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Spectrum Management and Telecommunications Policy

Spectrum Utilization Policy

Mobile Service Allocation Decision and Designation of Spectrum for Public Safety in the Frequency Band 746-806 MHz

Department of Industry

Radiocommunication Act

Notice No. DGTP-002-04 - Mobile Service Allocation Decision and Designation of Spectrum for Public Safety in the Frequency Band 746-806 MHz (SP-746 MHz)

Intent

The purpose of this Notice is to announce the release of a spectrum policy document under the above-mentioned title. This document announces Industry Canada's decision to allocate the mobile service in the frequency band 746-806 MHz on a co-primary basis with the broadcasting service, and designate some spectrum for public safety. This notice also seeks comment on the technical and licensing considerations for an efficient implementation of this spectrum for public safety.

On June 8, 2001, the Department released a consultation paper entitled, *Proposal to Introduce the Mobile Service on a Co-primary Basis with the Broadcasting Service in the Frequency Band 746-806 MHz* (DGTP-004-01). Significant public input was received on this consultation from the broadcasting, mobile wireless and public safety communities. Since that time, the Department has carried out studies of the Digital Television Transition Allotment Plan, has negotiated changes within the allotment plan with the United States to accommodate public safety and has commissioned technical sharing studies between the broadcasting and public safety applications. Also, the Department has introduced a moratorium on television channels 63 and 68 to prepare the spectrum to be used for public safety applications.

Submitting Comments

Interested parties should submit their comments on the issues raised in SP-746, no later than January 14, 2005. Shortly after the close of the comment period, all comments received will be posted on Industry Canada's [Spectrum Management and Telecommunications Web site](http://strategis.gc.ca/spectrum) at: <http://strategis.gc.ca/spectrum>.

Respondents are requested to provide their [comments](#) in electronic format (WordPerfect, Microsoft Word, Adobe PDF or ASCII TXT) to the following e-mail address: wireless@ic.gc.ca, along with a note specifying the software, version number and operating system used.

Written submissions should be addressed to the Director of Spectrum and Radio Services, Industry Canada, 300 Slater Street, Ottawa, Ontario, K1A 0C8.

All submissions should cite the *Canada Gazette*, Part I, the publication date, title, and notice reference number (DGTP-002-04).

Obtaining Copies

Copies of this notice and documents referred to are available electronically on the [Spectrum Management and Telecommunications Web site](http://strategis.gc.ca/spectrum) at: <http://strategis.gc.ca/spectrum>.

Official printed copies of gazette notices can be obtained from the [Canada Gazette Web site](http://canadagazette.gc.ca/subscription-e.html) at: <http://canadagazette.gc.ca/subscription-e.html> or by calling the sales counter of Canadian Government Publishing at (819) 941-5995 or 1 800 635-7943.

September 23, 2004

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1.0 Introduction

The purpose of this paper, announced in DGTP-002-04, is to allocate the mobile service in the frequency band 746-806 MHz on a co-primary basis with the broadcasting service, and to designate some spectrum for public safety. This paper also seeks comment on the technical and licensing considerations for an efficient implementation of this spectrum for public safety.

The decision to allocate the mobile service in the frequency band 746-806 MHz on a co-primary basis with the broadcasting service, completes the public consultation process which began on June 8, 2001 in the consultation entitled, *Proposal to Introduce the Mobile Service on a Co-primary Basis with the Broadcasting Service in the Frequency Band 746-806 MHz* (DGTP-004-01). Since that time, the Department has carried out studies of the Digital Television Transition Allotment Plan, has negotiated changes within the allotment plan with the United States to accommodate public safety and has commissioned technical sharing studies between the broadcasting and public safety applications. The Department has also introduced a moratorium on television channels 63 and 68 to prepare the spectrum to be used for public safety applications. Based on these activities, the Department was successful in finding suitable spectrum for public safety in the television sub-bands 764-770 MHz and 794-800 MHz (television channels 63 and 68) while accommodating broadcasting services.

The Department is seeking comments on certain aspects of the implementation of designated spectrum for public safety. Comments can be submitted according to the instructions set out in the Gazette Notice.

2.0 Background

In June, 2001 the Department initiated public consultation to allocate the mobile service in the frequency band 746-806 MHz on a co-primary basis with the broadcasting service. This new mobile allocation was proposed with the provision that further study and consultation would be needed before some spectrum for mobile applications could be released. The Department outlined the pressing requirement to open some spectrum for public safety in-line with the US band plan in order to accommodate cross-border, interoperable communications and the use of common radio equipment. The overall approach in the allocation and designation of spectrum for public safety, takes full account of the spectrum needs for the implementation of DTV, in accordance with the allotment plan.

The tragic events of September 11, 2001 have added further pressure to proceed with the allocation decision and the proposed spectrum designations for public safety contained herein.

By the close of public consultation on September 24, 2001, the Department had received 27 submissions. The comments received were submitted from the broadcasting and wireless communities, police, fire and other public safety organizations, industry and public safety associations and manufacturers and related government agencies in Canada and the United States.

2.1 Public Comments on Mobile Service Allocation

The Department proposed that the domestic allocation should be confined to the addition of the mobile service in band 746-806 MHz (TV channels 60-69) given the spectrum requirement for the DTV transition (see Section 3). As there is a shortage of mobile service in spectrum below 900 MHz, modifications to the *Canadian Table of Frequency Allocations* were proposed to address this requirement.

Most respondents supported or did not oppose a mobile allocation as co-primary within the broadcasting band 746-806 MHz. The wireless community indicated that the Department should allocate the mobile service in the bands listed in International Telecommunication Union (ITU) footnote 5.293, including the bands 470-512 MHz and 614-806 MHz. In addition, the wireless industry favoured introducing the fixed service on a co-primary basis. Broadcasting industry respondents favoured the incremental approach proposed by the Department that would see only the mobile service allocated in one band i.e. 746-806 MHz.

In general, the comments received in response to DGTP-004-01, supported adding a mobile service allocation in the band 746-806 MHz with the broadcasting service on a co-primary basis provided that spectrum is available for the full DTV transition. A pressing requirement was also expressed to make spectrum available for public safety.

The issue of harmonizing a frequency band plan for public safety similar to that developed by the US administration was supported by the majority of respondents.¹ Respondents also supported a level of harmonization with the US that would promote cross-border interoperability. This is particularly pressing in a smart borders, Canada/US security environment.

3.0 Allocation Decisions

Based on the public consultation and the transition period required for digital TV broadcasting to be implemented, the Department has decided to limit the allocation of the mobile service with the broadcasting service, on a co-primary basis, to the frequency band 746-806 MHz. In addition, with this allocation change to the *Canadian Table of Frequency Allocations* and the adoption of an international footnote 5.293 supporting this allocation, Canadian footnotes are introduced that deal with the inter-relationships between these two primary services. The Canadian footnotes reiterate the provision of necessary spectrum for a full digital television transition in accordance with the DTV Transition Allotment Plan.

In summary, the Department is making the following changes to the *Canadian Table of Frequency Allocations* to enter the:

- mobile service as a co-primary service with the broadcasting service in the band 746-806 MHz;

¹ i.e. the same paired transmit and receive frequencies, the further division of spectrum for narrow band channels and wide band channels and the fostering of a common technical system standard.

- international in-country footnote 5.293 in the bands 470-608 MHz, 614-746 MHz and 746-806 MHz; and
- Canadian footnotes:

C- 22 to indicate that the implementation of mobile service will be subject to spectrum policy taking into account the progress of DTV transition; and

C-24 to reflect the extent to which international in-country footnote 5.293 is being adopted.

Canadian Table of Frequency Allocation Change

	MHz
470-608	BROADCASTING 5.293 C24
614-746	BROADCASTING 5.293 C24
746- 806	BROADCASTING MOBILE 5.293 C22 C24

5.293 (WRC-2000) *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico and Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina, and Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.

C22 (CAN-2004) In the band 746-806 MHz, the gradual use of spectrum for the mobile service will be subject to the development of a series of spectrum utilization policies as the transition of digital television progresses.

C24 (CAN-2004) In the bands 470-512 MHz and 614-806 MHz, international footnote 5.293 has raised the fixed and mobile services to a co-primary status with the broadcasting service for Canada. To support broadcasting requirements during the transition to digital television, the Department is only allocating the mobile service in the band 746-806 MHz at this time. The Department, will carry out public consultation in the future in order to adopt the other service

allocation provisions of international footnote 5.293 in the frequency bands 470-512 MHz and 614-746 MHz.

Discussion

This allocation change will provide the flexibility to gradually implement the mobile services in parts of the frequency band 746-806 MHz, as the DTV transition progresses. The Department intends to carry out studies of the DTV Transition Allotment Plan and undertake further public consultations as DTV is implemented; additional spectrum could be released for mobile service according to Canadian footnote C22.

With regard to Canadian footnotes C22 and C24 a few issues were raised during the consultation. Some respondents asked why the Department had not adopted the full provisions of international footnote 5.293, as it applies to the bands 470-512 MHz and 614-806 MHz and the shared primary allocation of the fixed service and the mobile service with the broadcasting service. The Department is of the view that in order to balance the public interest to accommodate a full deployment of DTV broadcasting and release some critical spectrum for public safety, a phased-in approach is required. Such an approach is required for allocating new services in the Canadian Table and should, in the short term, be confined to the band 746-806 MHz (TV channels 60-69). The Department has decided to only co-allocate the mobile service with the broadcasting service at this time to deal with the pressing need for mobile spectrum.

These modifications will be incorporated in the next revision to the *Canadian Table of Frequency Allocations*.

4.0 Designation of Spectrum for Public Safety

The June 2001 consultation paper proposed that a modest amount of spectrum in the frequency band 746-806 MHz should be identified for public safety and possibly commercial mobile service taking into account the DTV transition. Since the issuance of the consultation paper in June 2001, much has happened to heighten the needs of all nations to protect the safety and security of their citizens at home and abroad. There has been a significant increase in the urgency and critical need for common spectrum for public safety and national security for many applications and across several frequency bands. Hence, there is a pressing need for the Department to designate some spectrum for public safety use.²

In March 2002, the Department convened a two-day conference under the auspices of the Radio

² [Spectrum Utilization Policy 30-896 MHz, Part 1](#) (May 1990) defines safety services. [Standard Radio System Policy 502, Issue 4](#) further defines a hierarchy of safety service users such as: (a) **Category 1** - police, fire and emergency medical services; (b) **Category 2** - forestry, public works, public transit, dangerous chemical clean-up, customs and other agencies contributing to public safety; and (c) **Category 3** - Other government agencies and certain non-government agencies. See the following Web addresses respectively:
<http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf01051e.html> and
<http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf00050e.html>.

Advisory Board of Canada (RABC). The purpose of this conference was to discuss ways to improve Canada's public safety radiocommunication systems. Among the issues debated were the required spectrum, technical standards and operational practices to facilitate the interoperability of public safety systems at domestic and international levels.

On June 12, 2002 the Canadian Radio-television and Telecommunications Commission (CRTC) released a licensing policy framework to oversee the transition from analog to digital over-the-air television broadcasting in Broadcasting Public Notice CRTC 2002-31. The Commission issued a regulatory framework for the implementation of high-definition television in Canada with the anticipation that digital television would be a full replacement for analogue television.³ The implementation and the speed of transition to DTV will be influenced very much by the market place.

Since the issuance of gazette notice DGTP-004-01, the Department carried out a study of the DTV Transition Allotment Plan and in particular in the frequency sub-bands 764-770 MHz, 770-776 MHz, 794-800 MHz and 800-806 MHz⁴ to identify spectrum that could be re-arranged for public safety operations. Negotiations were also carried out with the Federal Communications Commission (FCC) in the United States to assess possible changes to the allotments listed in the Canada/US Letter of Understanding on DTV and to the DTV Transition Allotment Plan. These discussions were necessary to release spectrum for public safety and the future coordination and sharing of mobile service spectrum along the border area.

In the longer term, as the transition of digital television progresses, the Department will consult on opening up more mobile spectrum for public safety and commercial mobile applications in the band 746-806 MHz.⁵ In specific regard to public safety applications, this consultation would be concerned with the sub-bands 770-776 MHz and 800-806 MHz (TV channels 64 and 69).

4.1 DTV Transition Allotment Plan Study for Potential Public Safety Spectrum

On July 10, 2002, the Department sent a letter to the CRTC to indicate that the Department needed additional time to carry out studies of the DTV Transition Allotment Plan for TV channel pairs 63/68 and 64/69 in order to find potential spectrum for public safety.⁶ A temporary moratorium on issuing broadcasting certificates was imposed for these studies.

³ "...the Commission's preliminary view expressed in Public Notice 2001-62 was that DTV should be introduced in Canada as a replacement technology, rather than as a new technology that would simply take its place alongside the existing analog system. Although there was some discussion about the particulars, there was overall support for this approach. Accordingly, it is the Commission's determination that: Digital technology will be treated as a replacement for analog technology." (Section 7 of Broadcasting Public Notice CRTC 2002-31).

⁴ TV channel pairs 63/68 and 64/69 respectively.

⁵ TV channels 60-69.

⁶ See the following Web address for a related letter to the CRTC regarding [Implementing Digital Television Broadcasting \(DTV\) within the DTV Transition Allotment Plan](http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf08087e.html): <http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf08087e.html>.

Industry Canada addressed the viability of designating television channel pairs 63/68 and 64/69 for public safety in the near term as the transition was beginning to digital television. As a result, it was determined that designating spectrum from one pair of TV channels would meet the pressing need of public safety and at the same time would not restrict the DTV transition. The Department concluded that the potential for meeting these pressing needs could be better realized in TV channel pair 63/68. The allotments of TV channel pair 63/68 could be re-assigned to release spectrum for public safety. TV channel pair 64/69, however, was too heavily assigned with analogue/DTV allotments to be practically re-assigned.

The Department concluded that enabling the designation of television channels 63/68 for public safety would require some adjustments to existing allotments in the allotment plan. The allotment plan would need to provide new channel allotments for one NTSC⁷ station operating in channel 68 and for 14 planned DTV assignments allotted in television channels 63 and 68. The Department proceeded to accommodate these allotment adjustments to the DTV Transition Allotment Plan in consultation with the FCC. Annex 1 provides the list of allotment adjustments within the Canada/US coordination zone that were affected and consequently provided a replacement channel allotment.

Based on the conclusion that a re-arrangement of the DTV Transition Allotment Plan is feasible, the Department informed the CRTC and the broadcasting industry of its decision on March 10, 2003 to designate spectrum sub bands 764-770 MHz and 794-800 MHz for public safety (television channels 63 and 68 respectively).⁸ The Department imposed a permanent moratorium on the certification of broadcasting facilities in these two channels. In addition, the Department indicated that the implementation of the public safety use in this spectrum would be based on suitable service coordination with broadcasting facilities operating in adjacent TV channels.

The Department has discussed these changes to the DTV Transition Allotment Plan with affected broadcasters. The Department also contracted technical inter-service studies.⁹ These contracted studies will assist in the establishment of technical criteria so that broadcasters and public safety users can co-exist in adjacent spectrum.

Notification Process

Based on emerging public safety applications and commitments to implement services and prior to the Department undertaking a formal process to authorize the use of spectrum in channels 63 and 68 for public safety applications, the Department will provide a notification period of two years for the re-arrangement of one NTSC station in operation.

⁷ NTSC stands for National Television System Committee, which developed the NTSC television broadcast system standard in 1953.

⁸ See the following Web address for a related letter to the CRTC regarding [an update of the studies to identify spectrum for public safety in television channels 60-69](http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf08088e.html): <http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf08088e.html>.

⁹ See the following Web address for the [contracted studies regarding broadcasting and public safety spectrum](http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07035e.html): <http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07035e.html>

It is noted that broadcasting undertakings and corresponding channel allotments affected by the future use of spectrum in channels 63 and 68 for public safety applications, have been re-allotted replacement channels in accordance with Annex 1, for both NTSC and DTV channels.

In summary, the Department has designated the sub-bands 764-770 MHz and 794-800 MHz i.e. television channels 63 and 68, for public safety operations. Although the DTV Transition Allotment Plan has been re-arranged in cooperation with the U.S. to accommodate existing NTSC stations and DTV allotments in other channels, the list in Annex 1 is yet to be officially ratified by the U.S. Federal Communications Commission. Technical requirements will be developed to permit co-existence of broadcasting and public safety uses in adjacent spectrum.

4.2 Interference Mitigation Between Public Safety and the Broadcasting Service

The Department contracted two engineering studies to assess the potential for interference between the broadcasting and mobile services for applications such as those for public safety. The results of these studies may assist the Department in the development of suitable interference protection criteria and technical standards.

4.2.1 Protection of NTSC and DTV Broadcasting Operations from Public Safety Operations in TV Channels 63 and 68

The Communications Research Centre (CRC) study¹⁰ assessed the impact of public safety communications on broadcasting stations. To assist the Department in developing suitable interference protection criteria (wide band and narrow band mobile channels), this study had to evaluate interference from mobile base stations and mobile terminals of public safety services to analogue and digital broadcasting stations.

The objective of the contract was to help establish and propose interference protection criteria that would accommodate NTSC and DTV broadcasting facilities and permit the operation of public safety services on the designated frequency bands. In addition, a proposal on how to reuse the spectrum (co-channel and adjacent channels, wide band and narrow band) was required.

¹⁰ A summary of the [Communications Research Centre \(CRC\) study](http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07035e.html), *The Effects of Narrow band and Wide band Public Safety Mobile Systems Operation (in television channels 63/68) on DTV and NTSC Broadcasting in TV Channels 60-69 (746 MHz – 806 MHz)* may be viewed at: <http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07035e.html>.

4.2.2 Protection of Public Safety Operations in Televisions Channels 63 and 68 from NTSC and DTV Broadcasting Operations in Adjacent Channels

The Lapp-Hancock and Associates study¹¹ assessed the impact of broadcasting stations on public safety communications. To assist the Department in developing suitable interference protection criteria (wide band and narrow band mobile channels), this study had to evaluate interference from analogue and digital broadcasting to land mobile base stations and mobile terminals used to provide public safety services.

The objective of the contract was to help establish and propose interference protection criteria that would permit public safety operations on the designated frequency bands. Also, this could identify the amount of spectrum that could be used in paired television channels 63 and 68 for public safety purposes. In addition, the established criteria would consider any guard band spectrum that may be needed to allow such use.

The Department will permit the use of spectrum in channels 63 and 68 for public safety operations under suitable technical and operational parameters including interference mitigation criteria.

4.3 A Case for Interoperability - Fostering Equipment Standards For a Multiplicity of Equipment Manufacturers

On March 27 and 28, 2002, a National Public Safety Radiocommunications Conference brought together public safety users of spectrum, service providers and manufacturers and government policy makers to discuss how to improve the ability of the public safety community to communicate more effectively and efficiently. Among the benefits that this dialogue stimulated over the two days was the summary report commissioned by the Department and prepared by Pricewaterhousecoopers (PWC). Of the key issues raised by all participants, the PWC summary pointed out that functionality in public safety radiocommunication systems was a major issue. In addition, PWC suggested that Industry Canada could encourage the community of public safety users to plan, share and coordinate their common spectrum needs. This could require the sharing of common blocks of spectrum based on co-ordination criteria among user groups. These approaches would lead to the effective implementation of the spectrum and contribute to its efficient use.

The Department understands interoperability to mean the ability of public safety officials from different organizations to exchange information by radio according to a planned and set method. The Department also understands that the authority for Canadian public safety services occurs at several levels (municipal/regional, provincial/territorial, and national). As such, the Department recognizes that interoperable communications links are either multi-jurisdictional (involving public safety agencies having different geographical areas of responsibility) or multi-disciplinary (involving two or more different public safety agencies) in nature. An example of multi-jurisdiction communication includes a

¹¹ A summary of the [Lapp-Hancock and Associates study](http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07035e.html), *Interference Assessment and Development of Interference Protection Criteria to Protect Public Safety Operations and Enable Spectrum Sharing with NTSC and DTV Broadcasting in TV Channels 60-69 (746-806 MHz)* may be viewed at:
<http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07035e.html>.

fire department from one city communicating with a fire department from another city. An example of multi-disciplinary communication includes a fire department communicating with a police department. In addition, the Department acknowledges that interoperable communications are required for day-to-day operations, large emergencies/events and in times of crises.

To achieve an appropriate level of interoperability and to meet the spectrum requirements, any new spectrum will need to be designated and authorized with specific conditions. Such conditions will include the need to support a multiplicity of radio equipment manufacturers and following a common standard to ensure interoperability and a successful uptake of any new spectrum. Consequently a number of technical and licensing conditions will need to be explored. The Department will need to explore the development of technical and licensing criteria that meet the needs of public safety users and encourage the adoption of a common equipment standard for public safety use. This approach will make interoperable public safety system communications more feasible in a harmonized North American equipment market.

4.4 The U.S. Band Plan

The U.S. band plan for public safety is based on 24 MHz of spectrum at the 764-776 MHz and 794-806 MHz bands. Within each of the four 6 MHz blocks of spectrum (formerly TV channels), the spectrum is separated into narrow band (6.25 kHz channels) and wide band (50 kHz channels) segments. Furthermore, the U.S. designated the public safety spectrum for use as follows: 12.5 MHz for General Use, 2.6 MHz for Interoperability, 2.4 MHz for State Licences, 0.3 MHz for Low Power, 0.2 MHz for secondary trunking and 6.0 MHz for Reserve.¹² All transmitters in this band must use digital modulation.

4.5 Technical and Licensing Considerations

In addition to the technical criteria that needs to be considered to permit public safety to use spectrum in sub-bands 764-770 MHz and 794-800 MHz, there are licensing criteria that must be developed, for example, to encourage public safety users to roll out effective spectrum sharing plans among similar users and to promote interoperability. The following issues are raised to assist the Department in developing the licensing, technical and operational requirements to oversee the orderly release of this spectrum:

- (a) What common/open standard could be encouraged, that would foster interoperable mobile systems for public safety operations? Should this be an APCO¹³ sanctioned standard? And if so, should this standard, with all its suites of technical criteria be applied in the bands 764-770 MHz and 794-600 MHz to only interoperability channels or to all public safety channels and if not, why and which technical criteria should be applied?

¹² See the U.S. Code of Federal Regulations (CFR), Title 47-Telecommunication, Part 90- *Private Land Mobile Radio Services*, Paragraph 90.531 (Band Plan).

¹³ Association of Public-Safety Communications Officials (APCO).

- (b) Should interoperability on a domestic and Canada/US basis be a prerequisite to licensing and if so, what criteria should be applied?
- (c) What planning and authorization mechanism should be used to ensure that public safety users are successfully accommodated?¹⁴
- (d) Should public safety users have to submit a spectrum and system plan that accommodates public safety users in defined areas in order to justify an authorization? What information and commitments should be required in an overall plan?
- (e) In order to foster a common communications system to accommodate public safety, should the Department insist on common service plans on a regional or national basis in various regions of Canada before licences are granted anywhere else in Canada to any public safety user?
- (f) What level of harmonization with the U.S. band plan is appropriate i.e. should the Department define the same specific service applications such as low power, interoperability, wide-area systems etc.?
- (g) Does the current description of public safety services as previously referenced in footnote 2 cover all critical safety and services for public safety spectrum?

The Department welcomes comments from interested parties on these questions and any other related matters.

4.6 Next Steps

The Department anticipates that the use of sub-bands 764-770 MHz and 794-800 MHz for public safety will be based on the availability of mobile radio equipment and equipment interoperability standards. This would be supported through clearly defined licensing criteria and conditions. The technical and operational standards will be developed to ensure that the broadcasting and public safety uses can co-exist in adjacent spectrum.

Canada/U.S. Sharing Arrangement for Public Safety

Industry Canada, as part of its ongoing dialogue with the FCC, will negotiate a bilateral frequency sharing arrangement to guide the future implementation of mobile service applications as spectrum becomes available while meeting the objectives of DTV Transition Allotment Plan. At this time, only television channels 63 and 68 are being designated for public safety use in Canada. As such, these

¹⁴ A number of licensing mechanisms are available to the Minister of Industry to assign frequencies. The “First-Come, First-Served” (FCFS) approach is used in instances where there is sufficient spectrum to meet the anticipated demand in a given frequency band and where there is no additional measure required to advance particular telecommunications policy objectives. More information can be found on the Spectrum Management and Telecommunications Web site at: <http://www.strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf01148e.html> (*A Spectrum Policy Framework for Canada*) and at: <http://www.strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf01875e.html> (*Client Procedures Circular 2-0-16, Licensing Procedure for the Spectrum Licence*).

frequency sharing discussions will be conducted in a manner which anticipates that more spectrum will eventually be released in Canada for mobile applications, after the DTV transition and subject to further public consultation. Until that time, spectrum sharing discussions will fully adhere to the principles established in the DTV Transition Allotment Plan and the *Letter of Understanding Between the Federal Communications Commission of the United States of America and Industry Canada Related to the Use of the 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-806 MHz Bands for the Digital Television Broadcasting Service Along the Common Border*.

5. Further Consideration: Facilitating Advanced Communications in Remote Rural and Northern Communities

It has been the long standing approach of the Department to facilitate advanced communications services in high cost serving areas such as remote rural and northern communities. Often, flexible approaches have been adopted for the use of spectrum, including spectrum policy allocation, designation, and technical standards perspectives. Mobile spectrum has been used in non-congested areas for fixed telephone services. Broadcasting spectrum has been used for distance trunking of over-the-air broadcasting and for the use of television channels to provide wireless cable television-like services in small isolated communities where cable does not exist. Flexible use has also been made of fixed Multipoint Communication System (MCS) spectrum to extend Multipoint Distribution Service (MDS) broadcasting operations. MDS broadcasting spectrum has also been used to extend fixed broadband Internet applications.

The Department has also enabled broadcasting spectrum to be used to accommodate ancillary non-broadcasting services such as data casting. The Department has permitted some mixed fixed and mobile service applications recognizing that while the predominant service may be either fixed or mobile in nature, from a practical radio system perspective, each service can use some portion of the other to effectively delivery its primary service. To this end, the Department has also relaxed technical standards, antenna requirements, channelling plans, etc. in what is known as a geographical differences policy.

The Department anticipates that in certain remote rural and northern communities, significant spectrum allocated to television broadcasting in channels 2 to 59 will remain unused/unallotted. Due to a demographic reality, this spectrum will likely remain unused for the delivery of terrestrial analogue and digital television in these areas. As has been noted, the Department has previously afforded greater flexibility to use spectrum to facilitate advanced communications services in remote rural and northern communities. Consequently, there may be an opportunity in this instance, for broadcasters and other interested parties to make use of this unused spectrum to facilitate advanced communications services.

The Department is pre-disposed to study and consider the potential use of unused/unallotted television broadcasting spectrum in channels 2 to 59, in sparsely populated areas to extend access to advanced broadcasting and telecommunications services, including broadband Internet access and wireless broadcast distribution. However, regardless of any such study, it is still the intent of the Department to pursue the longer term goals and subsequent policy consultations to align the remaining portions of television channels 60 to 69 with those of the United States, for public safety and commercial mobile

applications.

The Department seeks comments on the types of advanced broadcasting and telecommunications services, that could be extended to Canadians in rural and remote communities, which find opportunity in unused spectrum on either an experimental, temporary or permanent basis. Specifically, given the significant amount of television broadcasting spectrum that is neither used, nor allotted, in rural and remote communities in channels 2 to 59, the Department seeks comments on:

- (i) the potential uses of this spectrum to provide advanced communications including broadband Internet access and wireless broadcast distribution; and
- (ii) whether temporary or permanent authorization should be granted and if so, in either case under what conditions.

6. Implementation

Based on the results of the public consultation initiated in this document and further internal evaluation, Industry Canada will encourage the development of an open technical equipment standard. It will also encourage licensing conditions that would, in the public interest, lead to the effective deployment of the proposed spectrum designations and promote both Canada/US and domestic interoperability among public safety users.

The Department will continue to study and conduct further consultations towards the longer term implementation of spectrum use by radio services for public safety and commercial mobile applications in the band 746-806 MHz (television channels 60 to 69). The Department will use the preliminary comments on the facilitation of advanced communications services in unused television broadcasting spectrum (channels 2 to 59) in remote rural and northern communities to make future proposals that develop this spectrum resource to meet Canadian needs.

Issued under the authority
of the *Radiocommunication Act*

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Director General
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Annex 1

Television Channel Allotment Replacements for Regular Power NTSC and DTV Stations

NTSC Channel	DTV Channel	City	Call	Class NTS C	Class DTV	NTSC Replacement Channel	DTV Replacement Channel
68	67	Sarnia-Oil Springs, ON	CBLFT-17	B	B	17	
3	63	Halifax, NS	CBHT	VL	VL		54
48	63	Chatham, ON	CBLFT-10	B	B		12
32	63	Kingston, ON	CBLFT-14	C	C		22
19	63	Toronto, ON	CICA-TV	C	C		51
36	63	Gatineau (Secteur Hull), QC	CFGS-TV	C	C		49
9	63	Sherbrooke, QC	CKSH-TV	VU	VU		55
8	63	Inverness, NS **	CBIT-19	C	C		53
6	68	Victoria, BC	CHEK-TV	VL	VL		43
43	68	Ottawa, ON	CHRO-TV-43	C	C		17
9	68	Sudbury, ON	CKNC-TV	VU	VU		35
47	68	Toronto, ON	CFMT-TV	C	C		64
32	68	Windsor, ON	CICO-TV-32	C	C		25*
24	68	Sherbrooke, QC	CIVS-TV	C	C		65
4	68	Sydney, NS**	CJCB-TV	VL	VL		55

Coverage Areas By Class of Station:

A (25 km); B (45 km); C (70 km); VU (82 km); VL (89 km)

* - 10 dB effective radiated power reduction toward Saginaw, Michigan

** Outside the Canada/US coordination zone