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House of Commons Standing Committee on Finance
Sixth Floor, 131 Queen Street
House of Commons
Ottawa ON K1A 0A6
Canada

**Attention: Suzie Cadieux, Clerk**

**MOTOROLA SOLUTIONS CANADA INC. SUBMISSION 2016 PRE-BUDGET CONSULTATIONS**

**EXECUTIVE SUMMARY**

Many recent (Parliament Hill October 2014, Moncton June 2014, Southern Alberta floods and Lac Mégantic 2013, and Elliott Lake Mall Collapse 2012) and not so recent (Southern Quebec Ice Storms 1998, Saguenay Floods 1996) emergency events have underlined both the need and the value for Canada's First Responders (police, fire and paramedics) of mission critical wireless communications infrastructure to help them make order out of the chaos, to eliminate or reduce the loss of life and property and to help both people and businesses initiate the recovery process more quickly.

The Federal Government must provide a strong, stable funding to provinces and municipalities to assist in the building and upgrading of key physical infrastructure (roads, bridges, water treatment systems and libraries to name but a few) to ensure the continued prosperity of Canadians in the communities where they live.

In 2015, the Federal Government recognized the importance of mission critical wireless communications infrastructure through the allocation of 10 MHz of the 700 MHz spectrum band to be used by public safety agencies for emergency management purposes. This allocation was in addition to the initial allocation of 10 MHz that was announced in 2012 and mirrors the spectrum allocation in the United States. The importance of common spectrum will be discussed below in the context of cross border assistance in emergency situations.

In 2015, the Federal government allocated $3 million in funding over two years, starting in 2016–17, to take initial steps to establish a Public Safety Broadband Network, a high-speed mobile network dedicated to emergency management to be operated in the 700 MHz spectrum band.

While $3 million is an important first step, is the time for the Federal Government to take the next steps to ensure that Canadians and the physical infrastructure in which they have invested are protected in times of emergency and their First Responders and other mission critical users have the right mission

critical wireless voice and data communications tools (in essence infrastructure for your infrastructure) at the right time to respond as effectively as possible.

**DISCUSSION**

**The Role, Importance and Benefit of Interoperable Mission Critical Communications Infrastructure**

While First Responders and other mission critical users (electric utilities, public works and public transit to name a few) have benefitted from the use of wireless voice communications for many decades, these systems did not allow for users on separate systems within one jurisdiction or for users from separate jurisdictions to communicate with each other either during day to day operations (e.g. responding to a multi vehicle accident or conducting a search for a lost child in a wooded area in a rural community) or during large scale emergencies such as those cited above.

Over the past few decades, technological innovations have evolved to the point that mission critical users now have at their disposal standards based "interoperable" wireless communications infrastructure that allows for the implementation of multi agency/multi jurisdictional systems.

The accepted standard for interoperable mission critical wireless voice communications in North America is the Association of Public-Safety Communications Officials Project 25 (APCO P25). The accepted standard for interoperable mission critical wireless data communications in North America is the Long Term Evolution (LTE) standard established by the Third Generation Partnership Project (3GPP).

A number of studies and reports over the past 20 years, including the Nicolet report on the 1996 Saguenay floods and 1998 Quebec Ice Storm (Volume 1 section 5.2.3), the 2003 Abbé-Poirier Report, the 2014 Report on the Algo Centre Mall Collapse in Elliott Lake and the 2015 Independent Review of the June 4, 2014 Moncton Shootings have noted the important role that these mission critical communication tools can play in emergency situations.

As the reality that no one jurisdiction can address a large scale emergency by itself becomes increasingly apparent, the practice of "scalability through collaboration" among different jurisdictions renders standards based interoperable wireless communications infrastructure an essential tool in multi agency/multi jurisdictional collaboration.

While there remain a number of challenges to overcome to ensure multi agency/multi jurisdictional collaboration, funding remains clearly one of those challenges as many jurisdictions have adopted lower cost, but lower value solutions that are not able meet the requirements of not only to day to day response situations but also large scale emergencies that require them to work closely with First Responders from other jurisdictions representing both different jurisdictions and different orders of government (municipal, provincial/territorial, federal and international) to mitigate against or eliminate the loss of life and property as effectively and efficiently as possible.

One very recent example of the challenge associated with the need for interoperable mission critical wireless communications infrastructure and the lack of funding was the tragic events of June 4, 2015 in Moncton New Brunswick. In his Independent Review of the events, *Assistant Commissioner Alphonse MacNeil (ret'd): wrote:*

> In 2007-08, discussions were held regarding a Maritime Radio Communications initiative that would create one radio system that all emergency responders in the Maritime provinces could use. Studies were conducted and the idea was supported at many levels, however, provincial funding challenges prevented implementation. Without this system, there was no radio communication possible for those members who arrived from neighbouring Divisions unless they were able to secure a "J" Division portable radio or pair up with a "J" Division member. As these workarounds were not in place immediately, responders from other divisions could have unknowingly driven into the "hot zone." *****.[1]

**Emergency Management and Interoperable Communications in Public Safety Canada's Policy Framework**

Public Safety Canada has four core mandates: National Security, Border Strategies, Countering Crime and Emergency Management. Within the Emergency Management mandate there lie three key pillars: Disaster Mitigation and Prevention; Emergency Preparedness and Response; and Disaster Recovery.

The Federal Government has for many years assisted Canadians recover from natural disasters through the creation and funding of a number of programs, most notably Public Safety Canada's Disaster Financial Assistance Arrangements (DFAA). Many of these programs have functioned in collaboration with similar programs administered by a number of provinces.

In budget 2014, the Federal Government recognized the importance of prevention when it announced the creation and funding ($200 million over 5 years) of the National Disaster Mitigation Program (NDMP), also administered by Public Safety Canada. In the words of Public Safety Canada:

> The NDMP will address rising flood risks and costs, and build the foundation for informed mitigation investments ***that could reduce, or even negate***, the effects of flood events in the future." [2](emphasis is ours)

It is well known that a key component of mitigation against loss is a community's ability to respond as quickly and effectively as possible (we note that Public Safety Canada's Emergency Management web page is in fact laid out in this order) and that in Public Safety Canada's own words an essential component to effective response is Communications Interoperability.

Federal jurisdiction and leadership in this area is both proper and required. In fact the 2011 Communications Interoperability Strategy for Canada provides the following summary and justification for a federal role in the field:

"In the event of a large-scale, complex emergency or event in Canada, no single agency at any level of government would have the required authority and expertise to act unilaterally. A complex emergency or event is one that triggers a variety of mandates, crosses jurisdictional boundaries, and requires an

[1] http://www.rcmp.gc.ca/pubs/moncton/moncton-macneil-eng.htm#sec7
[2] http://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/dsstr-prvntn-mtgtn/ndmp/index-eng.aspx

approach that aligns policy and integrates efforts by federal, provincial, regional, and local responder organizations. Such events may also require support from international partners.[3]"

We also believe that the federal government needs to play a role in ensuring that first responders from separate jurisdictions are communicating with the same tools at the same time to ensure that emergency response can benefit from scalability through collaboration across municipal, federal and even national (Canada to US) jurisdictions.

**The US Example**

We believe that a review of the role that the United States federal government plays in this area is warranted for two significant reasons: First, it serves as a useful comparison of an approach taken elsewhere in the world. Secondly, and perhaps more importantly, as we have touched upon above, increasingly emergency management is crossing borders, including national borders and practices in the United States in this area will have direct impact on Canadians.

The United States Federal Government administers a number of recurring and non recurring funding programs that assist state and local governments in disaster mitigation, emergency preparedness and response and disaster relief assistance.

One such program is the Department of Homeland Security's (DHS) Emergency Management Performance Grant (EMPG) Program. In fiscal year 2014 alone, this program provided significant grants to state, local and aboriginal governments for disaster mitigation, response and recovery programs, including significant contributions in key border states and communities including Chautauqua, Niagara and Erie in New York state, to name a few. DHS describes the role of the EMPG Program in the following way:

> The EMPG Program plays an important role in the implementation of the National Preparedness System. The program supports the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. Delivering core capabilities requires the combined effort of the whole community, rather than the exclusive effort of any single organization or level of government. ***The EMPG Program's allowable costs support efforts to build and sustain core capabilities across the Prevention, Protection, Mitigation, Response, and Recovery mission areas.*** [4]

**RECOMMENDATION**

**P25 Mission Critical Voice Projects**

To facilitate voice communication interoperability, the North American public safety community standardized on the P25 architecture to enable national, regional and local emergency management interoperability through reliable, highly ruggedized networks that are dedicated to the demanding

[3] http://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/ntrprblt-strtg/ntrprblt-strtg-eng.pdf
[4] https://www.fema.gov/fiscal-year-2015-emergency-management-performance-grant-program

needs of public safety. While many communities have migrated to this P25 standard, some are having difficulty given current budget pressures.

We recommend the Federal Government provide infrastructure funding under current or new programs to support the migration of antiquated, unreliable analog systems to the P25 standard. We forecast there are three Provinces, Ontario, Manitoba, and Newfoundland and 15 -20 communities such as Calgary, Victoria, Waterloo, Quebec City, Cornwall and Saguenay that would benefit from this infrastructure funding.

We estimate the total project funding in the order of $1B to complete the migration of the remaining analog systems to P25 digital systems with large Provincial systems at around $100m / system, and small municipal systems around $5M per system. These funds would be used as follows:

- Professional Services - Professional Engineers, Program Managers, and System Technologists, to design, build and install systems. This represents between 5 – 10% of total project costs
- Infrastructure – Tower / Shelter construction or upgrades , radio equipment on towers, central site servers / switching equipment, wireless network facilities to connect Tower sites to central switch, and digital end user subscribers or radios. This represents 50-60% of total project costs.
- Lifecycle – Hardware, software, and maintenance services to keep the system up to date over 10 – 15 years as technology evolves, and services to maintain high levels of system availability, and performance. This represents 30-45% of project costs.

**Mission Critical 700MHz Broadband**

Dedicated mission critical broadband networks have the potential of transforming how we deliver public safety services in the same way that smart phones have revolutionized the consumer experience. Real time video, social media, data analytics, global positioning, public safety drones, and many data rich applications can transform public safety, by delivering all this information to assist public safety personnel in the field. The Federal Government has funded many studies on the Economics of policing, to determine how we can police our communities in a more effective and efficient manner. Now is the time to test these concepts in the field. The Unites States and some Middle East nations are funding 700MHz mission critical public safety broadband networks to ensure the best possible data is available to public safety, to fight potential security threats.

This is a new and emerging area for public safety, and while there is a very high level of interest in the potential of public safety broadband, other than small research projects, communities do not have the funding to explore this technology. The Federal Government could facilitate this enormous potential by taking a two phase approach:

- Seed a number of projects in local communities, in the order of $1-5M per community to build test systems to allow public safety users to test applications and determine how new solutions can improve police efficiency and effectiveness;

- Subsequently to provide funding for full scale implementation of these systems. Project costs would be $20 - $200M per system based on the size of the local community.

Projects have a similar profile to the description under P25 mission critical voice systems.

We look forward to meeting with the Committee to discuss this important issue for Canadians.

Our contact for further discussion is Matthew Swarney, Director Government Affairs. Mr. Swarney can be reached at 905-948-5747 or matthew.swarney@motorolasolutions.com.