RR-1(d)

CITY OF **VANCOUVER**

ADMINISTRATIVE REPORT

Report Date:	December 6, 2006
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Meeting Date:	January 16, 2007

TO: Vancouver City Council

FROM: General Manager/Fire Chief Vancouver Fire & Rescue Services

SUBJECT: Vehicle repeaters – Increase to the E-Comm Radio Levy for Vancouver Fire & Rescue Services (VFRS)

RECOMMENDATION

A. THAT Council receive for INFORMATION this report requesting the approval of the purchase, installation and maintenance of fifty-five (55) vehicle repeaters to be installed in VFRS frontline apparatus and vehicles, with financing provided by E-Comm and repaid through an increase in the VFRS Radio Levy of $141,700 annually starting in the 2007 budget year without offset. Approval and funding to be deferred to the 2007 Interim Operating Budget;

B. THAT Council receive for INFORMATION this request to approve an increase to the VFRS operating budget for 2007, without offset, for the one time installation and annual warranty costs that will not be funded by E-Comm. These costs include $25,600 one-time installation costs and $14,200 annual license fee costs. Approval and funding to be deferred to the 2007 Interim Operating Budget.

GENERAL MANAGER'S COMMENTS

The General Manager/Fire Chief of Fire and Rescue Services RECOMMENDS approval of A & B.

COUNCIL POLICY

No specific Council policy exists regarding Fire Communications. However, Council has consistently supported effective emergency communications to support daily emergency operations and response planning for major emergencies.

SUMMARY

The 800MHz radio trunked system currently used by the VFRS does not provide adequate radio signal strength within some structures, including many concrete and steel buildings, towers and underground parking areas in the city. Regulations established by Worksafe B.C. (the former WCB) require that communications must be maintained between firefighters working inside and outside of buildings including all other enclosed locations.

The installation of vehicle repeaters in all VFRS front line apparatus will help minimize this radio communication problem. Vehicle repeaters are very sensitive to the tuned radio frequency and can receive and retransmit weak signals received from transmitting portable radios in use at emergency incident scenes.

PURPOSE

Vancouver Fire & Rescue Services seeks Council approval for an increase to the Radio Levy to fund the purchase, installation and maintenance of fifty-five (55) vehicle repeaters for VFRS frontline apparatus. These repeaters will provide improved in-building radio coverage and enhanced two-way radio communications at fire or other emergency scenes.

DISCUSSION

In 1999 Vancouver Fire & Rescue Services transitioned onto the E-Comm 800 MHz simulcast, trunked radio network which is a reliable and robust communications network. Yet, like all radio communication systems, it has some limitations. The E-Comm radio network provides 98% radio coverage to the service agencies. This coverage is based on external readings of radio signal strength at locations throughout the coverage area. However, the majority of VFRS incidents require crews to enter and work within buildings. The inherent characteristics of the E-Comm radio system, as well as the construction and design of newer buildings, results in inconsistent penetration of radio signals into some buildings.

Since the VFRS transition to E-Comm, the Department has attempted a number of technical adjustments and refinements to its communication systems to overcome the lack of consistent radio communication within newer buildings. Each of these adjustments has created a different set of problems, and no overall solution is available with the Department's existing resources. The best response to VFRS communications problems is the installation of vehicle repeaters in the Department's front line vehicles.

A "vehicle repeater" is a device that operates as a small localized receiver/transmitter. Repeaters are very sensitive to the tuned radio frequency, and can receive weak signals transmitted from portable radios. When a signal is received by a vehicle repeater, the signal is re-transmitted locally to all radios tuned to the selected channel and cross-banded to the

E-Comm radio network monitored by E-Comm's Fire dispatch center and any other VF&RS radios that are tuned to the selected channel.

The safety advantages of using vehicle repeaters include:

1. Improved "in-building" radio coverage
2. Use of the "emergency button" which provides eight seconds of emergency broadcast by the distressed firefighter
3. Cross banded radio communications which relay and record transmissions from the incident to E-Comm
4. A continuous radio communications network.

To be effective, vehicle repeaters must be installed in all fifty-five (55) front line apparatus.

WorkSafe BC regulations 31.23 - Entry into buildings (2) states: "Effective voice communication must be maintained between firefighters inside and outside the enclosed structure." When radio communications inside a building or other area is not functional, communication with the outside must be re-established and may require leaving the emergency area.

Vancouver Fire & Rescue is therefore not in compliance with current regulations and needs to become compliant. It is also worth noting that the vehicle repeater solution has been employed by other municipalities including Ottawa, Lethbridge, and Halifax in Canada, and Washington DC, and Portland Maine in the U.S. In all of those jurisdictions radio repeaters have demonstrated their effectiveness in maintaining communications within concrete and steel buildings, towers and underground parking areas.

The VFRS in concert with CSG – Chief Building Official's office are currently engaged in developing a report to Council that would recommend that the Vancouver Building Bylaw (VBBL) require in-building radio support systems for specific building types at time of construction which are likely to be radio opaque. The required technology at time of construction represents less than 0.5% of building costs. The cost for retrofit technologies into identified problem buildings would be prohibitively expensive and is therefore not an option.

ALTERNATIVES/OPTIONS

There are currently no identifiable alternatives to the "vehicle repeater" solution at this time. VFRS staff have discussed alternatives with manufacturer's representatives, and E-Comm staff, and confirmed that technical alternatives to radio repeaters have not yet been designed or developed.

FINANCIAL IMPLICATIONS

A capital investment of $690,000 for fifty-five (55) vehicular repeater units is required. E-Comm will finance the repeaters through the existing Radio Levy at an estimated incremental annual cost of $141,700 ($22,600 for radio infrastructure and $119,100 for user equipment costs) starting in the 2007 budget year.

Outside the Levy is a one-time cost in 2007 of $25,600 for installation that E-Comm will not finance, as well as the annual warranty and maintenance cost of $14,200 that should be added as an ongoing increase to Fire's radio maintenance budget (2007 pro-rated), without offset.

Approval and funding to be deferred to the 2007 Interim Operating Budget.

PERSONNEL IMPLICATIONS

When installed, VFRS suppression personnel will require awareness training in the use of vehicle repeaters. This training will be incorporated into the daily training schedules and will have no cost implications.

IMPLEMENTATION PLAN

The hardware installation and training requirements are expected to take approximately four weeks to complete. The go-live conversion to the mobile system will be quite seamless because operational procedures and practices remain the same.

CONCLUSION

Installing vehicle repeaters in front line VFRS apparatus will enhance staff safety at fire scenes and other emergencies that require department staff to work within buildings, below grade facilities, or in enclosed areas.

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