project 25 is a Standards Based Radio Platform adopted and endorsed by the North American public safety community. The adoption of standards based technology increases system flexibility, aids longevity and facilitates interoperability. Due to the proprietary nature of the interfaces and features exclusive to each of the vendors, the operation of full radio features while roaming in other jurisdictions cannot be achieved utilizing disparate systems.

***Migration Strategy***

Motorola has developed a hardware/software tool called SmartX that is used as a migration solution and allows for the gradual transition from an existing SmartZone system to an ASTRO 25 voice and data network.



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An ASTRO 25 system with SMARTX supports both Project 25 (P25) sites and SmartZone sites simultaneously, allowing a combination of analog and P25 digital radios to operate on the same network for interoperability and flexibility. VCOM members have had the opportunity to observe SmartX in successful operation elsewhere in North America. This migration solution is essentially a series of upgrades to the existing system, resulting in eventual renewal of all components to the new technology.

This solution will enable all VCOM agencies to gradually replace their user gear while migrating towards digital technology, allow upgrade and expansion of our radio sites and consoles with minimal disruption and minimal risk compared to the other options. In addition, the Motorola solution provides flexibility, interoperability, and sharing opportunities with surrounding jurisdictions who have already decided on the Motorola solution.

This replacement strategy will allow agencies to move users to the new technology at their own pace and concurrent with budget cycles, it will also allow agencies to properly manage expectations, and implement change management over an extended period of time.

A four year plan beginning January 2011 will upgrade and/or replace all VCOM infrastructures, add an additional site in the North Brampton area and add four channels system wide.

***Proposed Action Plan endorsed by the VCOM Group:***

- Negotiate a 15 year agreement and include cost breakdown annex(s) to reflect agency commitments and time frames.
- Commit to a Standards Based P25 compliant system.
- Directly Negotiate with Motorola for Infrastructure upgrade and replacement.
- Target date 2011 to install new Zone Core (main controller) concurrent with "Z" release software upgrade and SmartX installation.
- Engage a phased-in approach to replace and expand the VCOM infrastructure over the next four years while simulcasting in analog and P25 Digital, based on agreed upon user timeframes.
- Individual or joint agencies conduct a competitive process for system compliant user gear for deployment as per agreement and concurrent with their budget cycles.
- VCOM members will pursue opportunities for economies of scale and cooperative purchasing, as well as opportunities for sharing and interoperability with surrounding agencies.

**DIRECT NEGOTIATION FOR  
VCOM RADIO SYSTEM UPGRADE****5. FINANCIAL IMPLICATIONS**

**Capital Cost** The ten year capital plan identifies a gross expenditure for infrastructure of \$24,000,000. The Peel Regional Police portion of this project is \$14,000,000. VCOM members and users are individually responsible for the replacement cost of their user gear. The Peel Regional Police cost for user equipment replacement over the upgrade / renewal period leading to the 2014 sunset is approximately \$5,900,000 which has been factored into the capital planning, and the above amount.

The approximate breakdown of costing as it relates to the other VCOM members and users related to radio infrastructure is as follows:

**MEMBERS**

Regional Works	\$2,930,000
Mississauga Fire	\$1,250,000
Brampton Fire	\$1,250,000
Caledon Fire	\$873,000

**USER GROUP**

City of Mississauga	\$4,390,000
CBSA	\$2,350,000
GTA	\$1,800,000
Hydro One	\$486,000

**Current (Ongoing) Cost** Software maintenance costs to support the new system are estimated at an additional \$500,000 per annum. Additional Infrastructure staff will be required to proactively maintain the added sites and features. These costs are shared amongst the VCOM agencies.

Should the migration solution be endorsed there is an immediate cost saving of approximately \$300,000 in software upgrades which would otherwise be required to maintain the current system until the sunset date.

Parallel built systems and utilizing dual consoles which would be required of vendors other than Motorola will add the following logistical costs: Additional space requirements for four of the eight existing radio tower sites, two of which are leaseholds. These sites do not have the capacity to accommodate a parallel system. Estimated cost for development of existing space, or relocation is estimated to be in the range of \$1,000,000 - \$2,000,000.

The Public Safety joint communications centre at Peel Regional Police Headquarters cannot accommodate dual consoles in terms of floor space, electrical power, and HVAC. Expansion of the existing facility to accommodate a parallel built radio system by utilizing temporary services where possible is estimated at approximately \$500,000 - \$1,000,000.

Increased power HVAC and UPS requirements at Prime site and all tower sites are estimated at \$500,000.

**DIRECT NEGOTIATION FOR  
VCOM RADIO SYSTEM UPGRADE**

Therefore the recommendation to directly negotiate with Motorola for the system upgrade to a P25 system would result in an estimated total cost savings of \$2,300,000 - \$3,800,000.

**ADDITIONAL CONSIDERATIONS**

A migration strategy ensures the reliability of the existing system infrastructure and user gear by providing a source of replacement parts harvested from migrated channels. Remaining consistent with surrounding agencies in adopting a Motorola P25 system will enhance opportunities for economies of scale with respect to future infrastructure upgrades, and user gear, as well as opportunities for dynamic resiliency, and enhanced interoperability.

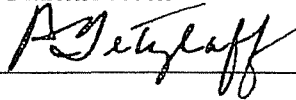
**6. CONCLUSION**

The installation of a Motorola P25 radio system will greatly enhance opportunities for interoperability between emergency services across the Greater Toronto area and beyond, provide resource sharing opportunities and provide the basis for economies of scale and cooperative purchasing. This approach also minimizes operational risk while achieving cost savings to the organization.

This proposed direction will ensure reliable radio communications over an anticipated 15 year lifespan, and properly position VCOM users to leverage the latest in digital communications technology.

Consequently, the VCOM Group seeks approval from the Police Services Board, to authorize the Regional Director of Purchasing to enter into Direct Negotiations with Motorola for VCOM system replacement in accordance with Purchasing Bylaw #365.

**Approved for Submission:**



Paul Tetzlaff  
Deputy Chief, Corporate Services

*For further information regarding this report, please contact Supt. Frank Roselli at extension 4440 or via e-mail at [frank.roselli@peelpolice.ca](mailto:frank.roselli@peelpolice.ca)*

*Authored by: Supt. Frank Roselli*

*CC: Mr. James Macintyre - Director, Purchasing*